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## **Potential Welfare Effects of Spreading Agricultural Protection to Developing Countries in the Asian-Pacific Region**

### INTRODUCTION

A number of empirical studies have provided cross-sectional evidence in support of the argument that there is a positive relationship between the degree of agricultural protection and economic development (Balassa and Associates, 1971; Bale and Lutz, 1981; Balisacan and Roumasset, 1987; Krueger, 1978; Lutz and Scandizzo, 1980). This pattern also shows up in the recent historical experience of most countries in East Asia (Anderson *et al.*, 1986; Olson, 1985).

The explanation of the relationship between economic development and agricultural protection in many of these studies is based on the changes that theory suggests are likely to occur in the patterns of consumption, production and trade specialisation of an economy as it grows. At the initial stages of economic development, farm incomes are relatively less sensitive to food price policies because of low marketable surpluses. On the other hand, urban consumers have relatively greater interest in maintaining pricing policies which ensure cheap food. This is because food contributes a high proportion of urban consumers' household budget and also because in some labour intensive industries of certain development economies, food is regarded as a 'wage good'. As countries industrialise and their incomes grow, the relative importance of food prices in household budgets of urban consumers declines. Consequently, the political pressure from these consumers for low food prices diminishes with economic growth. As countries continue to grow further and their industrial and service sectors expand, the relative importance of agricultural production and employment declines. In such circumstances, governments in these countries find it politically more costly not to accede to farmers' demands for protection. Such protection is offered on the grounds of social equity and it acts to insulate farmers from pressures for structural change. Furthermore, there is a tendency for rapidly growing countries, particularly densely populated ones, to lose their comparative advantage in agriculture and progressively become net food importers. This gives additional scope for providing protection to farmers and for justifying farm support on the grounds of food security.

According to Bertrand (1987), another justification for agricultural protection in developing countries is to countervail the adverse effects which the agricultural policies of highly protected industrial countries have on them via world markets. There are several distinct strands to this argument. For instance, efficiency losses would result if distorted international agricultural prices are allowed to influence resource allocations and investment decisions in the developing countries. This argument has been influential in import-competing sectors where domestic producer prices can be brought into line with hypothetical 'non-distorted' border prices with revenue generating tariffs, or absorbed into higher procurement costs for the food distribution system. Agricultural protection has also been justified on the grounds that there exist various domestic market failures in developing countries which lead to an inefficient adjustment to developments in world markets (Bertrand, 1987). Another argument for agricultural protectionism in developing countries involves the excessive protection previously given to other sectors of the economy. The rationale here is that by protecting agriculture, the sector can be compensated for the relative disincentives implicit in manufacturing protection, or alternatively, the excessive level of protection to other sectors can be indirectly undermined by improving incentives elsewhere.

In the mid-eighties a number of international agencies began to advocate the elimination or reduction of negative protection arising from agricultural export taxes and overvalued exchange rates in developing countries (ESCAP, 1988; World Bank, 1987). During the same period there was a decline in international food prices of a magnitude unprecedented in peace time and a correspondingly substantial adverse shift in the terms of trade of the majority of farmers in many developing countries (Anderson and Tyers, 1988). This decline in international food prices was largely due to the rapid increase in the world supply of food commodities during the seventies and the early eighties, which resulted from extensive support to agriculture, particularly in major industrial countries. Although there has been a strong recovery in prices of a number of food commodities since 1987, the basic structure of intervention in agriculture in major industrial countries has remained largely unchanged.

Given this background, the purpose of this study is to examine the implications of a hypothetical increase in agricultural protection in the developing countries of the Asian-Pacific region.<sup>1</sup> In particular we examine what the consequences would have been had those countries insulated their farmers against the international price collapse in much the same way as did the countries of Western Europe and North-East Asia. Such behaviour would have further limited the number of countries whose farmers and consumers would bear the burden of adjustment to the price collapse and hence would have enlarged it. Furthermore, the protection would have been funded by consumers and taxpayers in the developing countries or through an enhanced flow of development assistance.

