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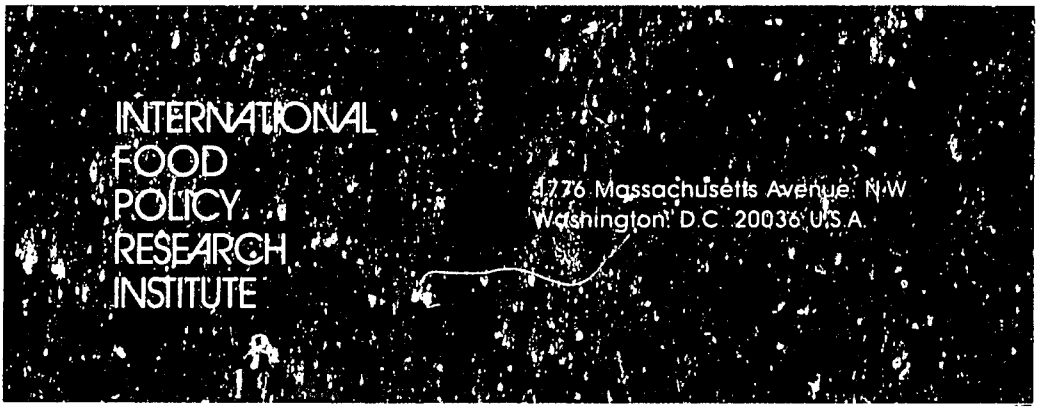

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EFFECTS OF TRADE AND EXCHANGE RATE POLICIES ON EXPORT PRODUCTION INCENTIVES IN PHILIPPINE AGRICULTURE

Romeo M. Bautista

I. Introduction

This paper examines, in a rather limited sense, the influence of the foreign trade regime on the agricultural sector in a developing country (LDC), focusing on the postwar experience of the Philippines. The specific concern is with the effects of trade and exchange rate policies on relative incentives to produce for export, through which some further repercussions on agricultural performance could be investigated. This is of contemporary policy relevance in the Philippine context not only because agriculture continues to be a dominant production sector,[1] but also in view of recent government efforts to promote increased foreign exchange earnings from agriculture and related industries as a means of alleviating the country's chronic balance of payments problem.

Past studies of foreign trade regimes and their effects on economic development have generally emphasized the consequences on domestic industry – to which trade-related policy measures in practice have tended to be directed specifically (Little, Scitovsky and Scott 1970). Such policies are likely to have economy-wide repercussions, affecting in particular relative incentives among and within major production sectors of the LDC economy. Thus, the protection of domestic industry through tariffs and other import restrictions

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1. Agriculture contributes about 30% of net domestic product and 50% of total employment in the Philippines. About one-half of the country's foreign exchange earnings are derived from raw and processed agricultural products.

which has characterized Philippine industrialization and trade policies throughout most of the postwar period can be presumed to have had deleterious effects on production and export incentives in agriculture, the magnitude of which would depend, as recent studies have shown,[2] on substitution relationships in both production and demand.

Section II of this paper gives a brief description of postwar trade and exchange rate policies in the Philippines, indicating various stages in the evolution of the country's foreign trade regime. The induced changes in relative incentives among domestic activities producing tradable goods are examined in Section III using "effective exchange rates" estimated in previous studies. This is followed by an analytical discussion, in Section IV, of the influence of the foreign trade regime on the structure of domestic prices among exportables, importables, and home goods, which is shown to determine relative incentives to produce for export vis-à-vis home goods production. Section V also describes the statistical estimation of the "incidence" equations linking the domestic price of exportables relative to home goods to the domestic price of exportables relative to other tradable goods, which provides the basis for representing quantitatively the indirect price effects of the foreign trade regime. In Section VI the effects on agricultural export incentives are specifically examined. Some aspects of relative incentives not taken into account in the effective exchange rate measure used are discussed, and concluding remarks are given in the final section of the paper.

II. Postwar Trade and Exchange Rate Policies[3]

Like any other developing countries, the Philippines has relied on foreign trade and exchange rate policies as a key instrument in promoting economic development since the end of the World War II. Rapid industrialization through import substitution was emphasized in the 1950s and 1960s, before a more outward-looking development policy began to be adopted in the early 1970s.

In response to a severe balance of payments problem, direct controls on imports and foreign exchange were instituted in 1949-50 by the Philippine government. Together with a heavily overvalued domestic currency (which retained the prewar exchange rate of two pesos per U.S. dollar) the criterion of "essentiality" governing the

2. See, for example, Garcia (1981).

3. For a detailed discussion of Philippine trade and exchange rate policies, see Baldwin (1975) and Bautista (1985). This section draws heavily on the latter source.

system of trade controls created a significant incentive for the domestic production of substitutes for industrial consumer goods, imports of which were considered less essential; on the other hand, imported raw materials and other essential producer goods were obtained at artificially low prices (in peso terms). Effectively penalized, therefore, were the primary production sectors (agriculture and mining), export-oriented industries, and intermediate and capital goods production (categories which are, of course, not mutually exclusive). The trade deficits witnessed in the 1950s, particularly during the second half of the decade, were a reflection of the increasing import dependence of domestic industries and the inability to stimulate exports.

Towards the end of the 1950s there was little room left for "nonessential" imports as producer goods already amounted to nearly 90% of the annual import bill. The worsening trade deficit prompted the authorities to gradually dismantle the control system and rationalize the foreign exchange rate. In 1962 the exchange rate for imports was raised to 3.9 pesos per U.S. dollar, while exporters began to receive 3.52 pesos per dollar. This multiple exchange rate arrangement gave way in 1965 to a unified system which officially devalued the domestic currency to the exchange rate of 3.9 pesos per dollar. These policy reforms, however, did not alter very much the incentive structure favoring import substitution in industrial consumer goods. A highly protective tariff system, introduced in 1957 but made redundant at the time by the import and foreign exchange controls, preserved the character of the protective structure biased against exporting and backward integration.

The 1960s were therefore attended also by balance of payments difficulties, accentuated in the second half of the decade by expansionary monetary and fiscal policies that the government adopted. In late 1969, a foreign exchange crisis developed, precipitated by the need to service short-term credit that financed the trade deficits of the immediately preceding years. The policy response was to float the Philippine peso in February 1970 and eliminate some of the exchange controls in effect since 1967. By December 1970 the exchange rate had settled to 6.4 pesos per U.S. dollar, representing an effective devaluation of 61.4% over the year. It went up gradually to 7.50 by year-end 1975, around which level the exchange rate fluctuated very slightly through the end of the decade.[4] Taking into account

4. Although it was officially claimed that a free exchange market had been created, the Central Bank frequently bought and sold foreign exchange, intervening heavily in certain years to take effective control of the peso-dollar exchange rate. See Bautista (1980, pp. 147-79).

the exchange rate realignments of major currencies since the early 1970s, the average annual rate of peso depreciation was 3.8% in nominal terms during 1971-80. In view of the 16.5% average annual rise in the general price level (wholesale price index) over the same period, the domestic currency actually was made to appreciate considerably in real terms.

The floating of the Philippine peso in early 1970 was followed by the enactment of the Export Incentives Act later in the year, signalling a policy shift towards a more outward-looking strategy of industrial development, away from the heavy import substitution drive of the previous two decades. Both measures recognized the need to orient local industries toward the export market and promote non-traditional exports. Among other incentives, manufacturing firms registered with the Board of Investments under the Export Incentives Act qualified for various kinds of tax exemptions, deductions from taxable income and tax credits. They served to compensate in part for the still pervasive bias of the country's incentive system against exporting. The highly protective and distorted tariff system was the primary source of this bias, but no attempt was made to deal directly with this source of bias as part of the export promotion program during the 1970s.[5]

The primary sectors (agriculture and mining) producing the country's "traditional" exports did not benefit from government policy efforts to promote exports during the 1970s as much as the industrial sector. As part of the "devaluation package" adopted in early 1970, exporters of traditional export products were required for a time to convert 80% of their foreign exchange earnings at the old rate of 3.9 pesos per U.S. dollar. This dual exchange rate arrangement was later replaced by temporary "stabilization taxes" on traditional exports at rates ranging from 4 to 10% ad valorem. This was made a permanent part of the customs and tariff code in 1973. Moreover, in February 1974, an additional tax was levied on the premium derived from export price increases beginning 1973. Thus the windfall gains from the devaluation and the commodity boom in the early part of the 1970s were partly siphoned off from producers of traditional export products.

