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Vocational Education and Economic Environments: Conflict or Convergence?

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Macroeconomic policies have a direct impact on the ability of a nation to provide vocational education and training efficiently.

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A better understanding of the relationship between economic policies and human capital formation through vocational education and training (VET) will help both development strategists and education planners.

Income policies that make the market less competitive, although designed to correct social inequality, often distort the demand for VET and lead to inefficiencies in its delivery:

- Effective minimum wage policies make enterprises less willing to provide skills training financed by reduced wages.
- Government regulated wage structures that result in wage compression, as seen in many developing countries, reduce the incentive of workers to invest in skills training.

Capital subsidies, and other relative factor cost distortions, may encourage the adoption of capital-intensive technologies that are inconsistent with a country's occupational skills mix and skills training resources. Such distortions will also debase the value of existing skills by accelerating their depreciation.

Trade policies can also influence incentives

for efficiency in VET.

- Protectionist trade policies provide shelter to inefficient domestic producers and reduce the market incentives for efficiency in VET.
- Export-led trade policies, coupled with competitive markets for capital and labor, tend to encourage the search for cost-effective forms of VET.

Making economic policymakers aware of the consequences of their policies for human resources development will hopefully lead to the more sensitive development of these policies. By the same token, making those responsible for the development of education and training programs aware of the constraints economic policies provide to their actions will hopefully create opportunities for adapting to these constraints. The paper offers an agenda for the further study of this relationship and its outcomes.

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I. INTRODUCTION

1. Training for vocationally-specific skills, as distinguished from general education, is undertaken in formal and nonformal modes in industrialized and developing countries. This training, referred to as vocational education and training (VET), encompasses a broad range of skills covering theoretical and cognitive development in the applied sciences to narrow training that is specific to individual occupations. In formal modes, VET is offered in secondary and postsecondary education institutions with vocational and technical curricula. In nonformal modes, VET is provided by vocational training centers run by ministries of labor, social affairs, and various technical ministries and by employers' associations and enterprises. Other nonformal modes of VET include apprenticeships, on-the-job training, and training provided by equipment suppliers. VET plays an important role in meeting skill needs for economic development. World Bank education sector lending in developing countries totalled \$7.4 billion between 1963 and 1986, with \$3.9 billion of this total invested in training for vocationally-specific skills (Schwartz, 1988).

2. As a source of productive skills acquisition, formal modes of VET have attracted considerable attention with criticisms of their high cost and frequent failure to achieve training goals. (Adams, 1980; Borus, 1977; Dougherty, 1987; Grasso and Shea, 1981; Psacharopoulos, 1986) This attention has resulted in efforts to reduce the cost of skills development in these modes, while attempting to maintain satisfactory levels of effectiveness, and in other cases, efforts to increase their effectiveness, while maintaining or even reducing their cost. Alongside these efforts

related to efficiency in the production of VET, other steps have been taken which would make formal modes of VET more responsive to market forces in determining which skills are produced and in what quantities. These efforts are summarized respectively as improving the internal and external efficiency of VET. Reflecting this attention, the share of VET in World Bank-assisted investments in formal modes has steadily decreased over the past two decades with a larger share of investment in nonformal modes of training.

3. The efforts taken to improve formal modes of VET have frequently focused on matters of policy within the control of schools and the education sector. Some examples include efforts to improve teacher education and administration, upgrade training facilities and equipment, update programs and curricula, and refine admission and certification standards. Less attention has been given to the economic environment and the array of economic policies outside the education sector that can alter the derived demand for skilled labor and influence individual and social returns to investments in VET. These policies are identified by Balassa (1987) as ones which can distort the operation of product and factor markets. In factor markets, this includes social policies, financial policies, and tax policies affecting the relative price of labor and capital, while in product markets, it includes trade policies (import protections and export subsidies), exchange rate policies, and price controls all of which affect relative product prices.

4. This paper explores the manner in which economic policies can act to thwart or discourage efforts within the education sector to improve the internal and external efficiency of VET. The study is part of a broader

policy study of training for vocationally-specific skills in developing countries conducted by the World Bank. The objective of the broader study is to provide guidance to educational policy makers in developing countries and to Bank staff in the selection, design and development of appropriate training models. The present paper contributes to this objective by exploring the linkage between broad economic policies and the development of skilled manpower for economic and social development. A better understanding of this linkage is important to those concerned with the selection of appropriate economic development strategies as well as those responsible for the development of effective training programs.

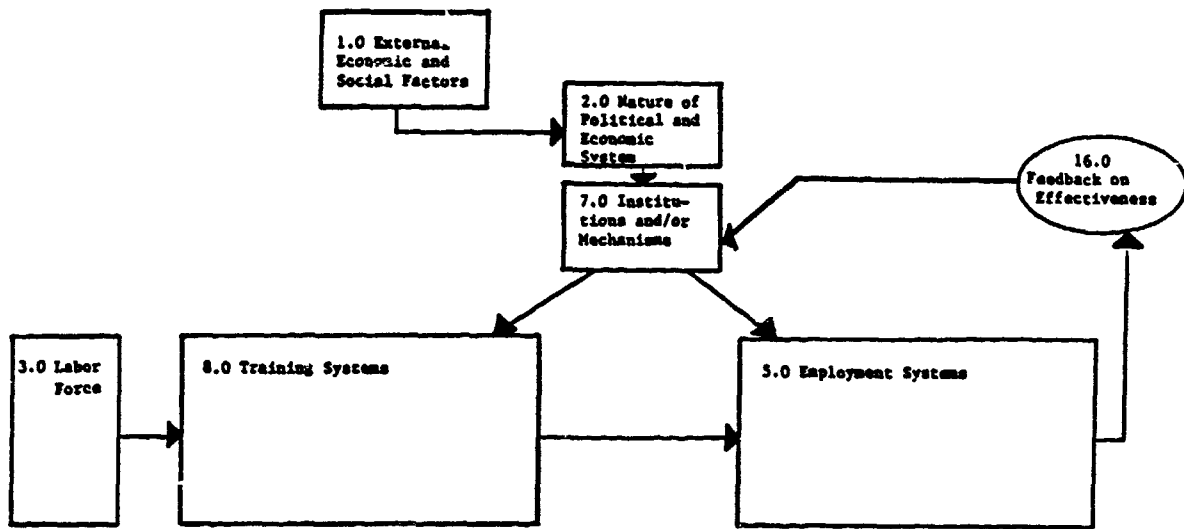
5. Benson (1987) offers a taxonomy identifying conditions under which formal modes of VET are expected to be an efficient institutional source of skills acquisition. This taxonomy considers the capacity of these modes for realizing economies of scale in training, the complementary linkages with general education, and the ability to focus on social alongside private interests in training. In addition, while many educational planners and labor market analysts have come to recognize the benefits of moving training closer to the enterprise in terms of added efficiency, this does not translate directly into the dismantling of existing VET systems (Squire, 1981, p.204). The large investment of most industrialized and developing countries in formal modes of VET suggests instead that less costly alternatives will be explored to improve linkages between schools and enterprises, including the restructuring of VET financing (Dougherty and Tan, 1988).