This study focuses on the developing countries in the Asian-Pacific region for two major reasons. In the first place, these countries consist of both net food importers as well as net food exporters. The efficient food exporters such as Thailand and the Philippines are adversely affected by the protectionist food policies and farm support programmes of major industrial countries. The second reason for selecting the developing countries in the Asian-Pacific region is that, in addition to the newly industrialising countries, there are a number of rapidly growing developing economies in this region. Although many of these latter economies have larger per capita land and high comparative advantage in agriculture, theory suggests that as these countries continue to industrialise and grow further, then the agricultural sector's share of gross domestic product (GDP) and employment is more likely to fall because of the low and declining domestic income elasticity of demand for food compared with those for non-agricultural goods and services as incomes rise.<sup>2</sup> Either a strong growth in agricultural productivity and/or provision of large incentives to the farm sector would be required in order to prevent any such decline in agriculture's share of GDP in rapidly growing developing countries (Anderson, 1987).

#### METHODOLOGY

##### *A Model of World Food Markets*

For present purposes, in which interest is focused on estimating the potential welfare effects of distortions in several different food commodity markets, a global multi-commodity model is required. In this study the Tyers-Anderson world food trade model is used. The Tyers-Anderson model is described in detail elsewhere (Anderson and Tyers, 1988; Tyers, 1985; Tyers and Anderson, forthcoming). Only a brief summary of its important characteristics is presented here. It is a dynamic simulation model of world markets for seven commodity groups: rice, wheat, coarse grains, meats of cattle and sheep, meats of pigs and poultry, dairy products and sugar. It is not a general equilibrium model in that markets for

other tradable goods, services, factors of production and non-tradables are excluded. Currency exchange rates therefore enter as exogenous variables. This drawback is offset, however, by a number of useful features:

- (a) It is global in coverage and disaggregated into 30 countries and regions.<sup>3</sup>
- (b) It incorporates the cross-effects in both production and consumption between the interdependent markets for the seven food products included. This includes input-output relationships linking livestock production with derived feedgrain demand.
- (c) It has both a dynamic mode and a static equilibrium mode. In this study the dynamic mode has been used.
- (d) Stock holding behaviour is endogenous, based on an empirical analysis of stock level responses to price and quantity changes in each country.
- (e) Policy is endogenous to the extent that price transmission equations are used to incorporate the two key features of each country's food price policies. These are the protection component, which raises the trend level of domestic food prices above that at the border, and the insulation component, which limits the effects on domestic market prices of disturbances in domestic supply or border prices.

### *Analysis*

The dynamic version of the Tyers-Anderson model is used first to derive a reference scenario for the base period, 1980-82, to 1995, for which it is assumed that each country's policy regime (in particular, the degree to which domestic markets are insulated) will remain unchanged. Included in this simulation are the global shocks in the period 1982-85 due to the changes in real interest and exchange rates, land set-asides in the United States and production fluctuations in the Soviet Union. Thereafter, the exogenous macro-economic variables are based on forecasts by Wharton Econometric Forecasting Associates (1986), and the provisions of the United States Food Security Act of 1985 are approximated based on the work of Johnson *et al.* (1986). This reference scenario, which captures the collapse in food commodity prices through the mid-eighties, is compared with two counter-factual scenarios in which it is assumed that farmers in developing countries of the Asian-Pacific region are insulated from the shift in the international terms of trade. In the first of these, only producer prices are insulated, so that the bulk of the cost of the protection which results or its equivalent in other forms of assistance is borne by taxpayers or aid donors.<sup>4</sup> The assistance to producers is thus assumed to correspond with the maintenance of real farm prices at the levels prevailing in the base period (1980-82) through 1995. In the second counter-factual scenario, both producer and consumer prices are insulated (held constant at their 1980-82 levels). In this case, a substantial part of the cost of protection is borne by domestic consumers in these developing countries.