Relative incentives due to trade and exchange rate policies therefore tended to be biased against domestic production of agricultural exports throughout the postwar period. The foreign trade regime also

5. The Revised Tariff Code of 1973 simplified the rate structure and actually raised more duties than it lowered.

discriminated against industrial exports, particularly under the import and foreign exchange controls of the 1950s; however, in the 1970s, the export bias of the protective tariff system was being partly offset for domestic manufacturers by fiscal incentives and other selective export promotion measures. The heavy bias of Philippine postwar trade and exchange rate policies was toward the industrial producers of import-substituting goods, especially those competing with foreign suppliers of "nonessential" consumer goods imports.

III. Effect on Relative Incentives Among Tradable Goods

One useful measure of sectoral incentives provided by the foreign trade regime is the effective exchange rate (EER) for various types of external transactions, i.e., the number of units of domestic currency *actually* paid by importers or received by exporters per unit of foreign exchange, including trade-related taxes and subsidies. Invoking the "law of one price" for the small, open economy, the long run effect of differential EER changes among various classes of tradables on their relative domestic prices is equiproportional. Denoting the domestic prices of exportables and importables by P_x and P_m, their foreign prices by P_x^* and P_m^*, and their effective exchange rates by EER_x and EER_m, respectively, we have

$$(1) \qquad P_x = \text{EER}_x \cdot P_x^* = (1 - t_x) R_x P_x^*$$

$$(2) \qquad P_m = \text{EER}_m \cdot P_m^* = (1 + t_m) R_m P_m^*$$

where t_x and t_m are the implicit export tax and import tariff rates, and R_x and R_m are the nominal exchange rates applicable to export and import goods, respectively. Thus, other things the same, a 10% increase in the import-export EER ratio should lead ultimately to a 10% rise in the domestic price of import goods relative to export goods, encouraging a production-shift toward import-competing goods.

EER estimates for each year during 1949-71 have been derived by Baldwin for different exchange control categories used by the Central Bank, "taking into account [not only] the different exchange rates applicable to various types of transactions [but also] the differential impact on these transactions of tariffs, discriminatory sales or compensating taxes (on imports), special foreign exchange taxes, exemptions from various domestic taxes, subsidized borrowing rates, and marginal-deposit requirements on imports" (Baldwin

1975).[6] This time series has been extended by Senga (1983) through 1980 using Baldwin's procedure and distinguishing also among the various exchange control categories. For present purposes we are especially interested in the EER estimates for "traditional" (mostly, agricultural and mining) exports, "new" (industrial) exports, and imports.[7] Domestic production competes heavily with imports of "nonessential consumer goods" almost by definition, and hence the movement of EER for this particular import category relative to traditional and new exports also merits close examination.

The average annual EER levels and ratios for the abovementioned categories of tradable goods are shown for the subperiods 1950-59, 1960-69, and 1970-80 in Table 1. Figures 1 - 3 portray the annual movements in the EER ratio between traditional exports and each of the other tradable good categories. The ratios are consistently less than one, implying a continuing discrimination against traditional exports. The increasing bias in favor of import-competing production during the entire period is also evident, however, relative to new exports, the bias against traditional exports appears lowest in the 1960s.

IV. Effect on Export Incentives Relative to Home Goods: Analytical Framework

In addition to the direct influence of the foreign trade regime on the relative prices among tradable goods, export incentives are also affected indirectly through the further repercussions on the domestic price of exportable goods relative to home goods.

In the simple model of a small economy in which three goods are produced, namely, exportables, importables, and home goods, trade and exchange rate policies affect directly the domestic price of exportables relative to importables, which in turn affect the domestic

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6. It should be noted that the EER measure does not capture the additional protective effect that may arise from quantitative import restrictions. Therefore, to the extent that foreign exchange allocation and import quotas effectively restricted the importation of particular product groups (as with nonessential consumer good imports during the 1950s), the EER estimates understate the incentive bias toward domestic production of import substitutes.

7. Tariffs and other taxes were averaged across commodities within each import category by Baldwin and Senga on an unweighted basis. Similarly, the "all imports" EER in Table 1 above are unweighted averages of the available EER estimates for the six import categories. It would have been preferable to use weights based on import-competing production, but relevant data are not available.

