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Editor's Preface

This is the second of three volumes emanating from the National Bureau of Economic Research project on alternative trade strategies and employment. It contains a series of papers focusing on important aspects of the analysis of the trade strategies–employment relationship.

The entire project has been devoted to analyzing the extent to which employment and income distribution are affected by the choice of trade strategies and by the interaction of trade policies with domestic policies and market distortions. The trade strategies in question are, of course, import substitution and export promotion as alternative means of encouraging the growth of domestic industry. Although earlier studies, including the NBER project on foreign trade regimes and economic development (see Bhagwati 1978 and Krueger 1978 for details), provided considerable evidence that the economic growth performance of developing countries pursuing export-oriented trade strategies was substantially superior to that of countries under import substitution, little attention was given to the relationship between the choice of trade strategy and conditions in the domestic labor market before this project.

Trade theory, especially the Heckscher-Ohlin-Samuelson model, predicts that poor countries will generally have a comparative advantage in the production of relatively labor-intensive commodities. In light of this, failure to investigate the possible links between different rates of growth of employment and real wages with alternative trade strategies constituted a significant hiatus in our understanding of the trade strategies–growth relationship.

A first task in the research project on alternative trade strategies and employment was to provide an analytical framework within which the links between trade strategies and employment could be identified. This was done in Krueger (1977). A next step was to secure a group of researchers to investigate the empirical dimensions of the relationship. Many of the project participants undertook empirical and analytical studies of individual country experiences. The studies for ten countries were presented in the first volume in this series, Krueger, et al. (1981), which also contains a chapter describing the common concepts and methods employed in all the country studies.

It was clear from the outset that the country studies would provide a great deal of insight into the trade strategies–employment relation, but that there were some interesting questions where comparative analysis, or focus upon a single aspect of the relationship, would yield fruitful results. In addition to the country studies, research on these questions was considered an integral part of the project. This volume presents the results of those endeavors. A final volume will analyze the findings from the entire project, based upon the results reported in both this volume and the individual country studies.

A statement of the theory underlying the links between factor markets, substitution possibilities, and supply responses covered in this volume is not possible here and has been given in Krueger (1977). It suffices to point out that the net result of a change in real exchange rates or other incentives provided through trade regimes is a function of supply response and of underlying conditions within domestic markets. In particular, conditions and regulations covering real wages, social insurance taxes, and the like can affect the sorts of industries that find it profitable to respond to altered incentives. Credit rationing, artificially low costs of capital goods, and other inducements to employ capital-intensive techniques can also affect both the output mix and the factor proportions that will result from any particular set of trade policy instruments. The scope for substitution between factors of production is crucial in determining to what degree factor proportions are affected by domestic factor market distortions. Likewise, the extent to which the industry mix alters in response to changed incentives is a function of the extent of supply responses. Finally, there is an interaction term between prevailing factor market conditions and the mix of outputs that will result from any particular set of incentives conveyed by the trade regime.

Each country author attempted to assess the importance of these phenomena for his country, and the results are highly revealing. The results of the individual country studies point to significant supply responses and to a fairly large scope for altering overall factor proportions within the industrial sector both by altering the mix of output and by altering factor proportions.

There is no substitute for in-depth analysis of individual countries' economies and particular situations. There is, however, scope for complementary analysis. That is what this volume provides. The first study, by James M. Henderson, contains an optimizing model that uses a nonlinear programming framework to investigate what individual countries' optimal export and import vectors might be if they maximized the international value added of a fixed bundle of available domestic resources subject to production functions that permit substitution between labor and capital. Much of the data base for Henderson's study originated with the individual country authors, and there is significant overlap between the countries covered by his study and those covered in the first volume in this series. Henderson's paper makes a twofold contribution: on one hand, his model provides an additional tool that economists can use to estimate the direction of likely changes from a shifting of trade strategies or a removal of factor market distortions, or both; on the other hand, his substantive findings tend to reinforce those of the individual country authors. In particular, his results suggest that countries that have followed export-oriented trade strategies appear to have an output mix fairly close to one the model indicates to be optimal, while some of the countries known to have had fairly severe distortions in the domestic wage/rental ratio and large deviations between domestic and international prices show fairly large scope for gains through resource reallocation and altered factor proportions. Henderson's comparisons with some developed countries further reinforce this finding. By employing capacity constraints he is able to use the shadow prices derived from the optimal program to infer a considerable amount about the direction of likely resource pulls in the event of an alteration in trade strategies, and this should prove a useful tool in future research.

The second chapter by T. Paul Schultz, focuses on the income distribution implications of protecting domestic industry. Using data from Colombia, Schultz estimates earnings functions for workers of various skill categories. He finds a strong and significant relationship between the protection afforded an industry and earnings, even after allowance is made for such factors as schooling and experience. This finding holds for both employers and employees, thus strongly suggesting that protection does protect the incomes of those within the industry. Although it is possible that this might reflect the attraction of more able persons within each schooling and experience category to more highly protected industries, it is more likely that protection has served to shelter the incomes of those in the protected sectors. Particularly in light of the findings in most of the country studies, that import substitution industries tend to employ a relatively larger proportion of skilled workers than do export industries, Schultz's results strongly suggest that the income distribution effects of import substitution regimes, or at least the regime in Colombia, have been to increase the incomes of those already earning more than average. Schultz's effort is the first empirically oriented demonstration of the ways effective protection affects incomes of domestic owners of the factors of production. While the Colombian situation may not be representative, it is a significant first step in documenting the direct effects of effective protection on income distribution.