#### WELFARE EFFECTS IN DEVELOPING COUNTRIES

The effects of insulating food markets in developing countries in the Asian-Pacific region on domestic producer and consumer welfare through 1988 to 1995 are summarised in Table I. It is clear from this table that when domestic producers in the developing countries of the region are insulated from changes in international food prices, they benefit substantially over time. This is because with insulation, the producer prices are maintained well above

the international prices. The cost of this protection is borne principally by taxpayers and aid donors. Benefits also accrue to domestic consumers since they face domestic consumer prices which are in line with international food prices, under the first alternative scenario.

TABLE I. PRODUCER AND CONSUMER WELFARE EFFECTS OF INSULATING FOOD MARKETS IN ASIAN-PACIFIC DEVELOPING COUNTRIES, 1988-91 AND 1992-95  
(1985 US \$ billion per four-year period)

Countries	With insulation of producers				With insulation of producers and consumers			
	Changes in producer welfare		Changes in consumer welfare		Changes in producer welfare		Changes in consumer welfare	
	1988-91 (2)	1992-95 (3)	1988-91 (4)	1992-95 (5)	1988-91 (6)	1992-95 (7)	1988-91 (8)	1992-95 (9)
(1)								
China	48.0	24.0	8.0	12.0	46.0	22.8	-12.0	-20.0
Indonesia	8.0	10.8	2.0	2.8	7.6	10.4	-3.2	-4.8
Philippines	2.0	2.4	0.4	0.4	1.6	2.4	-1.2	-1.6
Thailand	6.0	6.4	1.2	1.6	5.6	6.4	-2.8	-3.2
Bangladesh	15.2	17.6	2.0	2.0	15.2	17.6	-8.0	-9.2
India	72.0	92.0	10.4	12.8	73.2	92.8	-71.2	-90.8
Pakistan	2.8	4.4	0.4	0.4	2.8	4.4	-2.4	-4.0
Pacific Islands	0.8	0.8	0.1	0.4	0.8	0.8	-0.4	-0.8
Other developing	27.2	35.2	4.8	5.2	28.0	36.0	-20.4	-26.4
All Asian-Pacific developing	182.0	193.6	29.3	37.6	180.8	193.6	-121.6	-160.8

Where both domestic producers and consumers are insulated in the developing Asian-Pacific region, the domestic producer welfare effects are similar to what has been observed in the situation where only domestic producers are insulated. However, under this second alternative scenario, domestic consumers experience welfare losses over time because they are insulated from changes in international food prices. The welfare gains to producers under this scenario accrue at the expense of domestic taxpayers-cum-consumers and aid donors.

The costs to be borne by the government (and therefore taxpayers) in insulating domestic producers in developing countries of the Asian-Pacific region from international market forces, are substantial and would rise over time (see Table II). Furthermore, a considerable proportion of total government revenue in these countries would be required to meet these costs of insulating domestic food producers. These costs average to about a quarter of current government revenue in all the countries listed, with the cost in some poorer countries being substantially high. In India, for example, the cost would exceed half the current government budget, while in Bangladesh it would be many times the current budget. Even if these costs were to be covered through development assistance, the amount of funding involved would require an unprecedented flow of assistance to these countries. For example, the total official development assistance to developing countries in the Asian-Pacific region is about US \$10 billion at present. The additional budgetary burden of producer assistance in these countries would be significantly greater than this current level of development assistance. On the other hand, costs to be borne by the government in insulating both domestic producers and consumers are relatively low. This is because consumers would bear part of these costs. Nevertheless, the proportion of total government revenue required to insulate both producers and consumers in developing countries of the region cannot be regarded as negligible, as can be seen from Table II.