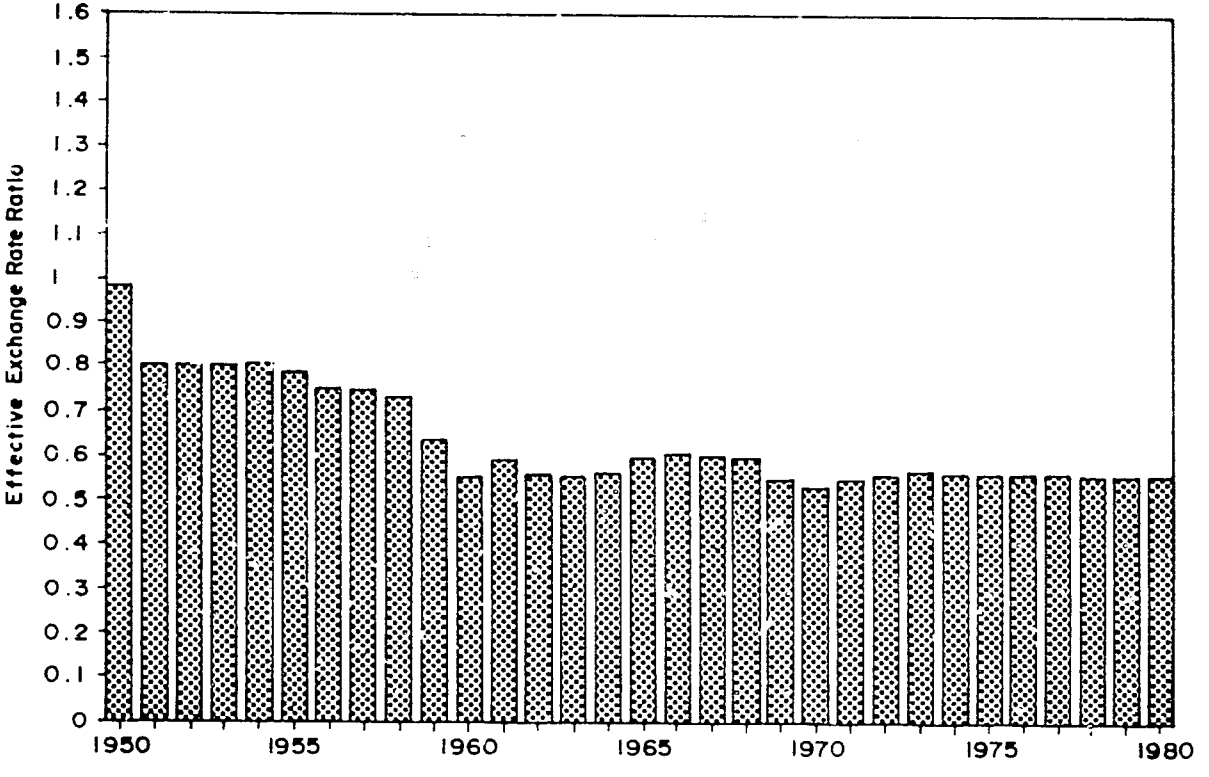

FIGURE 1
RATIO OF EER FOR TRADITIONAL EXPORTS TO EER FOR IMPORTS

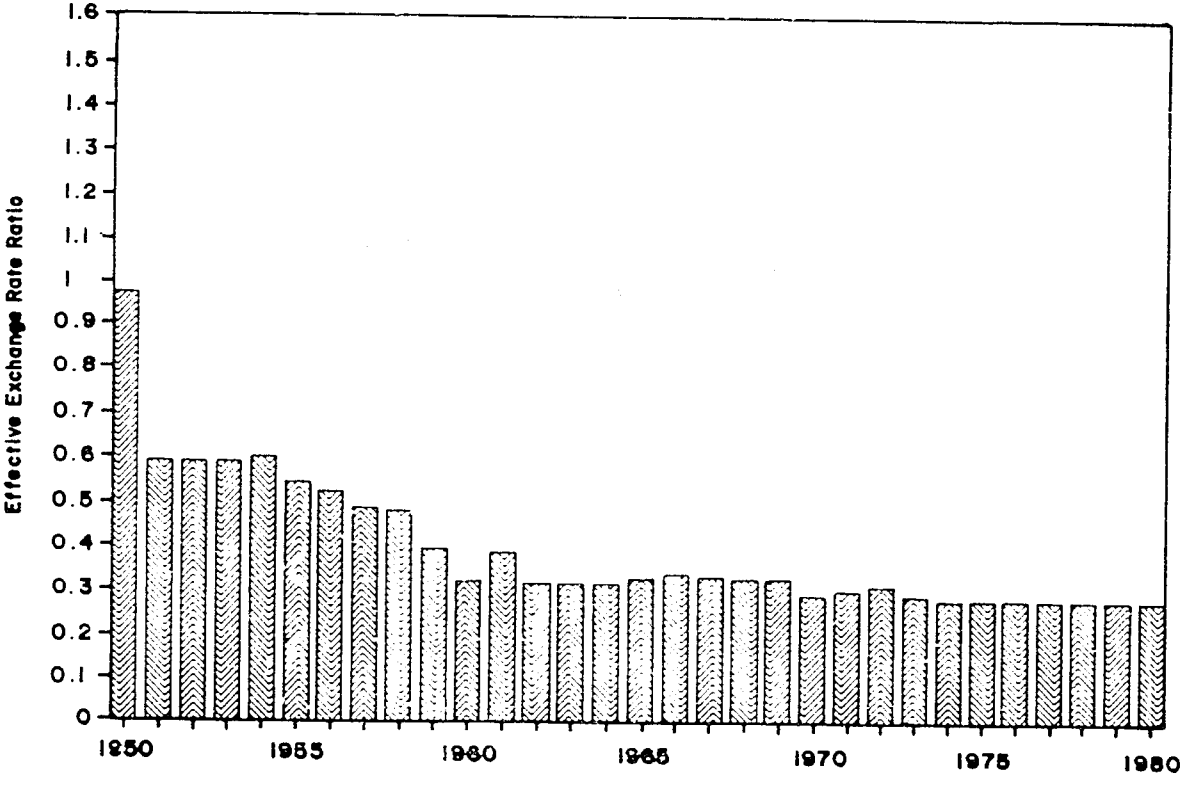

FIGURE 2
RATIO OF EER FOR TRADITIONAL EXPORTS TO EER FOR NONESSENTIAL CONSUMER GOOD IMPORTS

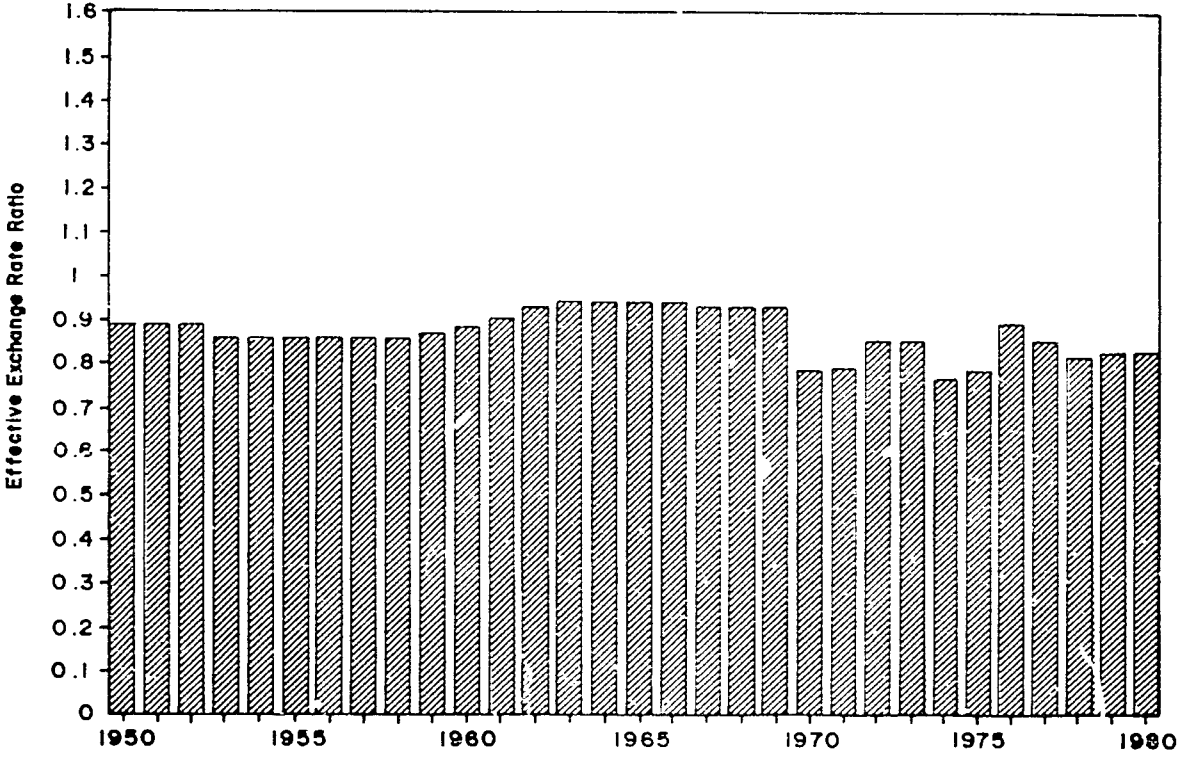

FIGURE 3
RATIO OF EER FOR TRADITIONAL EXPORTS TO EER FOR NEW EXPORTS

TABLE 1
AVERAGE EFFECTIVE EXCHANGE RATES, BY PRODUCT CATEGORY

Category	*1950-59*	*1960-69*	*1970-80*
		(pesos/U.S. dollar)	
Traditional exports	2.000	3.459	6.602
All imports	2.578	5.978	11.868
	(.776)	(.579)	(.556)
"Nonessential" Consumer Good (NEC) imports	3.645	10.563	25.459
	(.549)	(.327)	(.259)
New exports	2.294	3.704	8.018
	(.872)	(.934)	(.823)

Note: Numbers in parentheses indicate ratios of TER for traditional exports to the TERs for other product categories.

Source: Calculated from Table 5-1 in Baldwin (1975) and Appendix 2 in Senga (1983).

price of exportables relative to home goods. If foreign trade is in balance, the equilibrium properties of the model can be analyzed in terms of the equilibrium in the home goods market. We make use of the latter approach in deriving the equilibrium price relationships among the three goods[8] which, in the subsequent application to the Philippines, are further disaggregated into various agricultural export categories.

The demand and supply functions for home goods can be represented, respectively, by

$$D_h = D_h(P_m/P_h, P_x/P_h, Z_h) \tag{3}$$

and

$$S_h = S_h(P_m/P_h, P_x/P_h, C_p) \tag{4}$$

where P_m = domestic of importable goods
P_x = domestic price of exportable goods
P_h = domestic price of home goods

8. This analytical approach follows Dornbusch (1972, pp. 177-85), Sjaastad (1980) and Garcia (1981).

Z_h = total expenditure in terms of home goods

C_p = productive capacity of the economy, determined by the existing domestic resources and technology.

Differentiating (3) and (4) while holding Z_h and C_p constant yields

$$\hat{D}_h = \epsilon_m(\hat{P}_m - \hat{P}_h) + \epsilon_x(\hat{P}_x - \hat{P}_h) \tag{5}$$

$$\hat{S}_h = \eta_m(\hat{P}_m - \hat{P}_h) + \eta_x(\hat{P}_x - \hat{P}_h) \tag{6}$$

where ϵ_m and ϵ_x are the demand elasticities for home goods with respect to the relative prices of importables and exportables, respectively; η_m and η_x are the corresponding supply elasticities; and the hat ($\hat{}$) over a variable denotes a proportionate change.