6. Against this background, the paper begins with a social systems model to trace the impact of the economic environment and policies on the

internal and external efficiency of VET. It continues with a discussion of how specific economic policies can shape efforts to improve the internal and external efficiency of VET. Some evidence of this relationship is provided in a review of the VET experience in selected countries. The paper concludes with some tentative lessons for VET lending and sector work as drawn from this review and offers an agenda for the further study and validation of the economic environment thesis.

II. A SYSTEMS MODEL FOR SKILLS DEVELOPMENT

7. Middleton and Schwartz (1986) employ a social systems approach to the modeling of skills development (also see Middleton and Demsky, 1988, pp. 7-9). Their heuristic model views skills development as a product of the interaction of system components which are dynamically connected by flows of information and resources. The modeling of these components and connecting flows provides a framework for guiding the study of VET. A general model is offered in Figure 1 which depicts external economic and social factors (1.0) as influencing a society's political and economic system (2.0). This system in turn functions through policy institutions and mechanisms (7.0) to affect the labor force (3.0) and the training (8.0) and employment (5.0) systems. The model includes a feedback component on the effectiveness of skills development (16.0) that connects the employment system with a society's policy institutions and mechanisms. An expanded version of this model is offered in Figure 2 which depicts in greater detail the connection between economic policies and the skills development process. This expanded model shows the important connecting linkages



□ - Components
 ○ - Linking Components

Figure 1: General Conceptual Model of Skill Development and Employment

Source: Middleton and Schwartz

between the major systems of the model, and in the case of the training and employment systems, the internal components of these systems. Middleton and Schwartz argue that these linkages are particularly important and that their absence or weakness will lead to the system's relative inefficiency (1986, p.11). The model is generic. The nature of its components and connecting flows, for example, is likely to be very different when compared across distinctive political and economic systems. The merits of the model therefore rest in the structure it provides for the analysis of VET. As one approaches the problem of skills development in a particular setting, the model suggests where to begin looking for the key elements and potential points for policy intervention.

8. The expanded model shows how the political and economic system of a society (2.0), as shaped by external economic and social factors (1.0), functions through its policy institutions and mechanisms (7.0) to establish basic resource and policy parameters (9.0, 10.0) for training (8.0) and employment (5.0) systems. Differences in these basic resources and policy parameters in turn lead to differences among training and employment systems. The training and employment systems are each comprised of dynamically-linked sub-systems which define their efficiency and effectiveness. In the training system, for example, training is comprised of teachers, students, facilities and equipment linked through a curriculum to learning activities. In the employment system, manpower is joined with other resources and technology in production activities. The model connects the training and employment systems in several ways. For example, the product of the training system, skilled persons (12.0), is used by the employment system. Labor markets (13.0) or employment mechanisms in the

