



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Trade Policy, Self-Sufficiency, and Liberalization in the Indonesian Food Economy

*Sjarifudin Baharsjah, Soetatwo Hadiwigeno, H.S. Dillon,
Douglas D. Hedley, and Steven R. Tabor¹*

Abstract: International trade in food crops has historically played a residual, supply-augmenting role in the Indonesian food economy. Indonesia was able to transform its rice economy technologically and stimulate rapid growth in rural income and consumption levels while protecting the domestic economy over the 15-year period ending in 1985. A slowdown in economic growth, combined with a deteriorating external payments situation, has led Indonesian planners to adopt a more open and outward-oriented approach to economic management. For agriculture, trade liberalization is understood as being a part of this new, outward-oriented, development approach. The costs of shifting the agricultural economy to a more liberalized trade régime were simulated using a multimarket agricultural sector econometric model. The results of the static simulation show that the transition costs, in terms of higher import demand, lower farm income, and lower employment absorption, will be high. This argues that, particularly in a depressed world primary commodities market, a sound economic case can be made for special and differential treatment of protectionism in the developing economies. The extent to which labour wages are flexible will also have a significant influence on the economic gains from trade liberalization. In the Indonesian agricultural economy, where a high degree of rural underemployment is evident, complete trade liberalization will not be a first-best development policy choice.

Trade and Protection in Indonesian Agricultural Development

In Indonesia, the historical role of international trade in food crops has been to balance domestic demand and supply at target, or politically sanctioned, levels. The international market has been treated as a residual market, to be used by the government or appointed traders to clear markets, rather than as a catalyst to allocate domestic resources. The lack of reliance in the international market as an allocative device is related to the role of agriculture and, more broadly, agricultural development in the national economy. This role is changing, and, consequently, the agricultural economy must now place greater reliance on the international market to improve domestic competitiveness.

The main role of the Indonesian agricultural sector is to provide an adequate diet to consumers and a sufficient supply of raw materials to industry and to generate adequate incomes for crop producers. Generating foreign exchange has traditionally been accorded a low priority in the food sector. Over the past decade, the main aim of agriculture has been import substitution, first in rice and then in all other foodstuffs.

Although near-autarky in food and in other strategic commodities remains official policy, downturn in economic performance of the mid-1980s has led to a rethinking of the role of trade in economic development. Economic policy makers have adopted a more outward-looking orientation in order to diversify export earnings, increase domestic competitiveness, and encourage new sources of growth. This new direction is reflected in recent trade reforms in industry and services. Trade in agricultural commodities, by comparison, has not been directly affected by the trade liberalization measures of 1986 and 1987. Still, calls for agricultural trade reform continue to mount, through GATT, in reports of the government's major creditors (World Bank, 1987b), in key bilateral government meetings, and from technocrats within the government's own ministries (IFPRI, 1987; and Deptan, 1988). The limits to which trade liberalization can be accommodated and the problems involved in adjusting to a more liberalized trade régime require an understanding of the historical linkage between trade, protectionism, and agricultural development in Indonesia.

Trends in Food Crop Trade and Agricultural Development

Before 1975, Indonesia was an occasional exporter of small quantities of food crops. Import demand was held in check by foreign exchange constraints, low income growth, and low urbanization. Between 1976 and 1985, high growth rates in income and population

created an excess food and feed demand that could not be satisfied by domestic production. A rise in petroleum earnings, available foreign assistance (which eased foreign exchange constraints), concessional food imports, and rapid infrastructural growth allowed imports to escalate quickly. By 1983, Indonesian imports of foodstuffs had risen to \$950 million, with foodstuff exports of only \$45 million. The food crop sector was, in effect, running a negative trade balance of \$905 million annually. The largest imports by volume and value in 1983 were rice, followed by wheat, soyabeans, and soyabean meal. Cassava chips and pellets were the largest export items. Because of the very rapid growth in rice production after 1979, rice imports had ceased by 1984; small surpluses of rice were exported in 1985 and 1986 at distressed prices to relieve pressure on domestic stockholding. However, imports of soyabeans, soyabean meal, and wheat for human consumption had increased considerably. Spurred by demand increases for animal products, maize imports for animal feeds also expanded in the 1980s. With the fall in world prices for Indonesia's food crop imports and an increase in unit values for cassava exports, the Indonesian net food import balance declined from the earlier level of \$905 million in 1983 to about \$400 million in 1986 (Deptan, 1988).