Setting $\hat{D}_h = \hat{S}_h$ to examine the comparative static properties of the model, we have

$$\theta_m(\hat{P}_m - \hat{P}_h) + \theta_x(\hat{P}_x - \hat{P}_h) = 0 \tag{7}$$

where $\theta_m = \epsilon_m - \eta_m$ and $\theta_x = \epsilon_x - \eta_x$.

Therefore,

$$[\theta_m(\hat{P}_m - \hat{P}_x) + \theta_m(\hat{P}_x - \hat{P}_h)] + \theta_x(\hat{P}_x - \hat{P}_h) = 0$$

and hence

$$\hat{P}_x - \hat{P}_h = \omega(\hat{P}_x - \hat{P}_m) \tag{8}$$

where $\omega = \theta_m/(\theta_m + \theta_x)$. Equation (8) is a necessary relationship among the domestic prices of exportables, importables, and home goods when the economy is displaced from one equilibrium state to another. Note that ω is positive and less than one if $\theta_m, \theta_x > 0$, i.e., the cross price elasticities of *excess* demand for home goods are positive.[9] Also, the incidence parameter will be greater the higher

9. As pointed out by Dornbusch (1972) this condition does not require (a) that home goods and tradable goods be substitutes *both* in production and in demand, and (b) that exportables and importables be necessarily substitutes or complements.

(lower) is the degree of substitutability in consumption and production between home goods and importables (exportables). Assuming full transmission of changes in effective exchange rates (reflecting changes in trade and exchange rate policies) on the domestic prices of exportables and importables, the "incidence parameter" ω determines uniquely the induced change in the domestic price of exportables relative to home goods.

Equation (8) can be transformed into an expression for the "real exchange rate," defined as the ratio of the nominal exchange rate R (assuming the same exchange rate for exports and imports) to the price of home goods. Using (1) and (2),

$$\hat{P}_x = \hat{T}_x + \hat{R} + \hat{P}_x^* \tag{9}$$

$$\hat{P}_m = \hat{T}_m + \hat{R} + \hat{P}_m^* \tag{10}$$

where $T_x = 1 - t_x$, $T_m = 1 + t_m$, and $R = R_x = R_m$.

Setting $\hat{P}_x^*, \hat{P}_m^* = 0$, substituting (9) and (10) into equation (8) to eliminate $\hat{P}_x$ and $\hat{P}_m$, and simplifying, we get

$$\hat{R} - \hat{P}_h = [\omega \hat{T}_m + (1 - \omega)\hat{T}_x] \tag{11}$$

which shows explicitly the effect of trade policy, represented by T_m and T_x, on the real exchange rate.

Distinguishing between agricultural and nonagricultural export goods, equation (7) can be modified as follows:

$$\theta_m(\hat{P}_m - \hat{P}_h) + \theta_{ax}(\hat{P}_{ax} - \hat{P}_h) + \theta_{nx}(\hat{P}_{nx} - \hat{P}_h) = 0 \tag{12}$$

where P_{ax} and P_{nx} are the domestic prices of agricultural and nonagricultural export products, respectively, and

$$\theta_{ax} = \epsilon_{ax} - \eta_{ax} \text{ and } \theta_{nx} = \epsilon_{nx} - \eta_{nx},$$

the θ's, ϵ's, and η's being defined as before but in reference to the two export goods.

Let $\omega_m = \theta_m/\theta$, $\theta_{ax} = \theta_{ax}/\theta$, and $\omega_{nx} = \theta_{nx}/\theta$, where $\theta = \theta_m + \theta_{ax} + \theta_{nx}$. Equation (12) can then be written

$$\hat{P}_h = \omega_m \hat{P}_m + \omega_{ax}\hat{P}_{ax} + \omega_{nx}\hat{P}_{nx} \tag{13}$$

or

$$\hat{P}_{ax} - \hat{P}_h = \omega_m(\hat{P}_{ax} - \hat{P}_m) + \omega_{nx}(\hat{P}_{ax} - \hat{P}_{nx}) \tag{14}$$

Equation (13) expresses $\dot{P}_h$ as a weighted average of the proportionate changes in the domestic prices of the three categories of tradable goods. In equation (14) the domestic price of agricultural export products relative to home goods is seen to depend on (a) the structure of domestic prices among tradable goods, and (b) the incidence parameters ω_m and ω_{nx}.

The extension to any number of export goods is straightforward. Analogous to equation (14), the proportionate change in the domestic price of export good i relative to home goods can be expressed as follows:

$$(15) \qquad \dot{P}_{ix} - \dot{P}_h = \omega_m (\dot{P}_{ix} - \dot{P}_m) + \sum_{j \neq i} \omega_{jx} (\dot{P}_{ix} - \dot{P}_{jx})$$

where P_{ix} is the domestic price of export good i and the ω's are the incidence parameters.

V. Estimating the Incidence Equations

We now proceed to the estimation of the incidence parameters appearing in equations (8), (14), and (15). Basic data used are described in the Appendix below. One important point to note here is that the available price data permit a disaggregation of export goods into agricultural and nonagricultural, as well as into five categories of agricultural export products, but not a disaggregation of import goods into the exchange control categories (including nonessential consumer goods) for which different effective exchange rates have been estimated. This is the underlying reason for having only an aggregate P_m variable in the analytical discussion above.

It is necessary to recall that the analysis is based on comparative statics, assuming that total expenditure (Z_h) and productive capacity (C_p) remain constant. Using historical data invalidates this assumption, warranting the inclusion of Z_h and C_p as shift variables in the regression equation. However, because they turned out to be highly correlated,[10] it was decided to include only C_p (in both the aggregative and disaggregative specifications). Also, since equations (8), (14), and (15) represent domestic price relationship when external trade is in balance, we included a balance-of-trade variable (BOT), defined as the ratio of the trade balance (exports minus imports) to exports as an additional explanatory variable in each of the estimating equations. Lastly, serial correlation of the error terms appeared

10. The correlation coefficient between Z_h and C_p is .995.

significant in the initial regressions for each equation; the Cochrane-Orcutt iteration technique was used to correct for first-order auto-correlation.

The estimation results for the aggregative equation, including specifications with and without C_p and BOT, are as follows:[11]

$$(16)\quad \ln P_x/P_h = \underset{(-.15)}{.005} + \underset{(9.25)}{.858}\ \ln P_x/P_m + \underset{(5.50)}{.323}\ \ln C_p + \underset{(2.21)}{.095}\ \text{BOT}$$

$$\bar{R}^2 = .941 \qquad \text{D.W.} = 1.74 \qquad \text{Rho} = .637$$

$$(17)\quad \ln P_x/P_h = \underset{(-.16)}{-.032} + \underset{(9.23)}{.846}\ \ln P_x/P_m + \underset{(2.87)}{.121}\ \text{BOT}$$

$$\bar{R}^2 = .930 \qquad \text{D.W.} = 1.76 \qquad \text{Rho} = .959$$

$$(18)\quad \ln P_x/P_h = \underset{(-.48)}{-.107} + \underset{(8.44)}{.873}\ \ln P_x/P_m$$

$$\bar{R}^2 = .911 \qquad \text{D.W.} = 1.60 \qquad \text{Rho} = .961$$

Each of the coefficient estimates is statistically highly significant, and more than 90% of the variance of the dependent variable is explained. The estimates of the incidence parameter (coefficient of $\ln P_x/P_m$) are seen to lie within a narrow range from .846 to .873, indicating robustness across different specifications. We may infer that, in the Philippine case, trade and exchange rate policies biased against exportables relative to import-competing production have also tended to reduce substantially the relative incentive to produce export goods vis-à-vis home goods.

Considering only agricultural export goods, the estimated equation is as follows:[12]

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11. Ordinary Least Squares was used on annual data for the period 1950-76. Numbers in parentheses are *t*-values of the coefficient estimates.