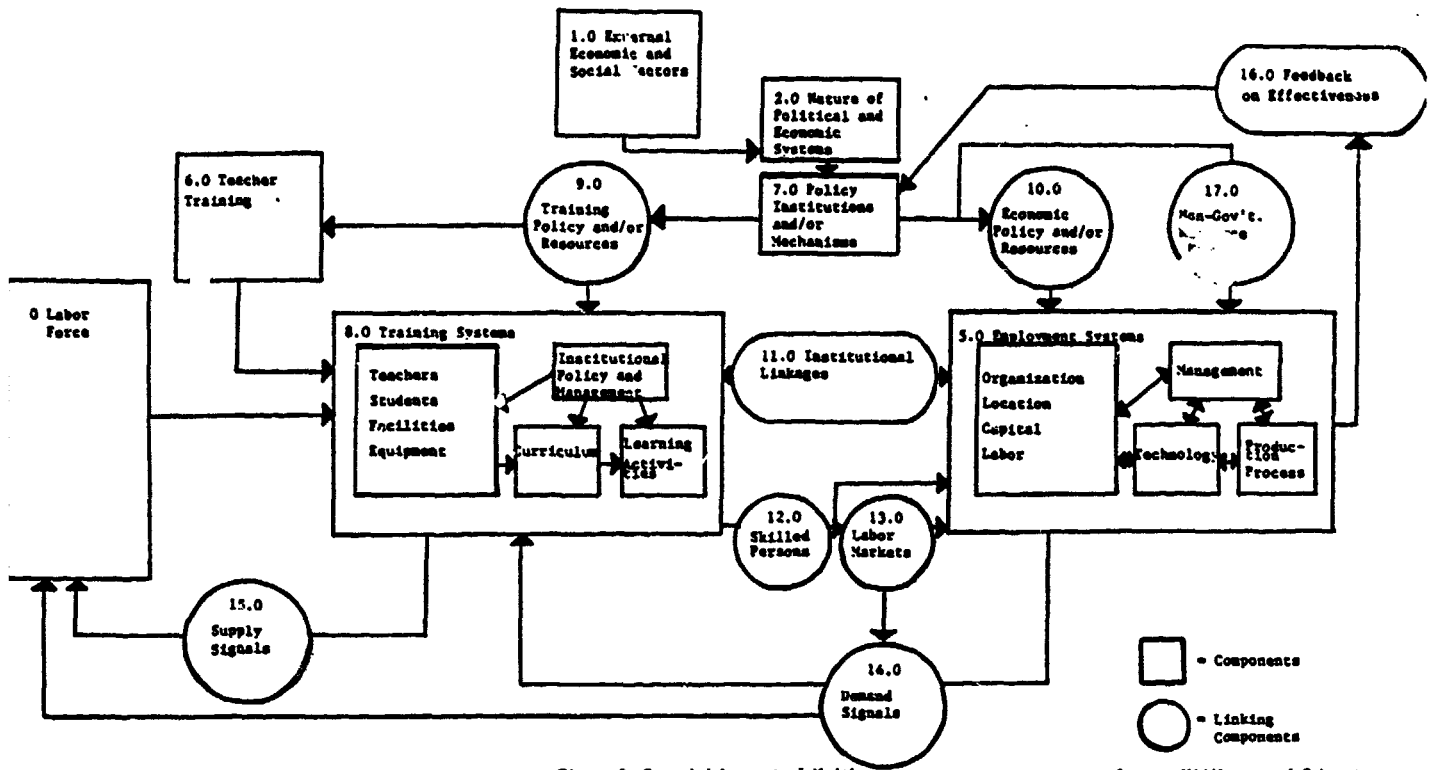


Figure 2: Expanded Conceptual Model of Skill Development and Employment

Source: Middleton and Schwartz

enterprise mediate this flow between the training and employment systems. The employment system sends demand signals (14.0) to the training system and to the labor force (3.0). The labor force also receives supply signals (15.0) related to training spaces from the training system. The model, in addition, includes institutional linkages (7.0) between the training and employment systems. These linkages may come in various forms ranging from advisory committees of employers on training curricula to formal contracts for training services. The equilibrium of the skills development process is maintained by the feedback mechanisms on employment (16.0), which are used to modify policy, and by demand and supply signals (14.0, 15.0).

9. The connecting linkages between the three systems play a vital role in the efficiency of skills development. The internal efficiency of VET, for example, is shaped by institutional policy and management within the training system which determines how a training institution uses inputs of information and resources to produce skilled persons. As a consequence, the effectiveness of institutional policy and management within the training system will depend on the nature of externally determined training policies and resources (9.0) furnished by the political and economic system (2.0), the demand signals (14.0) received, and the institutional linkages (11.0) provided. If training policies are unclear or resources inadequate, if demand signals are weak or inaccurate, or if institutional linkages are ineffective or absent, the internal efficiency of the training system in producing skilled persons will be threatened. These connecting linkages and their system antecedents can therefore play an important role affecting the internal efficiency of VET.

10. By the same token, the external efficiency of VET will be influenced by management in the employment system and its determination of how enterprises will use skilled labor and other resources along with technology in production activities. The effectiveness of management in this task will be controlled by externally determined economic policies and resources (10.0), non-governmental resource flows (17.0), supply signals received through the labor market (13.0), and the institutional linkages with the training system (11.0) and political and economic system (16.0). These components and connecting flows of the model together with the quality of management will determine the extent to which available skills are put to productive use. The degree to which skills are used productively will govern the external efficiency of VET as will the effectiveness of labor markets (13.0) and other formal and informal linkages between production and training (11.0, 16.0, 14.0) in signaling relative skills scarcities and in guiding the orientation and design of training systems.

11. In summary, the systems model for skills development offered by Middleton and Schwartz permits one to trace the impact of economic policies on the internal and external efficiency of VET. The model implies that resource and policy parameters are established by a political and economic system and are given to managers of employment and training systems. The efficiency with which these systems perform is in turn shaped by these parameters, the quality of systems management, and the institutional linkages and information flows provided. The economic policies (10.0) included in the model can be broadly defined and embrace the policies described by Baiassa (1987) as influencing the operation of factor and

product markets. These policies establish resource and policy parameters as constraints to the actions of employment and training systems managers. As such, these policies are important elements in the systems model influencing the internal and external efficiency of VET.

III. LINKING ECONOMIC POLICES TO VET

12. Economic policies in the environment surrounding the education sector can play an important role in determining the internal and external efficiency of VET. The effect of these policies can be seen in the systems model through their influence on factor prices and technology choices in the employment system and through their impact on information flows between the employment and training systems. As an illustration, incomes policies that weaken or severe the relation between wages and productivity in an effort to reduce social inequities can affect both the internal and external efficiency of VET. Wages in this context will no longer provide appropriate market signals to the labor force and enterprises regarding social rates of return to investments in skills training with the result that inefficiencies may arise in the mix of skills and the manner in which they are produced.

13. The source of these inefficiencies in this illustration rests outside the control of the education sector symbolizing the problem faced by this sector in its efforts to improve VET. It must in this and other cases depend on the feedback components of the skills development system for change and its own ability to adjust and plan for these constraints. The constraints imposed by these polices, of course, are only one element

affecting the education sector's efforts to improve VET. Others include the effectiveness of institutional linkages between the employment and training systems and the quality of management in the employment system. Improving the institutional linkages between the employment and training systems requires the cooperation of both systems. The training system cannot address this problem alone. Ineffective management in the employment system can also lead to technical inefficiencies and a failure to adopt cost-minimizing technologies and factor combinations.

14. This example can be extended to other economic policies that impose constraints on the education sector's efforts to improve the internal and external efficiency of VET. These policies are organized in terms of their impact on factor and product markets.

ECONOMIC POLICIES INVOLVING FACTOR MARKETS

The Market for Labor

15. Labor market policies may be adopted that intervene in the operation of competitive labor markets affecting the demand for VET. For example, rather than wages being determined simply by market forces, they can be determined by public policies concerned with broader social issues related to income security and social equality. Minimum wages are an illustration of this as used by industrialized and developing countries to provide a minimum standard of living for the employed. The impact of these policies on employment and the demand for VET is explained by Balassa:

...the narrowing of wage differences [due to minimum wages] will discourage socially profitable investments in human capital as incentives for such investment are reduced. Also, distortions will be introduced in the choice between labor and physical capital, between unskilled labor and skilled labor, as well as between labor

in the formal sector and the informal sector, where minimum wage regulations are rarely applied, (1987, p.12).