In chapter 3, José Carvalho and Cláudio Haddad, who also wrote the Brazilian country study in volume 1, provide estimates of the extent to which Brazilian exports responded to changes in incentives. One of the frequently heard arguments against shifting from an inner-oriented import substitution trade strategy to export promotion is that there is little export potential within the domestic economy. "Export pessimism" has, in one form or another, discouraged a shift in strategy. There was considerable pessimism in Brazil before its shift in trade strategy, so the Carvalho-Haddad findings are of particular interest. They conclude that Brazil's exports, especially exports of manufactured products, were very responsive to the altered incentives to export. Their estimates suggest that the overvaluation of the real exchange rate that characterized the Brazilian trade regime during the late 1950s and early 1960s explained a large part of the lagging export performance in those years, and that alteration of those policies after 1964 significantly affected performance. To be sure, other incentives to export appear to have been influential too, though Carvalho and Haddad find that an export subsidy led to a somewhat smaller export response than did an equal increase in incentives by means of the exchange rate. While many unanswered questions remain—such as the role of the increased certainty exporters felt after the adoption of a sliding-peg exchange rate—the Carvalho-Haddad estimates contribute significantly to knowledge about the responsiveness of exports to altered incentives and the empirical orders of magnitude of those responses.

The next two chapters, by Jere R. Behrman and by Vittorio Corbo and Patricio Meller, directly address the question of scope for substitution between labor and capital. Behrman's approach is to use cross-sectional data for seventy countries and as many as twenty-seven two-digit industries for the period 1967 to 1973. This is probably the richest cross-sectional data set to be used in many estimates of substitution possibilities. Using average observed inputs and outputs (to reduce problems associated with year-to-year fluctuations owing to strikes, recessions, and so forth), he estimates that elasticities of substitution are close to the Cobb-Douglas value of unity. His results are robust under alternative specifications of the model, though inclusion of a real per capita income variable yields some puzzling results.

Behrman provides strong evidence in support of the view that policies that affect the payments made for capital services and workers may significantly alter the factor mix in developing countries. They reinforce the notion that some of the capital intensity observed in developing countries may be a function of the distortions in wage/rental ratios occurring in those countries and thus significant in affecting the employment implications of any trade strategy. His estimates are used as a basis for inferring some of those costs in the final volume in this series.

Whereas Behrman's estimates are based upon data for many countries, Corbo and Meller, who also undertook the Chilean country study, base their estimated production relations upon data for 11,468 establishments in eighty-five four-digit Chilean industries, though only forty-four industries provide more than ten degrees of freedom and form the basis for their estimates. Using the general translog model, they test first for constant returns to scale, then for the validity of the Cobb-Douglas specification. For thirty-five of the forty-four sectors, Cobb-Douglas technology could not be rejected, tending to reinforce Behrman's conclusion. Corbo and Meller proceeded to investigate the substitution relationships between unskilled labor, skilled labor, and capital. As they explain, the nature of this relationship—whether human capital and unskilled labor are relatively good substitutes while complementary with physical capital, or whether human capital is more appropriately aggregated with physical capital—is of considerable importance for understanding many aspects of labor market behavior and the determinants of the pattern of wage differentials in developing countries. They find that, for Chile at least, there is more econometric support for regarding unskilled and skilled labor as substitutes and aggregating them than there is for aggregating human and physical capital. In view of the fact that the evidence from the country studies (and from Henderson's model) all suggests that there are strong differences in skill coefficients between exportable and import competing industries, this finding is important. For, if import substitution industries are skill-intensive relative to export industries, a shift in trade strategy would tend to increase the demand for unskilled labor in exportable industries, while releasing skilled labor (or failing to absorb the growth in supply of skilled labor) in import substitution industries. If skilled and unskilled labor tend to be substitutes, as Corbo and Meller's findings suggest, the adjustment process within the labor market would be relatively straightforward, as skilled workers could be absorbed in exportable industries.

The final chapter in this volume, by Robert E. Lipsey, Irving B. Kravis, and Romualdo A. Roldan, focuses upon multinational firms and their adaptation, or nonadaptation, to altered relative factor prices in developing countries. Using data on the behavior of American firms and Swedish firms, they investigated factor proportions (by a variety of yardsticks) in the multinationals' home countries, in other developed countries, and in developing countries. They found that capital intensity of the multinationals was higher at home than in other developed countries, which in turn was higher than that in developing countries. In general, a higher price of labor implied the use of less labor-intensive techniques, thereby providing strong evidence of adaptation by multinationals. In addition, more labor-intensive operations tend to be in lower-wage countries, so that there is adaptation by multinationals both in their choice of technique and in the choice of which activities to locate in which countries. These findings are of interest not only because of the light they shed on the behavior of multinationals, but also because they suggest that the costs of factor market distortions, and especially labor market distortions, in developing labor-abundant countries may be greater than can be inferred by inspection of the behavior of domestic industry. For developing countries that rely upon multinational firms to contribute to the growth of their domestic industry, distortions in the wage structure may either scare off multinationals or induce them to choose more capital-intensive products or techniques than would be optimal given the abundance of labor.

Taken as a whole, the studies included in this volume represent a significant contribution to knowledge about scope for alteration of product mix and factor proportions. In addition, they tend to reinforce the conclusions of the individual country studies and to provide evidence that trade strategy, and its interaction with domestic policies affecting the relative costs of labor and capital services, may significantly affect employment opportunities and their growth.

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