12. The estimation results for the disaggregative agricultural export categories, as shown in Appendix Table 2, do not differ markedly from the aggregate results. The estimated incidence parameter for imports, ω_m, varies from .582 for fruits and vegetables to .684 for coconut products, while that for nonagricultural exports, ω_{nx}, ranges from .350 for tobacco and products to .436 for fruits and vegetables. The domestic price of each of the five agricultural export categories is found not to be significantly influenced by its domestic price relative to other agricultural export products. Finally, the coefficient estimates for the shift variables, $\ln C_p$, and BOT) are in the neighborhood of their respective values in the aggregate regression.

$$(19)\quad \ln P_{ax}/P_h = \underset{(2.12)}{.081} + \underset{(7.04)}{.659}\ \ln P_{ax}/P_m + \underset{(4.08)}{.412}\ \ln P_{ax}/P_{nx} + \underset{(4.94)}{.298}\ \ln C_p + \underset{(2.61)}{.127}\ \mathrm{BOT}$$

$$\bar{R}^2 = .986 \qquad \text{D.W.} = 1.36 \qquad \text{Rho} = .745$$

Again the statistical-goodness-of-fit is excellent. Other things the same, a 10% rise in the domestic price of importables (e.g., due to tariffs) is associated with a 6.6% decline in the domestic price of agricultural export products relative to home goods; on the other hand, a 10% increase in the domestic price of nonagricultural export products (e.g., due to subsidies to industrial exports) leads to a 4.1% fall in the relative price of agricultural export goods vis-à-vis home goods.

VI. Effect on Agricultural Export Incentives

Based on the estimated values of the incidence parameters, the extent to which the observed changes in the effective exchange rates for traditional exports, new exports, and imports over the three postwar decades from 1950 to 1980 had affected the domestic prices of agricultural export products relative to home goods can be quantified, using equation (14) above. Domestic production competes closely, but not exclusively, with nonessential consumer goods imports, i.e., there is some substitutability between other imports and domestic products, admittedly of a lower degree. Since it has not been possible to disaggregate P_m, we consider below the effects on P_{ax}/P_h of the observed changes in EERs for both all imports (Case 1) and NEC imports (Case 2).

The calculated changes in the P_{ax}/P_h imply a time pattern of the corresponding *indices* of the price ratios for Cases 1 and 2 as shown in Figures 4 and 5, respectively. They represent hypothetical annual movements of the domestic price of agricultural exports relative to home goods due to postwar trade policy assuming that other factors (e.g., world prices) affecting the price ratio remain unchanged. In each of the two cases, one observes a general decline over time in relative price incentives for agricultural export production vis-à-vis home goods.

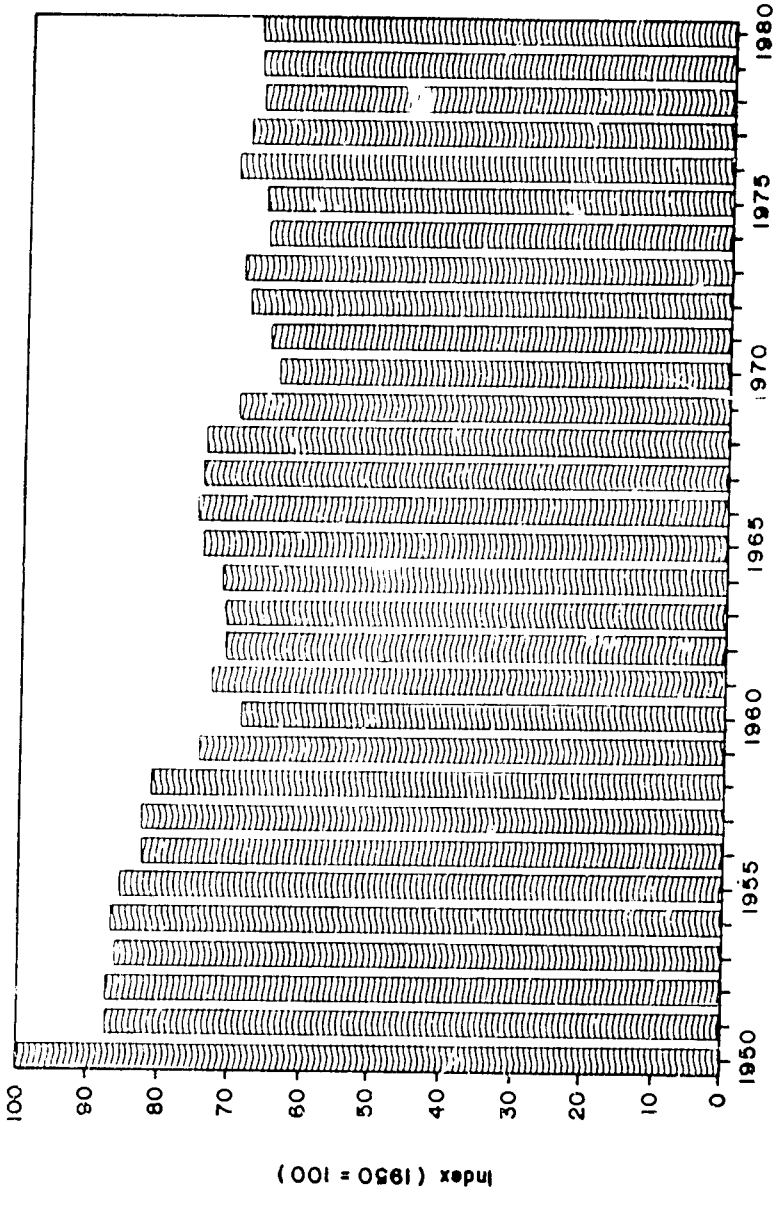

FIGURE 4
CALCULATED INDEX OF THE DOMESTIC PRICE OF AGRICULTURAL EXPORT PRODUCTS RELATIVE TO HOME GOODS (Case i)

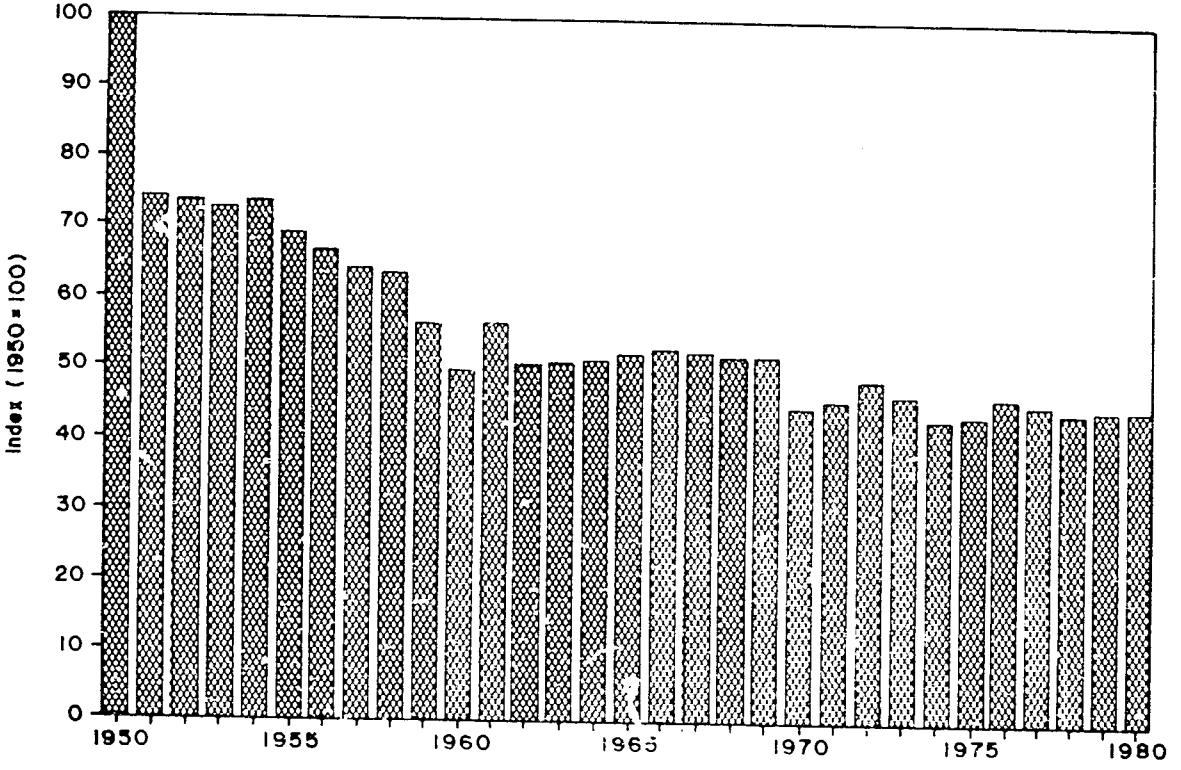

FIGURE 5
CALCULATED INDEX OF THE DOMESTIC PRICE OF AGRICULTURAL EXPORT PRODUCTS RELATIVE TO HOME GOODS (Case 2)