These trade figures mask the degree to which the government has actively intervened to constrain growth in import demand. On average, between 1984 and 1986, medium-quality rice in the Jakarta market was selling at 125 percent of the import parity price for "Thai 25 percent broken" rice. Wheat flour was selling at 30 percent over the comparable price of Australian wheat flour, soyabeans at twice the border price of China-origin beans, and maize at 22 percent over the border price of Thai yellow maize (Deptan, 1988). These differences between domestic and international prices are maintained primarily through the use of nontariff barriers. Government is the sole importer and exporter for rice, soyabeans, soyabean meal, and wheat. Import licencing is used to control trade in maize, cassava flour, groundnuts, and mung beans.

The comparison of border and domestic prices does not take into account the public subsidies for irrigation, fertilizers, and pesticides. About 70 percent of the total value of domestic food production is derived from irrigated areas, primarily wetland rice. On irrigated lands, water is delivered at less than five percent of the capital, operations, and maintenance costs for the irrigation (World Bank, 1987b; and IFPRI, 1987). During 1986, fertilizers were selling at half the equivalent import parity price, on average, with a financial subsidy to domestic fertilizer consumption estimated at \$520 million in 1986 (Hedley, 1987). To this can be added the smaller, direct subsidies for pesticides and improved seeds.

In the food sector, Indonesia has relied on nontariff barriers and input subsidies as a wedge between the world market and the domestic economy. Historically, these means were used to provide some stability in domestic markets and to develop an "infant" staple food economy. Between 1976 and 1982, real private per capita expenditures grew by 52 percent and population by 21 million. Domestic demand for foodstuffs outstripped the growth in production, and imports were used in a controlled manner to balance supply and demand. In Figure 1, this is represented by an outward shift of the demand curve from the D_{1976} to the D_{1986} position. Demand became more inelastic as incomes rose, and prices became increasingly unstable in the face of supply disturbances. Supply was unable to meet this demand growth because of the continued dependence on traditional (largely nonprice responsive) technologies in the nonrice crops and due to a lack of complementary production and marketing infrastructure. Domestic prices rose quickly; imports were one means of easing the upward price pressure, even though world prices were high at the time. In order to ensure that the bulk of the benefits from the demand growth did not leak to the world market, Indonesia intensified trade controls, expanded production subsidies, and strengthened public-sector investment in irrigation, new rice technologies, input subsidies, and infrastructure. This led to an outward shift in the supply curve for foodstuffs (S_{1986} in Figure 1).

Behind such protectionist barriers, Indonesia was successful in raising consumption levels while stimulating the technological transformation of the rice sector. Between 1976 and 1984, wetland rough rice yields increased from 2.9 t to 4.2 t per hectare, while per capita domestic availability increased from 110 kg to 125 kg per year. Other commodities,

for which little new technology was available, did not perform nearly so well under trade protection (Deptan, 1988).