TABLE II. GOVERNMENT REVENUE EFFECTS OF INSULATING FOOD MARKETS IN  
ASIAN-PACIFIC DEVELOPING COUNTRIES, 1988-91 AND 1992-95  
(1985 US \$ billion per four-year period)

Countries	With insulation of producers				With insulation of producers and consumers			
	Change in government revenue		As a per cent of total government revenue		Change in government revenue		As a per cent of total government revenue	
	1988-91	1992-95	1988-91	1992-95	1988-91	1992-95	1988-91	1992-95
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
China	-56.0	-38.0	19	11	-36.0	-7.2	13	2
Indonesia	-10.0	-14.0	15	18	-7.6	-11.2	11	14
Philippines	-2.4	-3.2	12	16	-0.8	-2.4	4	12
Thailand	-8.8	-10.4	28	24	-8.8	-10.0	27	22
Bangladesh	-18.8	-23.2	470	580	-11.2	-13.2	280	330
India	-84.0	-112.0	57	62	-21.6	-28.4	15	16
Pakistan	-3.6	-4.8	23	24	-1.2	-0.4	7	2
Pacific Islands	-0.8	-0.8	18	20	-0.1	-0.4	0	10
Other developing	-33.2	-41.2	27	28	-7.2	-11.2	6	8
All Asian-Pacific developing	-217.6	-247.6	27	25	-94.5	-84.4	10	7

The economic welfare (defined as the sum of producer and consumer welfare, and government revenue) effects of insulating food markets in the developing Asian-Pacific region from international supply and demand forces are presented in Table III. It is apparent from this table that the welfare loss in these countries is larger where both producers and consumers are insulated than where only the producers are insulated. However, these welfare estimates do not take into account the cost of raising government revenue (through taxes) in order to insulate domestic food markets. According to Browning (1987), the marginal welfare cost of raising tax revenue could vary between about 30 per cent and 50 per cent, depending on the assumption made regarding the extent to which taxpayers benefit from marginal government spending. Therefore, if the cost of raising government revenue (through taxes) to insulate food markets in developing countries of the Asian-Pacific region is taken into account, the loss in economic welfare is likely to be substantially larger than that reported in Table III.

TABLE III. ECONOMIC WELFARE EFFECTS OF INSULATING FOOD MARKETS IN  
ASIAN-PACIFIC DEVELOPING COUNTRIES, 1988-91 AND 1992-95  
(1985 US \$ billion per four-year period)

Countries	With insulation of producers		With insulation of producers and consumers	
	Change in economic welfare		Change in economic welfare	
	1988-91	1992-95	1988-91	1992-95
(1)	(2)	(3)	(4)	(5)
China	-1.6	-1.2	-2.4	-3.6
Indonesia	-0.4	-0.8	-3.6	-6.0
Philippines	-0.2	-0.3	-0.4	-1.6
Thailand	-1.6	-2.0	-6.0	-7.2
Bangladesh	-2.8	-3.6	-3.6	-4.8
India	-2.0	-3.6	-20.8	-27.2
Pakistan	-0.3	-0.4	-0.4	-0.5
Pacific Islands	-0.2	-0.3	-0.3	-0.3
Other developing	-0.4	-0.5	-0.8	-2.4
All Asian-Pacific developing	-9.5	-12.7	-38.3	-53.6

It is important to recognise that the welfare analysis undertaken here applies only to the agricultural sector. As a result, the potential welfare effects arising from changes to non-agricultural sectors in developing countries that take place with economic development are not taken into account in this study. Therefore, the welfare effects reported here should be interpreted as potential welfare losses that could accrue to developing countries if they only increase agricultural protection.

#### CONCLUDING REMARKS

The main objectives of agricultural protection policies in many countries are to ensure food security and to maintain farm incomes on a par with urban incomes. Another justification for agricultural protection, particularly in developing countries, which has been discussed in recent literature, is to countervail the distortionary effects of agricultural policies in industrial market economies. However, as evidenced from the results of this study, developing countries cannot countervail the adverse effects (such as falling prices) of farm policies in industrial market economies, by insulating their own food markets. Instead, the likely effect of such insulation is a reduction in welfare in developing countries. Also, the costs to be borne by national governments (and hence taxpayers) in developing countries (such as those in the Asian-Pacific region), should they decide to embark on agricultural protectionism, are substantial and are likely to rise over time. Furthermore, it is politically extremely difficult to reverse a protectionist policy once it has been introduced (Anderson and Hayami, 1986).