16. Leighton and Mincer (1979, p. 159) suggest that minimum wages may discourage enterprises from providing vocationally-specific skills training that would otherwise be paid for by employees through reduced wages. Workers are instead forced to prolong their schooling to acquire these skills. The authors cite this as a reason for the growth of community colleges and vocational schools in industrialized countries and for the growing demand for vocationalism in college curricula. The result of such policies, they argue, is to shift demand for vocationally-specific skills training from enterprises to school-based settings, thereby loosening the linkage between training and employment systems and potentially reducing the external efficiency of VET.

17. The impact of these policies falls heavily on low-wage workers. Individuals whose productivity is below the minimum may lose their jobs while those whose productivity is worth at least as much or more than the minimum will lose opportunities for skills training in the enterprise. For individuals with earnings above the minimum, the enterprise may be willing to offer training paid for with reduced earnings, but the individual's incentive to acquire this training will be reduced by the compression of earnings for skilled and unskilled workers. The impact of minimum wages on skills development, however, depends on the aggressiveness with which this policy is pursued. Fallon and Riveros (1986, p.14), for example, point out that minimum wage policies in developing countries have been employed less aggressively over time and, therefore, are now less effective.

18. In developing countries, wage compression often takes place in a system where basic wages at each skill qualification level are defined as

legal minima. The distorting effect of such a system in terms of expected private returns to the acquisition of additional skills is illustrated in Figure 3. In this figure, W1 is the market-determined wage curve which would prevail in the absence of minimum wage practices, reflecting relative skills scarcity at each level, and W2 is the flattened wage curve, reflecting social objectives of redistribution and protection of lower skilled manpower. Thus, in the lower skills range, which in developing countries is usually in excess supply, social protection raises the actual wage above the corresponding shadow wage level. This discourages demand for this type of manpower, while, at the same time, the reduced slope of W2 discourages individuals from acquiring additional skills within this range.

19. While the system legally prohibits employers from remunerating workers below W2, there is nothing to prevent them from paying workers more than the legal minima. With regard to the relatively scarcer higher skill levels, therefore, W1 will prevail. The result is a segmented labor market with a truncated wage curve. Below or to the left of the critical skills level S, which is identified with the intersection of W1 and W2, wages reflect the legal minima and above this level they are competitive. From the individual's point of view, thus, skills acquisition is profitable beyond S, but much less so below the critical skills level. The impact of this segmentation on the cost-effectiveness of existing VET institutions obviously depends on the level and characteristics of S. To the extent S is viewed as the skills point separating post-primary VET delivery modes from postsecondary formal education, this would help rationalize the prevailing view in many developing countries of VET as not worth pursuing.

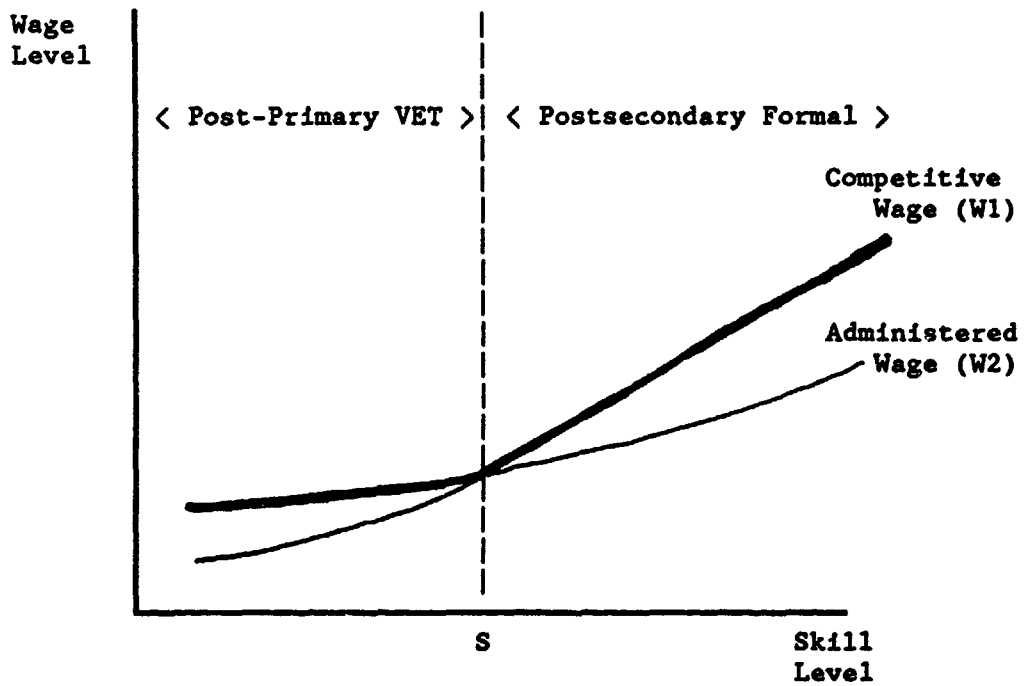


Figure 3: Competitive and Administered Wages by Skill Level

20. Zimbabwe provides an example of a country where government wage regulation policies, including minimum wages, have distorted training incentives (World Bank, 1987, Vol. II, p.14). Minimum wages were adopted by the government in 1980 following independence as part of a strategy to raise the incomes of Africans at the bottom of the income distribution. Along with this, restrictions on wage increases were adopted for those at the upper end of the income distribution to reduce income disparities and manage inflation. The government also adopted job security laws restricting employers' rights to dismiss employees as an antidote to the employment reduction expected with the increase in minimum wages. The minimum wage reached its maximum in 1982, coincident with the peaking of the unemployment rate for unskilled youth. More direct evidence of the impact on training is suggested by the declining number of apprenticeships offered by the private sector, 2,044 in 1981 compared with 1,197 in 1985.

21. Administered wage and employment policies of the public sector in many developing countries can also lead to labor market distortions affecting the efficiency of VET investments. The visibility of these policies can be a factor in determining their effect, particularly as related to the level of public sector employment. In a study of 38 developing countries, Heller and Tait show that employment in the public sector accounts for an average of 44 percent of nonagricultural employment (1983, pp.7, 42-43, also see Fallon and Riveros, 1987, p.16). The distortions arising from these policies emanate from the level of earnings paid by the public sector and the role played by it as an employer of last resort. The impact of these policies on the labor market is discussed by Psacharopoulos:

...Wages in the public sector exceed wages in the private sector at lower, although not at higher levels of education in Brazil, Colombia, Greece, Malaysia, and Portugal. In contributing to higher wages for the less-educated worker, public sector wage policies tend to compress the wage distribution, thereby aggravating distortions in labor markets. Also, in some African developing countries (e.g. Mali and Tanzania) the government or the parastatals are residual employers for high school and/or university production, thereby introducing distortions as between private and social returns to education, (quoted in Balassa, p.16).

