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Commodity Price Stabilization and Economic Growth

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This paper analyzes the probable consequences of commodity price stabilization proposals for long-run growth and change in primary producing countries. In particular, the focus is on the link between commodity producing sectors on the one hand, and other traded and non-traded sectors on the other. A simple two-sector framework investigates the medium and long-run effects of the asymmetric growth of primary exports on the viability and future development of pre-export processing of raw materials. The model analyzes the inter-sectoral movement of resources following price stabilization and traces the associated income and consumption effects. The discussion of medium-term resource movement effect is followed by a discussion of long-run effects on economic growth and welfare.

I. Introduction

Recent proposals for primary commodity price stabilization and price enhancement (indexation) through buffer stocks have been the subject of a number of theoretical and empirical studies. However, the probable consequences of these proposals for long-run growth and structural change in primary producing countries have received little or no attention. The pre-occupation with partial equilibrium price and income effects of stabilization and indexing of commodity prices have tended to preclude attention to their macroeconomic and sectoral implications. The only notable attempt at incorporating the inter-sectoral linkages is in the context of a comparison between buffer stocks and export quotas by Dick, *et al* (1982). However, sectoral implications in their paper are analyzed in a single-period, comparative static framework, which yields quantitative estimates of the once-and-for-all effects on the GDP. While this

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The plan of the paper is as follows. Section II analyzes the intersectoral movement of resources following price stabilization, and the associated income and consumption effects. Section III considers the effects of changes in the terms of trade on economic growth and welfare. A final section brings together the main conclusions.

II. Resource Movement Effects

In analyzing the production and consumption effects of primary commodity price stabilization and indexation, we assume a small, open, developing economy producing two tradable goods — primary commodities and "processing" of raw materials, both of which are traded at given world prices. The economy also produces another consumption good — termed for simplicity as the non-tradable or services — which is the only consumption good in this simplified economy. The imports from the rest-of-the-world consist exclusively of intermediate goods that do not directly enter the consumer utility function. We assume further that, while the production of primary commodities and of processing requires both capital and labor in some specified though variable proportions, the non-tradables are produced only with inputs of labor. Both labor and capital are assumed to be "non-specific," and freely mobile between sectors. Our chief concern is with the effect of price stabilization and indexation in commodity sectors on the relative profitability and size of the two tradable sectors, and subsidiary effects on real income, consumption, factor prices, and the future shape of economic growth.

We begin by considering the short-run production and consumption effects of changing relative prices and terms of trade on the three sectors included in the analysis. The ***production effect*** is reflected in the intersectoral movements of labor and capital due to a change in the marginal product of factors employed in the two tradable goods sectors. The ***consumption effect*** is simply the change in real income and consequent shifts in the demand for non-tradables. Changes in imports signify changes in production *capacity* and have no direct influence either on resource pulls or consumption.

Suppose that the buffer stock authority pursues its price targets by undertaking some form of market intervention (stock accumulation) for stabilizing the price of particular commodities, with reference either to a normalized trend of the commodity price index or a movement in the index of manufactured goods prices imported by the commodity-producing countries. The increase in the relative price of primary commodities, however induced, gives rise to shifts in factor demands and adjustments in

K_c is the demand curve for capital allocation to the commodity sector at the pre-stabilization goods price ratio. Similarly, K_p is the demand schedule for capital employment in the processing sector for the same product price ratio. Initial equilibrium with full utilization of capital is given at A, where the two factor demand curves intersect at the rental rate r_0.

By analogous reasoning, we obtrain the labor demand schedules for commodity production and for processing as L_c and L_p, respectively, in panel (b). The only difference is that, unlike capital, we assume unemployment of labor. Initially, employment of labor in commodity and in processing is determined at points C and D respectively, where the factor demand schedules intersect the line w_0, which signifies the prevailing wage rate.[3] The level of initial unemployment is, therefore, given by the segment CD.

The production effect is reflected in the ability of the commodity producing sectors to draw resources away from other sectors, due to a rise in the marginal product of factors employed in producing primary commodities. It should be noted that the production effect of price stabilization works in exactly the same way as price enhancement, viz., an increase in profitability of production, and hence demand for factors at given product and factor prices.[4] As a result, commodity sector's demand schedule for capital shifts upwards to K_c', and a new equilibrium is attained at B. At B, the rise in the price of capital to r_1 causes capital to shift out of the processing sector. This "resource pull" results in a fall in capital investment in the processing sector from O_pP_0 to O_pP_1, and a rise in the commodity sector from O_cP_0 to O_cP_1 in panel (a).

The resource pull has the same potential implication for labor employment in panel (b). However, due to the presence of initial unemployment, an upward shift of the commodities' labor demand schedule to L_c' need not raise the wage rate. Only if the commodity sector's labor demand schedule continues to shift upwards, for instance to L_c'', will the wage rate rise to w_1. In reality, the stability of the wage rate w_0 may persist beyond D, because the reduction of output in the processing sector would effectively shift the L_p curve in panel (b) downward. Nevertheless, national income rises with a correspondingly higher production of commodities than of processing.

[3] Wage rate w_0 is not a market-clearing wage, however. It may be appropriately viewed as a minimum wage, possibly determined by institutional considerations.