Estimates of the changes in relative prices of agricultural export products due to the movements in EER ratios over each of the three postwar decades and over the entire period are summarized in Table 3. The first line shows the proportionate changes in the domestic price of agricultural export products relative to new (industrial) exports (P_{ax}/P_{nx}), based on the observed changes in the EER ratios for traditional and new exports. This is followed by the corresponding effects on P_{ax}/P_m, based on the EER estimates for all imports (Case 1) and for nonessential consumer good imports (Case 2). The last two lines in Table 2 give the induced changes in P_{ax}/P_h, calculated from the indices derived earlier (cf. Figures 4 and 5), distinguishing again between Cases 1 and 2.

One striking observation concerning the entries in Table 2 is that, except for P_{ax}/P_{nx} in 1959-69, negative effects on the relative domestic prices of agricultural export products are indicated throughout. Industrial import substitution based on direct controls in the 1950s is seen to have heavily penalized agricultural exports, especially in relation to import-competing and home goods production. The policy reforms in the early 1960s which dismantled the system of import and foreign exchange controls and devalued the Philippine peso appear to have favored agricultural over industrial exports; however, the incentive structure became even more biased toward importables and home goods. Finally, in the export promotion decade of the 1970s, agricultural export production was ironically

TABLE 2
EFFECT OF EER CHANGES ON RELATIVE DOMESTIC PRICES OF AGRICULTURAL EXPORT PRODUCTS

Relative price	*1950-59*	*1959-69*	*1969-80*	*1950-80*
		(percent)		
P_{ax}/P_{nx}	−2.6	7.5	−11.3	−7.2
P_{ax}/P_m				
Case 1	−35.6	−6.6	−6.6	−43.8
Case 2	−59.5	−17.2	−14.7	−71.4
P_{ax}/P_h				
Case 1	−25.4	−6.5	−3.2	−32.5
Case 2	−43.5	−7.6	−14.0	−55.1

Note: Case 1 is based on the effect on P_m due to changes in EER for all imports; Case 2 is based on the effect on P_m due to changes in EER for NEC imports.

not given any encouragement, the induced changes in relative domestic prices due to trade and exchange rate policies being seen in Table 2 to have favored industrial exports, import-competing products, and home goods.

The last column of Table 3 shows the overall deterioration in relative incentives for agricultural export production due to the foreign trade regime over the three postwar decades. Based on Case 2, the induced decline in the domestic price of agricultural export products is seen to be more than 70% relative to import-competing products and about 50% relative to home goods. On the other hand, the incentive bias toward new (industrial) exports due to trade policy increased by only 7% between 1950 and 1980.

How significant are these trade policy-induced changes in price incentives in relation to the actual movements in relative prices of agricultural exports? Using relevant domestic price data (available only through 1976, as noted in the Appendix), indices of three-year moving averages of the three price ratios are calculated and plotted in Figures 6–8, together with the corresponding indices of the hypothetical price ratios reflecting the changes in relative incentives due to the foreign trade regime.

One significant observation is that the relative prices of agricultural export products actually improved over the years. This is despite the continuous decline in the hypothetical price ratios due to discriminatory trade and exchange rate policies, which implies that other influences, principally world commodity prices, must have been highly favorable. The first half of the 1970s, for example, included the period of the "commodity boom," the graphs showing sharp increases in each of the three indices of the actual relative prices of agricultural exports. This is presumably related to the rapid expansion of Philippine agricultural exports during the 1970s, as noted in the preceding chapter, which occurred in spite of the unfavorable influence of the foreign trade regime.

The graphs in Figures 6 through 8 also suggest that the incentive bias against agricultural exports production had not been insubstantial relative to the actual domestic price changes. The ratio of the vertical distance between the horizontal line at 100 and the B-curve to the vertical distance between the A- and B-curves indicates the cumulative significance of trade policy relative to the other sources of the observed movements in the domestic prices of agricultural exports. The calculated values for 1959, 1969, and 1975 are shown in Table 3. One finds that, even after the 1972-74 commodity boom, the contribution of trade policy to the actual changes in the domestic