22. In Indonesia, government wage scales for persons with no schooling and those with primary and secondary schooling are from 2 to 20 times the monthly income of non-government employees (McMahon, 1986, p. 288). This wage differential does not exist at the postsecondary level. As a consequence, there is a long queue of persons with a secondary diploma or less in Indonesia waiting for government jobs. These individuals wait for an average of two years. A successful wait by secondary school graduates is estimated to yield a rate of return of over 25 percent.

23. In Egypt, the government guarantees employment to graduates of secondary and postsecondary institutions. Furthermore, it provides "free" education to its citizens through the postsecondary level. The combination of these policies has contributed to an oversupply of university graduates in relation to skilled craftsmen and technicians and an overstaffing and underemployment in public enterprises and government, which in 1984 accounted for slightly over 32 percent of total employment (Haddad, Stevenson, and Adams, 1987, p.9).

24. In Zambia, public sector wage policies have attempted to narrow the real wage gap between the lowest and highest paid workers. Government workers in the highest paid occupations in 1983 earned in real terms 45 percent of their 1975 salaries while those in the lowest paid occupations

earned 88 percent of their 1975 salaries (World Bank, 1986, pp. 58-59). The government was less successful in imposing wage restraints on parastatals and the private sector although some wage compression could be observed in each sector. This compression is blamed for Zambia's high unemployment and serious financial disincentives for acquiring skills.

25. A World Bank study of the Tunisian economy finds wages in public enterprises exceeding those in the private sector (1985, pp. 19-21). The study also offers evidence of wage compression attributable to labor market policies and administered wage structures. Noah and Middleton (1987) cite evidence of wage compression in China. China's recent efforts to restructure its economy have introduced changes that resemble a competitive market economy. The pace of change has been slow, however, and much of the old system remains, including a nationally determined wage scale with meager earnings differentials between levels of skills. The authors argue that "Combined with very slow promotion, this compressed wage structure provides few financial incentives to workers to raise their levels of productivity (p.4)." This limitation of incentives for training is referred to as one of the important underlying causes of China's severe shortage of skilled labor.

26. Fallon and Riveros (1986, p. 23) conclude that governments have generally limited rather than encouraged real wage increases in recent years and that high wage regimes are now the exception rather than the rule. They argue instead that mandatory government regulations on labor compensations have come to play a more important role in wage rigidity increasing non-wage costs. Included in these costs are support for health and family welfare, as well as workers' job security and pension schemes.

These costs are expected to lead to labor market distortions with implications for occupational training and VET. The impact, however, is uncertain. On the one hand, by increasing labor's fixed cost they imply a social welfare loss through capital substitution and lower employment levels. On the other hand, the nature of these regulations may be to reduce mobility and thereby encourage enterprise investments in specific skills. To the extent these costs are positively correlated with seniority, however, they may encourage labor turnover and lower investment in specific training.

27. In Burundi, the social overhead cost of labor is estimated between 30 and 50 percent of the wage bill covering housing allowances, social security, medical coverage, and payroll taxes (World Bank, 1988, pp. 53-54). Matched with government incentives reducing the cost of capital, this is considered an important factor behind the slow growth of employment in Burundi's modern sector compared with its agriculture and informal sectors where small enterprises are frequently able to escape labor regulations. Pakistan which has adopted a system of labor protection laws modelled after those in European countries provides another example of distortions tied to these regulations. Enterprises of more than 10 employees are subject to minimum wages, health and safety regulations, overtime payments, and social security taxes. The cost of these regulations is seen as a factor encouraging capital intensive development. In Portugal, restrictive labor legislation has made it very difficult to dismiss workers and transfer them to other jobs. This legislation along with rigid pay and incentive scales have discouraged upgrading and retraining.

28. Labor market policies leading to administered wage structures that weaken the link between productivity and wages can be reinforced by trade union policies involving work rules, job stratification, and wages. Ryan (1984) contends that trade unions seek to limit wage differentiation for at least two reasons: ostensibly to improve equity in pay among workers; but more importantly, to reinforce the union's bargaining power for experienced workers by increasing the relative cost of trainees. A similar argument has been made to explain trade unions' traditional support of minimum wages. In competitive labor markets, wages are an important measure of demand providing signals to the labor force and training system. Thus, the adoption of labor market policies and practices that result in administered wage structures threatens to distort these signals by creating a wedge between private and social returns for VET. This wedge can also be opened by tax policies that lead to a divergence of before and after tax incomes.

29. A workforce confronted with a relatively flat wage profile will find a reduced economic incentive for investing in skills training, or perhaps for that matter, in general education. Evidence of this is found by Prais and Steedman (1986) in their study of vocational training in the construction trades in France and Britain. The authors found that the number of youths attaining comparable professional qualifications in France in the 1970's was about 1.7 times the number in Britain even though the size of the industry was roughly the same in both countries. They argue that training in Britain was discouraged by relatively high trainee wages. Second-year trainees in Britain earned about 70 percent of adult craftsman wages, while those in France earned about 25 percent of an adult's wages.

Apprentice wages in Britain have since been revised, but in 1984 were still more than double the French percentage.

30. The importance of the wage profile is further illustrated in West Germany and Tunisia. The effectiveness of the highly publicized West German "dual" VET system is largely due to the fact that it is demand-driven and is therefore predicated on an adequate supply of training places by enterprises. Apprentice wages, which average between 20 to 40 percent of the starting wage level, play an important role in creating this supply (Schwartz, 1986, p.6). By contrast, in Tunisia's "official" apprenticeship system, apprentices are legally entitled upon reaching 18 years of age to the guaranteed minimum wage and incorporation in the social security system which adds another 36 percent to their wage cost. This increase in wages occurs without consideration to whether the training has been completed and full productivity reached. As a consequence, the supply of training places in the modern sector of Tunisia is depressed and apprentices are often fired and replaced just before reaching the age of 18 (World Bank, 1985).