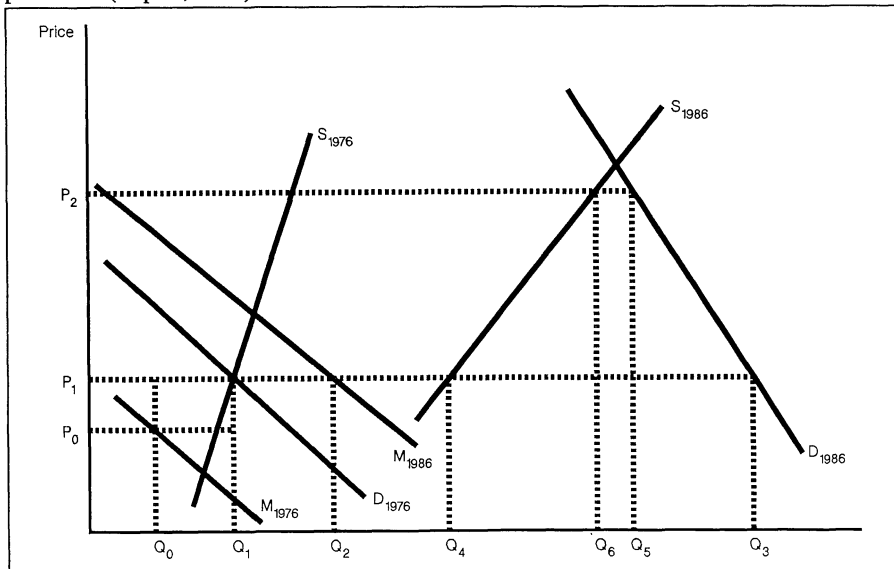


Figure 1—Changes in Supply and Demand in the Indonesian Food and Agricultural Sector

Q_0 = 1976 food imports (under subsidy)
 Q_1 = 1976 domestic consumption
 Q_2 = 1986 food imports (under free trade) ($Q_3 - Q_4$)
 Q_3 = 1986 food consumption (under free trade)
 Q_4 = 1986 potential food supply (under free trade)

Q_5 = 1986 food consumption (under protection)
 Q_6 = 1986 food production (under protection)
 P_0 = 1976 prices for food to consumers
 P_1 = world food prices
 P_2 = 1986 domestic food prices

Trade Liberalism as a Source of Growth

By the mid-1980s, Indonesian economic growth had slowed considerably. The causes were a rising debt service ratio, an abrupt fall in petroleum prices, the secular decline in primary commodity prices generally, and the weakening of the US dollar. Within food crop agriculture, the usual Green Revolution rice technology had been nearly fully exploited, since more than 97 percent of the rice on Java was coming from HYV rice under high fertilizer and pesticide applications. For the nonrice crops, little technology was available to foster a growth pattern similar to the rice success. Trade reform and the reduction in direct and indirect public sector subsidies have been used as a part of a broader economic reform package to stimulate growth and diversify export earnings.

As part of the overall economic reform movement, Indonesia has been called upon to liberalize trade in the agricultural sector (World Bank, 1987b). The positive gains from agricultural trade liberalization would be to reduce domestic food costs, improve efficiency in the allocation of production resources, and stimulate growth and technological transformation in markets where Indonesia may have a comparative advantage (World Bank, 1987b; and Ministry of Agriculture Round Table, 1987). The efficiency gains from a more outward-oriented trade strategy has been proposed as, in effect, an important new source of growth for the sector.

Multimarket Simulation of a Liberalized Food Economy

The Indonesian economy has become increasingly complex, with rapidly strengthening linkages across sectors and within the food crop subsector. Because single market, partial equilibrium approaches can lead to bias in domestic resource cost estimates and the calculation of economic surplus when the cross-commodity and cross-factor effects are important, the methodology selected for this study takes into account these interactions among the food crop production and demand systems. A multimarket model was used to simulate the effects of trade liberalization on the Indonesian food economy. The structure of the Indonesian agricultural sector model has been described in more detail elsewhere (Deptan, 1988). In brief, the model is an econometrically estimated, seven food crop commodity sector model using a profit function and adaptive response approach to derive product supply. On the demand side, a variant of an "almost ideal demand system" is used. Agricultural production is linked to a three sector macromodel to generate national income, which is then linked, through a consumption function, to food demand. Prices are exogenous in the model, and trade is used to clear domestic markets.

The sector model is used to test the static equilibrium effects of trade liberalization, under the assumption that Indonesia is a large country (and hence exerts an important influence on price) in the rice market but a small country in other commodity markets. Two scenarios are tried. In the first, domestic prices of rice, soyabeans, maize, and fertilizer, with minor adjustments, are set equal to world market parity price forecasts for 1988 using World Bank (1987a) commodity price forecasts. The model is used to forecast the near-term effects of trade liberalization. In the second scenario, domestic prices (with rice adjusted for large-country effects) are set equal to 1984 and then 1985 border parity prices for the major traded foodstuffs. This can be interpreted as a "backcast" of a liberalized trade régime. Two variants of each scenario are tested. In the first, farm labour wages are completely flexible and adjust to reflect rice prices; in the second, wages do not adjust downwards but instead follow the rate of growth in aggregate expenditures.