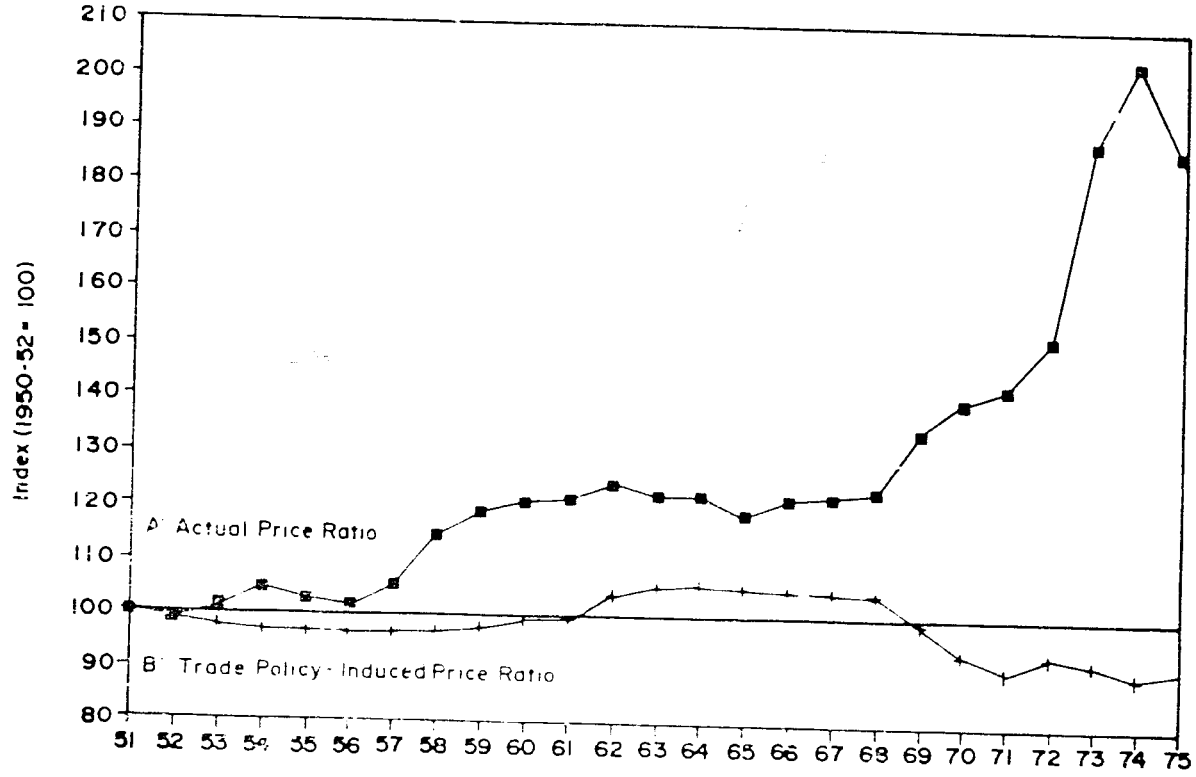

FIGURE 6
TIME PROFILES OF ACTUAL AND TRADE POLICY-INDUCED PRICE RATIO
BETWEEN AGRICULTURAL AND INDUSTRIAL EXPORTS

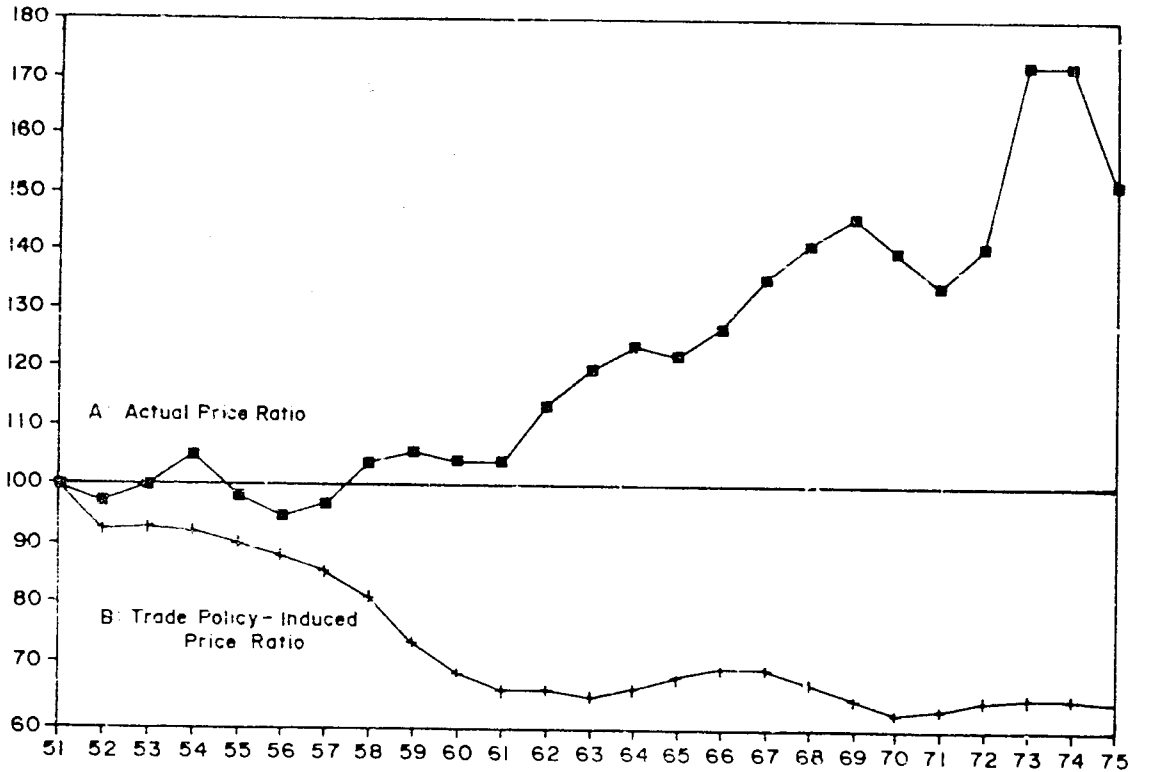

FIGURE 7
TIME PROFILES OF ACTUAL AND TRADE POLICY-INDUCED PRICE RATIO BETWEEN AGRICULTURAL EXPORTS AND IMPORT-COMPETING PRODUCTS

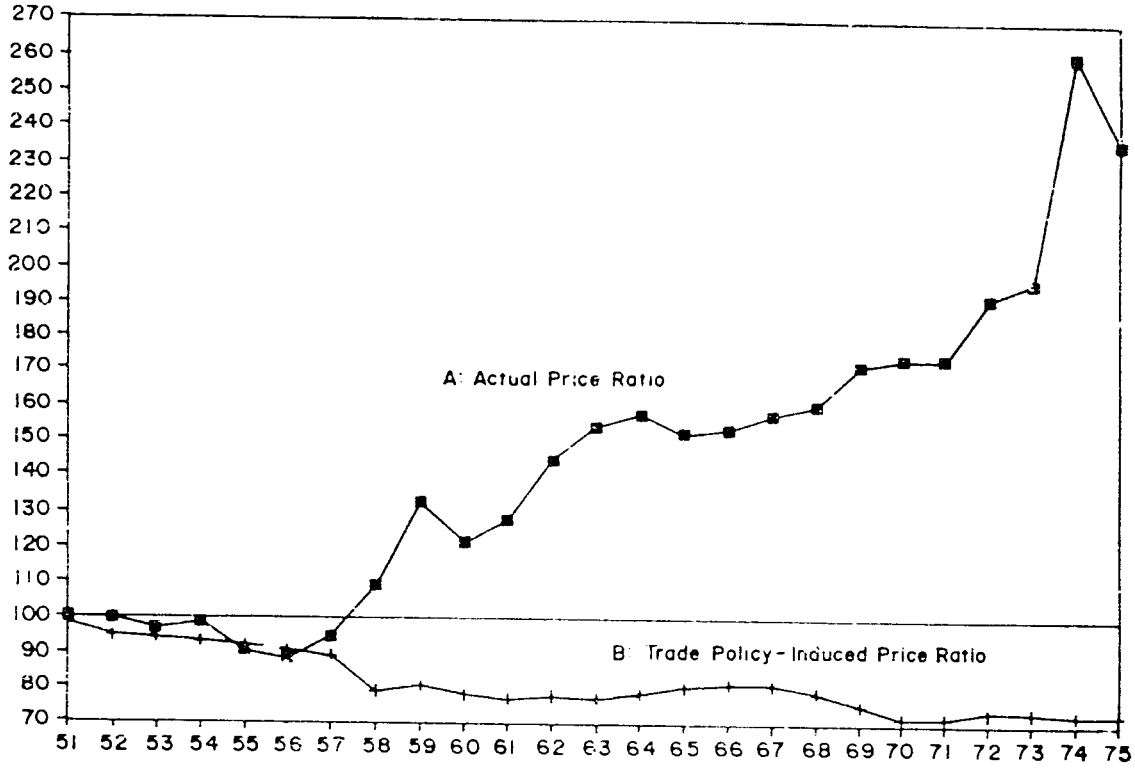

FIGURE 8
TIME PROFILES OF ACTUAL AND TRADE POLICY-INDUCED PRICE RATIO
BETWEEN AGRICULTURAL EXPORTS AND HOME GOODS

TABLE 3
ESTIMATES OF THE CUMULATIVE SIGNIFICANCE OF TRADE POLICY RELATIVE TO OTHER INFLUENCES ON THE DOMESTIC PRICE OF AGRICULTURAL EXPORTS VIS-A-VIS OTHER PRODUCT CATEGORIES

	1950	1959	1969	1975
Industrial exports (P_{ax}/P_{nx})	0	.106	.022	.044
Import-competing goods (P_{ax}/P_{m})	0	.804	.428	.396
Home goods (P_{ax}/P_{h})	0	.360	.253	.162

prices of agricultural export products remained relatively significant, at least with respect to import-competing products and home goods.

VII. Some Further Considerations and Conclusion

As pointed out earlier, the EER measure understates the trade regime's degree of bias toward import-competing products in the 1950s to the extent that domestic prices of imported goods included a scarcity premium due to the existence of quantitative restrictions on imports and foreign exchange at the time. Indeed, direct comparison of wholesale prices of comparable items in the Philippines and the United States (adjusting for transport cost) has shown that, in 1959, "implicit protective rates of 400 percent were not uncommon for nonessential consumer goods, whereas the average explicit degree of protection (provided by exchange rate and tax policies) in 1959 for this category was around 150 percent" (Baldwin 1975, p. 101). This implies that a substantial amount of windfall gains was being received by importers of nonessential consumer goods, which provided a further impetus at the time to the domestic production of import substitutes and resource allocation away from export industries.