31. It is interesting in this context to note that under the traditional apprenticeship systems found in the informal sector throughout much of Sub-Saharan Africa, apprentices are not only unpaid, they are often expected to pay their employer for the training they receive. It is therefore important to find that the informal sector in these countries is much more dynamic in terms of its rate of absorption of youths as new job seekers than is its modern sector counterpart. These findings and others above suggest several hypotheses about the impact of labor market policies on the supply and demand for vocationally-specific skills training.

32. As proposed by Balassa, labor market policies creating administered wage structures may encourage a shift of employment from the modern sector to the informal sector where these policies are rarely applied. By increasing the relative price of unskilled labor through wage compression, these policies may also result in the modern sector's use of labor-saving technologies and capital substitution. In other cases, they may contribute to the substitution of skilled for unskilled labor. Administered wage structures and the compression of wages may also discourage nonformal modes of training in the enterprise. The enterprise, unable to pass the cost of training on to workers in the form of lower wages, may resist investing in occupational skills that can be lost through labor mobility, the more so if product markets are also subject to administered pricing regimes that prevent passing the cost of training on to consumers. In this environment, vocationally-specific skills training is expected to rely heavily on formal, school-based VET modes.

33. Public sector wage and tax policies that contribute to the compression of wages and the creation of a wedge between private and social returns to vocationally-specific skills training are expected to lead to an underinvestment in skills training and to greater reliance on formal VET delivery modes. In other cases, public sector employment policies that promise jobs to graduates of secondary and postsecondary institutions may actually contribute to an overinvestment in secondary and postsecondary education. These distortions of factor market prices are expected to impair the external and possibly the internal efficiency of VET. Where such distortions are found, the public sector is more likely to be involved in financing occupational skills development as a remedy to market failures

and imperfections. This may be reflected in formal modes of VFT and in public subsidies to nonformal modes of training in the enterprise. The comparison of developing countries with different levels of wage compression would offer a means for testing these and other related hypotheses.

The Market for Capital

34. As suggested by Becker (1975), the cost of capital is an important element in the willingness of individuals and enterprises to pay for vocationally-specific skills training. It is important in terms of its impact on the marginal rate of return to investments in this training. Kodde and Ritze. (1985), using Becker's human capital framework, show that imperfect capital markets with rising rates of interest on borrowing will lead to underinvestments in skills development. Competitive capital markets with constant borrowing rates are required for efficiency in skills development. Experience suggests, however, that capital markets in both industrialized and developing countries rarely function in an efficient manner where individual investments in skills are concerned because of the risk attached to the return from these investments and the absence of security for such loans. Experience also suggests that many enterprises in developing countries, particularly smaller ones, face an imperfect capital market with implications for efficiency in investments in physical as well as human capital (Hanson and Neal, 1986, pp 37-39).

35. Becker has shown that the willingness of individuals and enterprises to pay for vocationally-specific skills training depends to an important degree on the division between general and specific skills.

Since general skills increase the individual's productivity equally in all enterprises, the enterprise is unwilling to pay for these skills for fear that the investment will be lost through labor mobility. Individuals are therefore expected to pay for general skills training while the enterprise is expected to pay for specific skills whose marketability is restricted to the enterprise. Becker acknowledges that most training investments are neither completely general nor completely specific. As a consequence, the cost of such training will be distributed between individuals and enterprises in proportion to the benefits each shares. Imperfect capital markets, by distorting the cost of training for individuals and enterprises, are expected to lead to inefficiencies in the human capital investments of both groups. The existence of imperfect capital markets, moreover, provides a justification for the public interest in VET.

36. Distortions in capital markets may also arise from financial policies that lead to credit rationing. Credit rationing can shape the nature of the demand for occupational skills and thereby the external efficiency of VET institutions. In developing countries, these policies typically favor large public enterprises and can lead to socially inefficient choices of technology and factor combinations in production. Branson (1985) describes this in the case of Portugal where the absence of a market for government debt requires that banks fund this debt at low interest rates leading to crowding out of private sector borrowing. Adams (1987) in a study of the Portuguese textile sector refers to capital rationing in the private sector and its opposing effect on the ability of the textile sector to restructure itself for meeting competition in world markets. The result is found in textile workers in many enterprises,

particularly in the wool subsector, continuing to use outmoded capital and methods of production.

37. Similar distortions in capital markets may arise as part of a strategy for economic development. These strategies in many industrialized and developing countries tend to favor capital intensive methods of production. Tunisia provides an illustration of this with negative implications for labor absorption (1987, p.112). Capital is subsidized in these countries through schemes involving taxes, administered prices, and direct subsidies that encourage the adoption of methods of production that may or may not be consistent with a country's existing mix of occupational skills and its resources for skills training. This can have important implications for the internal and external efficiency of vocationally-specific skills training. By encouraging capital substitution and embodied technological change, these policies can also accelerate the depreciation of occupational skills and reduce expected rates of return to past investments in formal and nonformal modes of training. This acceleration is expected to encourage larger investments in general education and more flexible modes of skills training.

38. In Burundi, public investment has concentrated on capital-intensive infrastructure projects (World Bank, 1988, pp. 24-25). Moreover, incentives in the modern sector, where tax exemptions have been offered on imported capital equipment and interest rates and energy prices have been kept artificially low, have also encouraged capital-intensive development. With this emphasis, modern sector employment growth has failed to keep pace with the rate of growth of the labor force. Between 1979 and 1985, employment growth averaged 2.4 percent per annum compared with labor force

growth of 2.7 percent per annum. Similar evidence of capital biases in development can be found in Indonesia (World Bank, 1985, pp. 86-87). Until 1983, Indonesia subsidized interest rates. The preferential treatment of capital was preserved in a 1984 tax law allowing accelerated cost recovery for capital investments. While encouraging capital-intensive development, Indonesia is faced with a labor force growing at the rate of 2.3 percent per annum and the need for significant labor absorption in the commodity-producing sectors.