In the first scenario, future liberalization, under 1988 World Bank price forecasts, would result in a 4.1-percent decline in farm income, an increase in import demand to \$1,300 million and a decline in agricultural employment of 6.3 percent, or 1.2 million full-time jobs, compared to 1987 base conditions. GDP would increase by 3.1 percent in 1988 under liberalization, slightly slower than the 3.7-percent growth rate projected under a more protected trade régime.

If only product prices were liberalized and input subsidies remained in place, then the farm sector would still lose income and employment, but at a marginally slower rate than in the more complete liberalization scenario. Furthermore, if wages adjust downwards to the lower output price régime, then the effects on farm income and national growth are the same for a protected and a liberalized trade régime. Under flexible rural wage rates (without fertilizer subsidy removal), trade liberalization would lead to an increase in sector net imports from \$450 million to slightly under \$1,000 million per year. Imports of about 1.1 to 2.6 million t of rice, 680,000 t of soyabeans (for direct human consumption), and 1.5 million t of wheat would be required under a more liberalized trade régime for 1988.

In the 1984 and 1985 "backcast" scenario, trade liberalization in inputs and outputs, with flexible rural wages, would have resulted in an increase in imports of \$750 million per year. This included average rice imports of 1.6 million t, maize imports of 410,000 t, and soyabean imports of 1.5 million t.

Under protection, farm incomes would have increased by 1.8 percent in 1984 and by 10.9 percent in 1985. Under the case of liberalization of input subsidies and trade, with flexible wages, farm income would have risen by 4.6 percent in 1984 and would have been constant in 1985. Slower growth in farm sector income would have been partly offset by the effect of lower food prices on nonagricultural growth. The net effect of liberalization would have been growth in national product of 0.1 percent below historical rates of growth.

Under the 1984 and 1985 "backcast" scenario, trade liberalization of key outputs, with rural wages indexed to inflation, would have resulted in a 2-percent decline in labour

absorption in 1984 and a 7-percent decline in labour absorption in 1985, compared to the actual level. This would be the equivalent of a loss of 800,000 full-time jobs in 1985 alone. In the "backcast" scenario, with wages falling proportional to the fall in rice prices along with liberalization in fertilizer and some product prices, labour demand would rise slightly in 1984 but would then fall sharply in 1985. The net result would be an aggregate loss of 100,000 jobs over the 1983 base case, with much greater instability in year-to-year farm labour demand.

Economics of Special and Differential Treatment

The results of the static simulation show that the transition costs of liberalization, in terms of higher import demand, lower farm incomes, and lower employment absorption, will be high in the Indonesian economy. This argues that, particularly in a depressed world primary commodities market, a sound economic case can be made for special and differential treatment for some trade insulation in the developing economies. The extent to which labour wages are flexible will also have a significant influence on the efficiency gains from trade liberalization. In the Indonesian agricultural economy, where a high degree of rural underemployment is evident, complete trade liberalization will not be the first-best trade policy choice. The model results suggest that the best trade policy choice would be a variant of the "staple theory" approach to trade and growth, in which the mainstay of the rural economy, in this case the rice market, is protected and transformed gradually, while the balance of the sector is gradually liberalized.

For a large developing economy, trade liberalization adds many risks as well as the high frictional costs of initial adjustment. Uncertainties about likely movements in international prices, the ability of the smallholder peasants to move resources in a more competitive economy, and the ability of the market to communicate trade information efficiently and equitably complicate the issue of liberalizing the trade régime. To this should be added the political risks involved in promoting greater trade openness when heavy investments of political capital have been made in legitimizing the goal of self-sufficiency in basic goods. These economic and political risks are significant for the Indonesian agricultural economy and should be explicitly considered to provide a balanced assessment of the effects of trade liberalization.

Note

¹Indonesian Ministry of Agriculture; except Hedley, Winrock International.