Another aspect of relative incentives due to trade and exchange rate policies not taken into account by the EER measure relates to the domestic pricing of intermediate inputs. Most industrial raw materials and other producer goods were allowed to be imported liberally during the period of controls in the 1950s; likewise, in the

1960s and 1970s, they were subject to much lower tariff rates compared to finished consumer goods. Also, "government policies tend(ed) to raise moderately domestic above border prices of agricultural inputs" (David 1983, p. 29). Using the "effective protection rate" (EPR) measure, which represents the rate of protection of domestic value added, one includes both the subsidy to domestic producers from the protection outputs and the penalty from the protection of inputs.

A study of effective protection in the Philippines, based on tariffs and indirect taxes in the mid-1970s, shows the weighted average EPR for the primary sectors (agriculture and mining) to be only 9% compared to 44% for manufacturing, and that for export industries[13] to be 4% versus 61% for nonexporting industries. Export production in agriculture was therefore being doubly penalized by the effective protection structure,[14] individual agricultural export products facing negative EPRs from -3% for pineapple to -12% for sugar.

Similarly, Baldwin's time series estimates of EPRs for the various exchange control categories indicate a continuing strong bias in the foreign trade regime against traditional exports throughout the period 1949-71. Thus, even after the lifting of import and foreign exchange controls in the late 1950s, "the unfavorable exchange rate for exporters together with the protection on the imported inputs they used caused the EPR for traditional exports to be significantly negative (in 1961). Moreover, the discrepancies in effective protective rates remain(ed) very large even after the decontrol effort and throughout the rest of the 1960s and early 1970s" (Baldwin 1975, p. 106).

The foregoing discussion serves to reinforce the findings of the present study indicating that postwar trade and exchange rate policies discriminated persistently against agricultural export production. Indeed it is remarkable that, even in the 1970s when an outward-looking development strategy was being promoted by the government, the bias in the foreign trade regime against agricultural exports continued. In the case of industrial exports, the existing biases of the tariff structure and indirect taxes were being offset, at least in part, by fiscal and financial incentives provided to registered enterprises under the Export Priorities Act of 1970, as well as by the development

13. Defined to be those exporting more than 10% of production.

14. A very revealing illustration on the input side is provided by the government-enforced, two-tiered pricing of fertilizer in 1973-75, during which time fertilizer was being sold to food crop producers at prices 50 to 70% less than prices paid by export crop producers (see David and Balisacan 1981).

of export infrastructure specifically directed to labor-intensive manufactured products. Both industrial and agricultural exports grew faster in the 1970s than in the previous two decades. In the case of agricultural exports, the comparative average annual growth rates were 4.5% and 3.8% in real terms; however, such improvement in export performance cannot be attributed to the trade and exchange rate policies adopted which, as made clear in the above discussion, became even more biased against agricultural export production during the 1970s.

In failing to provide for a more neutral incentive structure that could have encouraged a more efficient allocation of scarce resources and greater agricultural exports, Philippine trade and exchange rate policies throughout most of the postwar period presumably contributed to a relatively inferior economic performance in terms of real income growth and the balance of payments. It can also be concluded that an improvement in the foreign trade regime, i.e., correcting the incentive bias against agricultural export production, represents a potentially significant source of future growth in agricultural income and foreign exchange earnings. Institutional changes, new technologies, infrastructure development, and other productivity-raising public investments, as well as access to foreign markets, may be necessary to boost significantly the long-term export performance of Philippine agriculture. However, they are likely to prove inadequate if relative incentives continue to be heavily biased against agricultural export production.

APPENDIX

Derivation of Domestic Price Indices

The Central Bank began collecting wholesale prices of domestic and imported products, as well as of commodities for the home market and for export in Metropolitan Manila, in 1949 and published them annually in the *Statistical Bulletin* in index form, with 1965 as base year, until 1976. (In 1977 the base period was shifted to 1972, accompanied by a change in commodity classification.) The weights of commodity groups for each index are given in Appendix Table 1.

"Locally-produced commodities for home consumption" do not of course totally constitute the home goods or nontradables sector. The two important omissions are housing and services, price data on which are available only as components of the Central Bank's Consumer Price Index. To represent the domestic price of home goods (P_h) in the present study, a weighted average of

APPENDIX TABLE 1
WEIGHTS OF COMMODITY GROUPS IN THE CENTRAL BANK WHOLESALE PRICE INDICES FOR METROPOLITAN MANILA

Commodity group	*WPI of export products* (P_x)	*WPI of imported commodities* (P_m)	*WPI of locally-produced commodities for home consumption* (P_{h1})
Food	.258	.134	.458
Beverages and tobacco	.022	.003	.088
Crude materials	.570	.050	.047
Mineral fuels	.007	.109	.079
Animal vegetable oils	.089	.006	.018
Chemicals	.003	.103	.051
Manufactured goods	.048	.211	.152
Machinery transport equipment	—	.356	.049
Miscellaneous manufactures	.003	.028	.059
Total	1.000	1.000	1.000

Source: *Statistical Bulletin*, XXVIII (December 1976), Central Bank of the Philippines.

APPENDIX TABLE 2
REGRESSION RESULTS FOR INDIVIDUAL AGRICULTURAL EXPORT CATEGORIES

	Dependent variable				
	$ln\ P_{1x}/P_h$	$ln\ P_{2x}/P_h$	$ln\ P_{3x}/P_h$	$ln\ P_{4x}/P_h$	$ln\ P_{5x}/P_x$
Constant	.074	.071	0.73	.081	.084
	(1.74)	(1.71)	(1.83)	(2.07)	(2.74)
$ln\ P_{ix}/P_m$	.684	.682	.582	.660	.656
	(6.30)	(6.62)	(4.24)	(6.89)	(7.73)
$ln\ P_{ix}/P_{ioax}$	−.075	−.030	−.078	−.046	−.097
	(−.87)	(−.77)	(−1.35)	(−.64)	(−1.85)
$ln\ P_{ix}/P_{nx}$	.415	.416	.436	.412	.350
	(3.99)	(3.40)	(4.10)	(3.99)	(3.66)
$ln\ C_p$	.286	.282	.301	.302	.305
	(4.27)	(4.23)	(4.94)	(4.82)	(6.16)
BOT	.135	.138	.123	.127	.126
	(2.59)	(2.67)	(2.50)	(2.55)	(2.81)
$\bar{R}^2$	.987	.990	.978	.984	.981
D.W.	1.36	1.42	1.38	1.31	1.65
Rho	.749	.743	.744	.747	.692

Note: The subscripts *ix*, *ioax*, and *nx* refer to agricultural export category *i*, other agricultural exports, and nonagricultural exports, respectively. Agricultural exports categories. *i* =1 for coconut products; 2 for sugar and sugar products; 3 for fruits and vegetables; 4 for abaca and products; and 5 for tobacco and products.

the WPI for locally-produced commodities for home consumption (P_{h1}) and the two CPI components (P_{h2} for housing and P_{h3} for services) are calculated as follows:

$$(A1) \qquad P_h = .359\,P_{h1} + .104\,P_{h2} + .537\,P_{h3}$$

The weights are based on the value added shares computed from the aggregated 12-sector Input-Output Transactions Table for 1965 published in the *Philippine Statistical Yearbook 1975*.

Wholesale prices of major export products (published in the *Statistical Bulletin*) are used to represent each of the five agricultural export categories (P_{ix}) as follows:

1. Coconut products: copra resecada
2. Sugar and products: centrifugal sugar
3. Fruits and vegetables: canned pineapple
4. Abaca and products: unmanufactured abaca
5. Tobacco and products: leaf tobacco

The aggregate domestic price index for agricultural export products (P_{ax}) is calculated as the weighted average (based on 1965 export value shares) of the wholesale price indices of the product categories 1-5 above. The domestic price index for nonagricultural export products (P_{nx}) can then be computed from the following:

$$(A2) \qquad s_{ax}\,P_{ax} + (1 - s_{ax})\,P_{nx} = P_x$$

where s_{ax} (=.601) is the export value share of agricultural products (categories 1-5 above) in 1965.

Finally, for each agricultural export category i ($i = 1, \ldots, 5$), a price index (P_{ioax}) is computed for *all other* agricultural export categories as the weighted average of the wholesale price indices of all agricultural export categories other than i.

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