It is common for many low income economies to tax agriculture relative to manufacturing, for high income (especially food-deficit) economies to subsidise agriculture relative to manufacturing, and for growing economies to gradually change from the former to the latter as they industrialise (Anderson, 1987). This change is expected to take place at an earlier stage of economic growth, the weaker the country's comparative advantage in agriculture. Furthermore, such a change is likely to occur more rapidly, the faster an economy's growth rate and the faster its decline in agricultural comparative advantage (Anderson *et al.*, 1986). If developing countries change from taxing to subsidising agriculture as their economies grow, such changes are likely to bring about potential welfare losses.

Therefore, a more viable strategy for developing countries would be to actively take part in the current General Agreement on Tariffs and Trade (GATT) round of multilateral trade negotiations by providing support for a more open international agricultural trading system.

In rapidly growing developing countries, where domestic agricultural protection is likely to rise in the years to come, an open trading environment in which there are no barriers placed on the importation of agricultural products, may well be the most efficient means of ensuring secure food supplies (Siamwalla and Valdes, 1980). As regards the equity objective of ensuring that farm incomes keep pace with urban incomes, an important contribution could come from the provision of adjustment assistance to farm families; for example, increased investment in formal education and job retraining in rural areas (Schultz, 1961). This is because the cost of protection is likely to be much larger when compared with the cost of alternative methods of achieving rural-urban income parity and food security as shown by Anderson and Hayami (1986) particularly with regard to the developing countries in the Asian-Pacific region.

Given the positive relationship between economic growth and agricultural protectionism, the efficient food-exporting countries need to continually monitor changes in comparative advantage in those developing economies with above-average growth so that, should agricultural protectionist pressures begin to emerge, efforts can be made to provide



counter-arguments to protection. One way to limit or prevent the spread of agricultural protection to rapidly growing developing countries is to promulgate information on both the high costs of protection and the availability of less costly alternative methods of achieving the desired objectives. Given the ratchet nature of protectionism, there is far more likelihood of success in preventing the establishment of a protectionist policy regime than there is in reducing protection once it becomes entrenched (Anderson and Tyers, 1986).

H. Don B.H. Gunasekera and Rodney Tyers\*

#### NOTES

1. Developing countries in the Asian-Pacific region are defined in this study as all countries in the ESCAP region except the newly industrialising countries of Singapore, Hong Kong, Korea and Taiwan, and Australia, Japan and New Zealand. See ESCAP (1988) for a detailed list of the countries.

2. According to David (1986), a decline in agriculture's comparative advantage in countries such as Thailand, Malaysia, the Philippines and Indonesia could be expected to occur later than in East Asia due to characteristics in the former countries, such as high per capita land endowments, large shares of perennial crops (which have a more elastic longer term demand than annual food crops) in total agriculture and relatively low levels and growth rates of per capita income (when compared to that of East Asian countries).

3. These include Australia, New Zealand, Canada, U.S.A., European Community of ten countries, Spain and Portugal, European Free Trade Area of five countries, U.S.S.R., Japan, Korea, Taiwan, China, Indonesia, the Philippines, Thailand, Bangladesh, India, Pakistan, Argentina, Brazil, Mexico, Cuba, Egypt, Nigeria, Sub-Saharan African countries, Southern African countries, Other Eastern European countries, Other Asian countries, Other Latin American countries, and Other North African and Middle Eastern countries.

4. It is assumed here that, if the government in these developing countries cannot raise the required revenue needed to finance the cost of protection, funds may have to come from aid donors.

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\*International Economic Analysis Section, Australian Bureau of Agricultural and Resource Economics, Canberra and University of Adelaide, Adelaide, Australia, respectively.

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