39. Subsidized public sector financing of capital-intensive development in the Philippines has also been blamed for the country's low rate of employment growth (World Bank, 1987, pp. i-iii). Other examples of capital market distortions are found in a study of seven developing countries, including Hong Kong, Pakistan, Korea, Ghana, Sierra Leone, Tunisia, and Brazil. The study shows that when adjustments are made for administrative and risk differentials, the cost of capital for small non-agricultural enterprises is as much as 30 percent higher than that for large-scale enterprises (Haggblade, et.al., 1986, p.23). The latter tend to be more capital-intensive than the former. Capital subsidies are seen in these examples as lowering the rate of labor absorption and distorting the mix of skills required. Factor market distortions like these are expected to be closely connected with distortions in product markets, given the nature of the derived demand for capital and labor.

ECONOMIC POLICIES INVOLVING PRODUCT MARKETS

40. Balassa (1987, pp. 1-3) refers to the interaction of product and factor markets. Inward focused trade and development strategies, he

contends, create an environment with less resistance to measures that distort factor prices by insulating the domestic product markets from foreign influences. In turn, factor market distortions will tend to discourage an outward focused trade and development strategy whose success depends on the unhindered operation of these factor markets. Evidence of this is cited in Latin American and Far Eastern countries. In several Latin American countries, inward focused strategies have been accompanied by distortions in labor and capital markets, while in various Far Eastern countries, outward orientation has been associated with free labor markets and the increased freedom of capital markets (Aizenman, 1987, p.2).

41. This relationship implies a correlation between trade and economic development policies on the one hand and economic forces influencing the internal and external efficiency of VET on the other. Competitive product markets, stimulated by export-led development policies and an open economy, will both require and encourage competitive factor markets that will in turn be positively correlated with the internal and external efficiency of VET. Korea, Hong Kong, and Singapore provide examples of outward focused economies. In such settings, one could expect to find a larger role for nonformal modes of training because competitive labor markets would be associated with less wage compression and greater incentives for vocationally-specific skills training in the enterprise paid for by reduced wages. Formal modes, however, would remain an efficient source of training for some occupational skills, as suggested by Benson.

42. Administered commodity prices provide an example of policy-induced distortions in product markets affecting VET. Agricultural pricing policies in many developing countries discourage the realization of

potential benefits to agricultural education and training by keeping prices artificially low to reduce the cost of food. This limits the economic return to investments in agricultural training as well as to research. Moreover, to the extent that rural non-farm employment is linked to agricultural growth, these policies may also impede the expansion of non-farm employment opportunities. Product market distortions created by trade and economic development policies on a national level may be joined by distortions created on the regional level by policies adopted to encourage economic growth in disadvantaged areas of an economy. These efforts can exacerbate the demand for skills and generate acute local skills shortages which can be costly to meet at the local level. This is the case in Tunisia, for example, where the nature of industrial decentralization incentives favors the establishment in outlying areas of large-scale, capital-intensive enterprises (World Bank, 1985).

43. The development strategies of other countries can also influence the external efficiency of VET. Haddad, Stevenson, and Adams demonstrate this in their discussion of youth unemployment in Middle Eastern and North African countries:

The outlook for manpower training programs has changed considerably in the Middle Eastern and North African countries in recent years. Until the late 1970's, employment in the region was virtually guaranteed for anyone with the appropriate skills, and unemployment was primarily a problem for those at the lowest end of the educational spectrum. Since then, the actual and projected fall in oil revenues has led to a dramatic slowdown in migration of labor from the capital-poor, labor-surplus countries to the capital-rich, oil-exporting countries of the region. ...The region is now facing actual and potential surpluses of both skilled and unskilled manpower, (1987, 1)

44. Social and private returns to investments in VET by labor-exporting countries like Jordan and Pakistan, as a consequence, have been sharply altered by global events involving commodity prices outside their control. Such events can also influence investments in VET for domestic purposes. Increasing risk and uncertainty surrounding such investments can alter the demand for training positions and ultimately the external efficiency of VET. In Tunisia, for example, training capacity for the construction industry in public centers was sharply expanded in the mid-1970's, at the height of the oil price boom, with the objective of training domestic manpower for export to the Gulf States (World Bank, 1985). This export did not materialize, however, due to competition from other suppliers, and partly because of the subsequent fall in oil revenues. As a result, the utilization rate of the expanded training capacity was as low as 50 percent by the early 1980's.

45. Trade and development as they relate to choices of technology can also play a role in shaping the efficiency of VET. Inappropriate technology choices in the employment system, given available local management and human resources, may result from conditions established by foreign suppliers of machinery and equipment. These examples illustrate the manner in which the resource and policy parameters given the training and employment systems can shape the internal and external efficiency of vocationally-specific skills training.

IV. CONCLUDING THOUGHTS AND A RESEARCH AGENDA

46. While the relationship of education and training to national economic development and individual welfare has been studied extensively

during the past 30 years, much less attention has been given to the endogenous nature of this relationship and the impact of the macroeconomic environment on efficiency in the production and consumption of education and training. This paper has examined the latter relationship and the importance of policy-induced market distortions to the efficiency of resource allocations for VET. It offers evidence of these distortions in product and factor markets in developing countries and explores their consequences. These distortions are found in economic policies that shape the demand for goods and services, relative factor prices, and technology choices. Given the differences to be found among social systems in developing countries, it is reasonable to expect that the mix and relative importance of these policy-induced distortions will vary from country to country.

47. The lessons that can be drawn from this evidence point to the importance of recognizing the endogenous nature of this relationship in sector analysis. There are indeed actions that can be taken within the education sector to improve the internal and external efficiency of formal modes of VET. There are other actions, however, whose control rests outside the education sector in the macroeconomic environment that establish the parameters under which the education sector must function. It is important that these parameters be acknowledged and their policy antecedents, as developed in this paper, be recognized by economic policy makers and those responsible for the development of effective education and training programs. To the extent the former can be made aware of the consequences of economic policies for human resources development it will hopefully lead to a more sensitive development of these policies. To the

extent the latter understand the constraints these policies provide to their own actions, the greater the opportunity will be for adapting to these constraints.