References

- Deptan (Department of Agriculture) (1988) "Supply and Demand Prospects for Indonesian Foodcrops," report prepared for the SFCDP-USAID Project, Jakarta, Indonesia.
- Hedley, D.D., and Tabor, S.R. (1987) "Fertilizer in Indonesian Agriculture: Subsidy Issue," report prepared for the Bureau of Planning, Ministry of Agriculture, Jakarta, Indonesia.
- IIFPRI (International Food Policy Research Institute) and Centre for Agro-Economic Research (1987) "Price and Investment Policies in the Indonesian Food Crop Sector," report submitted to the Asian Development Bank, Washington, D.C., USA.
- Ministry of Agriculture Roundtable (1987) "Report of the Workshop on Indonesian Agricultural Development for Repelita V Preparation," Bureau of Planning, Jakarta, Indonesia.
- World Bank (1987a) *Commodity Prices and Price Projections*, Washington, D.C., USA.

World Bank (1987b) *Indonesia: Agricultural Incentive Policies—Issues and Options*, Vols. I and II, Projects Department, East Asia and Pacific Region, Washington, D.C., USA.

DISCUSSION OPENING—*Don Kanel* (University of Wisconsin)

The paper distinguishes three distinct periods in Indonesia's situation. In the first, before 1976, slow economic growth and scarcity of foreign exchange limited agricultural imports. In the second, high petroleum prices facilitated imports, but also in this period improvements in rice technology, prices above world levels, and input subsidies achieved self-sufficiency in rice and decreased the total cost of food imports. The 1980s are different. Lower petroleum prices and lower prospects for further productivity increases in agriculture mean that nontraditional exports will need to grow and that liberalization of trade policies may be the key to economic growth and the growth of such nontraditional exports.

To analyze the impacts of trade liberalization, the authors present the results of a simulation study. In this study, prices are set at levels that can be expected from trade liberalization, and an econometrically estimated model is used to calculate the consequences of the prices for different rates of growth of GDP, agricultural employment and income, and the value of food imports.

The results are given in only five paragraphs of text. This is too condensed to be clear. Possibly a table could have been used to make the results clearer.

What does the analysis indicate about the growth of nontraditional exports? Does the model indicate growth of exports from any of the seven food crop commodities in the model? Even more important, is liberalization of agricultural trade an important factor in lowering Indonesian costs and improving the competitiveness of the Indonesian exports? The authors conclude that, compared to liberalization of agricultural trade, a better policy would be protection of the rice market and only a gradual transformation of the rest of the agricultural sector. But this conclusion would be stronger if the policy proposed by the authors were to have minimal impacts on Indonesian costs.

The model measures impacts of liberalization on both agricultural income and employment. How is the impact on employment measured? Is it an aggregate estimate or does it distinguish family labour of cultivators from that of agricultural workers?

GENERAL DISCUSSION—*Philippe Burny, Rapporteur* (Faculté des Sciences Agronomiques de l'État, Belgium)

A question was raised whether Indonesia is considered a small or large country in the model. When a country is considered large, it has a nonnegligible influence on world prices. In reply, Dillon said that Indonesia was not considered a large country in the model.

One of the most important points discussed was the effect of trade liberalization on agricultural employment and rural wages. Would the wages rates decrease as well as the output prices? Would people leave the agricultural sector? What about the disparity between rural and urban areas? What would be the impact on nonagricultural investments on exchange rates?

In reply, Hedley said that, in his model, two hypotheses were related to this point: rural wages remain stable or decrease with prices. The impact on employment would be negative though, in Indonesia, if the labour force continues to increase in absolute terms but decreases in relative terms. And the consequence of trade liberalization would be the appearance of different wages and prices in different parts of the country (i.e., regional adjustments would be a problem). He agreed that exchange rates would be changed. He noted that income increases and then the elasticity decreases; other products would reajust.

Another speaker wondered if the problem treated in this paper could be dealt with better. Is it really appropriate to assume trade liberalization and then try to identify its consequences for the Indonesian economy? In fact, the Indonesian government has always proceeded differently: it fixes the desired price. So, would evaluating the consequences after the government fixes a domestic price have been preferable?

In reply, Hedley said that, indeed, that was historically so. But, since the mid-1980s, Indonesia has experienced less economic growth and problems have arisen concerning external debts. So, the government changed its policy and the industrial sector was liberalized to a certain extent. So far the agricultural sector has not been liberalized, but trade liberalization must be considered in the future.

Participants in the discussion included R.R. Barichello, A. Siamwalla, and A. Valdés.