[4] If it is true that investment and production in commodity sectors are constrained by price stability, the latter should serve to raise the profitability by eliminating planning uncertainties. In any case, stock accumulation phase of the buffer stock operation is synonymous with a rise in the relative price of the sector's output, and should have the same effect as indexation.

solute terms, while the return to labor is likely to fall.[6] The opposite would be the case, if factor proportions are reverse. As far as consumption effect is concerned, it must raise the profitability of labor employment in the production of non-tradables, and is likely to put an upward pressure on wages. The ultimate effect on wages and rentals would depend on the relative strength of the production and consumption effects.

The resulting distribution of income between capital and labor is not quite straight-forward. The answer requires a precise specification of relative factor intensities in all three sectors, and the extent of factor substitution in each as factor prices change. If technology is to be introduced into the analysis, there may be a large number of possible configurations of relative factor prices and factor intensities. If commodity sectors are assumed to be relatively labor-intensive, a rise in the price of their output will raise the wage rate, and with it the capital-intensity of both sectors. The distribution of income will move in facor of wage-earners, both in relative and absolute terms.[7] The improving distribution of income in favor of labor is reinforced by the consumption effect which raises the price of non-tradables. If, on the other hand, commodity sectors are assumed to be capital-intensive, the effect on distribution of income is ambiguous. The production effect alone would tend to move the distribution of income in favor of the owners of capital, while the consumption effect would tend to pull it in the opposite direction. The net effect depends on the relative magnitude of the two contrary effects. Furthermore, if capital investments in commodity producing sectors are foreign-owned, as is very likely, the distribution of income may even reduce the gains from trade.[8]

III. Inter-Sectoral Allocation and Economic Growth

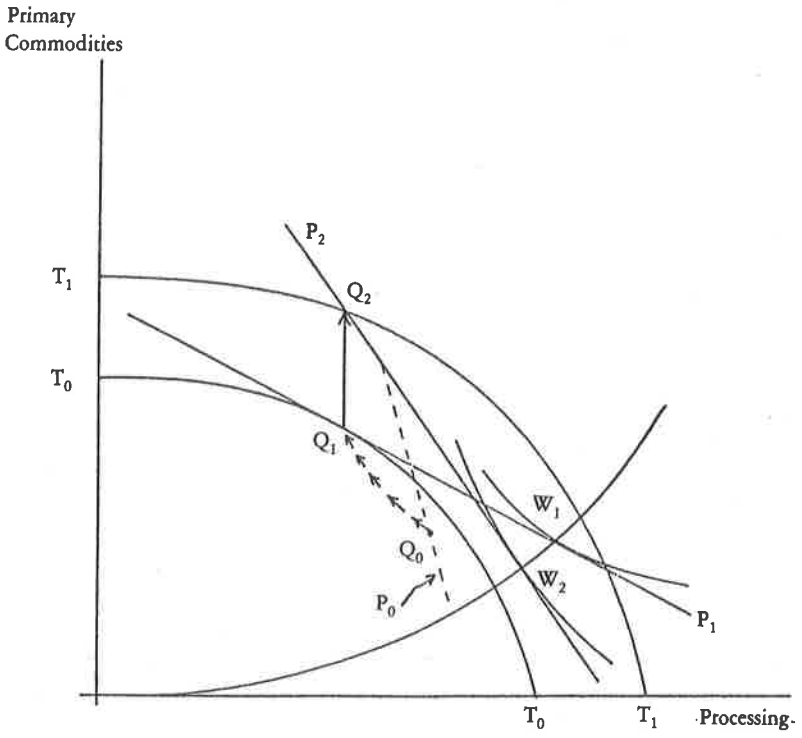
The effects on resource movements analyzed in the preceding section are necessarily static and signify once-and-for-all changes in the allocation of resources. But the cumulative processes that they generate are bound to have more permanent repercussions on the structure of production and on future economic growth. The subject of economic growth is one of the

6 There appears to be no *a priori* grounds for assuming either a lower or a higher capital-intensity in the commodity producing sectors, relative to processing activities. In a number of significant cases, production of primary commodities is relatively more capital-intensive per unit of output than processing, e.g., bauxite mining as compared to production of alumina.

7 This is in accord with the Stolper-Samuelson theorem.

8 See Bhagwati and Brecher (1980).

Figure 2



commodity producing sectors impart a "bias" to economic growth, in the sense that the output of the other tradable sector does not increase.

If the relative prices implied by P_1 can be sustained in the long-run, economic growth as such would seem to present no problem. This is probably the case which the proponents of the commodity program have in mind. But the hypothesis embodied in this case of economic growth which is neutral to the changes in economic structure does not correspond even roughly to what in the long run is happening in the real world. A sustained rise in the output of the commodity sector makes it unlikely that its relative price can be maintained for long at the ratio given by P_1.[13]

13 A great deal of available evidence suggests that efforts to raise commodity prices in the past have resulted in a large increase in supply. See, for instance, Lewis (1977). The increases in supply are due to both expanded production by established producers well as to influx of new producers.

of target prices through buffer stocks for economic growth in producing countries are uniformly negative.

While the terms-of-trade gain is likely to have a favourable impact on national income, it would also strengthen the forces that tend to concentrate the production factors in commodity sectors. If fluctuations in particular commodity prices are deemed undesirable, the correct policy would call for diversification of exports, at least partially, towards products with lesser fluctuations or with fluctuations that are not synchronized. It would seem, therefore, that purely financial measures to deal with temporary instability in foreign exchange earnings, such as the IMF Compensatory Financing facility and the EEC's Stabex scheme, are preferable in so far as they are not linked to maintenance of any particular production structure.

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