48. Economic policies that have objectives conflicting with incentives for efficiency in education and training will almost certainly continue to exist as a part of the economic landscape in developing and industrialized countries. Schemes for the redistribution of income linked to social equity rather than efficiency are an illustration of this. In this context, analysts must learn to recognize and adjust for market distortions that result from these policies. This has been illustrated in the discussion of administered wage policies where the link between productivity and earnings has been severed for reasons of social equity. In such cases, it must be recognized that "first-best" market solutions no longer apply and that observed prices will be an inaccurate indicator of social opportunity costs. As a consequence, in this example the use of rate of return analysis with observed wages would be inappropriate for efficient resource allocation. Instead, shadow wages should be used.

49. A failure to understand the relationship between the macroeconomic environment and the training system, as this relationship relates to efficiency in the production and consumption of VET, will place at risk efforts of the education sector to improve formal modes of VET. It is important for this reason that research be directed to the study of this relationship and its outcomes. Among the issues that might be studied, four appear to be especially important to efforts of the education sector to improve the effectiveness and efficiency of VET. The four include: (i) the impact of factor pricing policies on technology choices, (ii) the

choice of development strategy and efficiency in human resources development, (iii) the impact of policies leading to wage compression on incentives for education and training, and (iv) the manner in which financing schemes can influence efficiency incentives in VET.

Technology Choices

50. Economic policies that distort factor prices can have an important impact on technology choices and skills demand. Policies that increase the relative cost of labor and decrease the relative cost of capital can encourage the adoption of technologies that place pressure on the infrastructure of human resources development. It would be useful to examine the nature of this relationship as it relates to the demand for vocationally-specific skills training. For example, to what extent do capital-biased economic policies lead to technology choices that expand the quantity and level of skills demanded, either in the use of these technologies or in their production? Furthermore, what impact do these policies have on the demand for basic education as a foundation for vocationally-specific skills development? What are the consequences of this demand for developing countries with inadequate resources for meeting basic education needs?

51. In what fashion do capital-biased policies and technology choices influence the use of existing skills? Do these policies accelerate the depreciation of these skills and reduce the expected income stream attached to earlier skills investments? How do training systems in developing countries adjust to this? Is there a tendency to move toward more flexible VET delivery modes in the enterprise? Is VET able to adjust and increase

its flexibility through improving institutional linkages with the employment system? If so, how is this done and what are the linkages that emerge? What role do capital-biased policies play in the level of expatriate employment in developing countries and their ability to nationalize this employment? What are the consequences of these policies in terms of labor costs and job creation?

Development Strategies

52. A second line of research suggested by this paper involves the potential connection between development strategies and economic policies encouraging efficiency in VET. Outward focused development strategies place emphasis on competition in product and factor markets to encourage efficiency in production, while inward focused strategies, using protectionist measures, shelter inefficient producers and contribute to market distortions. Outward focused development strategies when accompanied by economic policies that encourage market competition might be expected to reinforce efforts to improve the efficiency of VET. These economic policies and the market forces associated with them would encourage the development of cost-effective approaches to skills training to meet market needs. Inward focused strategies, on the other hand, may result in economic policies that shelter and promote inefficiencies in skills training.

53. An examination of this issue would be important to those concerned with the selection of successful development strategies. It suggests a jointly dependent relationship whereby outward focused development strategies would create a policy environment encouraging efficiency in

skills training. The latter, in turn, would lead to outcomes supporting the success of the former. The relationship may not be exactly straightforward, however, as some countries may adopt an outward focused development strategy in some sectors while attempting to protect others. In such cases, it would be useful to know the effect this has on the structure and efficiency of the training system serving these sectors. For example, is there more nonformal training in the outward focused sectors as an indicator of relative efficiency? Are formal modes of training more narrowly defined around general skills in the outward focused sectors?

54. For countries with different development strategies, it would be useful to know the connection between these strategies and the structure and efficiency of VET. Is there evidence of VET being more efficient in outward focused countries? How tight is the linkage between these strategies and the efficiency of VET? Will an outward focused strategy create sufficient economic pressures to force the adoption of economic policies encouraging efficiency in VET? Will the absence of these policies and efficiency in VET effectively impede the success of an outward focused development strategy? Can formal modes of VET successfully isolate themselves from the economic pressures of an outward focused development strategy? Do they behave as a profit maximizing entity, or do they instead appear to be motivated by other bureaucratic objectives? Is there a difference in this regard between the response of public and private institutions?

Wage Compression

55. Economic policies leading to the compression of wages may reflect a conscious tradeoff of efficiency for equity in factor markets. It would be useful to know more about this tradeoff insofar as the compression of wages results in inefficient skills training. To begin, do wage rigidities at the lower end of the wage structure, associated with minimum wages, collective bargaining, and public sector wages, discourage general skills training in enterprises by preventing workers from paying for this training with reduced wages? Does this lead to the shifting of general skills training toward formal public VET delivery modes? Do these rigidities encourage the substitution of skilled labor for unskilled labor?

56. How are individual incentives to acquire skills training affected by economic policies that lead to wage compression? Are these incentives reduced such that enrollment rates fall and VET facilities are underutilized producing internal inefficiencies? How does this underinvestment in general skills training affect specific skills training in the enterprise? Does the complementarity of general and specific skills training force enterprises to absorb the cost of general skills training? Is there evidence that enterprises are willing to pay this cost? How does the presence of a dual economy affect these incentives where an "unlimited" pool of potential VET students exists for whom a compressed wage is better than rural earnings possibilities?

57. In the modern sector, how do progressive tax policies influence skills training? Does the reduction of after-tax earnings at the upper end of the wage structure compress earnings and discourage skills investments? Do these policies encourage the shift of employment in developing countries

to the informal sector where these taxes might be avoided? What effect does this shift have on the demand for VET? Is there evidence that these policies lead to skills shortages, higher labor costs, and the possible substitution of capital for labor?

VET Financing

58. Perhaps one of the most important issues for study is the effect of policy-induced market distortions on the choice of financing schemes for VET and the effect this may have on VET's efficiency. Financing schemes that are demand-driven promise to enhance the efficiency of VET by improving the institutional linkages between the training and employment systems. The issue is whether or not policy-induced market distortions reduce the incentive to adopt these schemes. Stated simply, do competitive product and factor markets stimulate efficiency in VET by encouraging the adoption of demand-driven VET financing schemes? If not, how are these linkages established? Answers to these questions and others above are important to a better understanding of the manner in which economic policies can act to dampen efforts in the education sector to improve the cost-effectiveness of VET.

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