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*Exchange Rates and Trade Policy: Help or Hindrance to Agricultural Growth?**

INTRODUCTION

In attempting to diagnose the causes of the current 'troubles' in agriculture, symptoms of which are excess capacity in developed countries and the disappointing performance of agriculture in many less developed countries (LDCs), trade and exchange rate policies are receiving increasing attention. Intervention in agricultural markets is widespread and is practised in rich and poor countries alike. To guide such intervention, incentive policies are a matter of concern for policy-makers and economists because economic incentives are perceived to be a basic determinant of production performance. Various types of policy interventions are used to modify the structure of economic incentives for agriculture. Many of these policies are directed at agriculture alone and include government expenditures (on roads, irrigation schemes, storage, agricultural research and extension systems, and so forth) – that is, the 'shifters' of supply – and explicit price policies (price controls and subsidies on inputs and outputs).

But there is, however, another set of policies directed at the macroeconomic management of the economy (e.g., on nominal exchange rates, interest rates, wages, international capital flows, fiscal and trade policy) which are of the utmost importance to agriculture. The consequences of these policies can reinforce or neutralise the policies directed solely at agriculture. This paper presents a simplified version of a framework to estimate the combined effect of trade and exchange rate policies on the structure of relative prices for agriculture. This framework is then applied to several LDCs. Emphasis is put on defining and measuring the 'implicit' protection or taxation of agriculture, in a long-term perspective, which results from the linkages between it and the rest of the economy. In many LDCs it is argued that import-substition-based industrial growth pursued through tariffs and other import restrictions can be presumed to have a strong bias against agriculture, and

*The analysis for this paper was done during 1984 while the author was a visiting research fellow at the United Nations Economic Commission for Latin America in Santiago, Chile.

results in a structure of incentives that could have deleterious effects on production and as such on long-term growth of agriculture.

The real exchange rate, defined as the ratio of the price of tradables to non-tradables, is portrayed as playing a central role in the profitability of tradables in agriculture – import-competing (such as cereals) and exportables; and it is through the real exchange rate that the macroeconomic management of the economy affects agriculture.[1]

It is a well accepted argument in theory that a tariff on imports also taxes the production of exports, and that a subsidy for exports also subsidizes the production of import-competing activities. A policy that protects industry directly raises the cost of importable inputs such as fertilizers, machinery and other materials used by farmers. More importantly and indirectly, through its effects on the real exchange rate, such a policy affects the relative profitability of other tradables. The exchange rate that maintains a balance in the external account at a 'higher' rate of protection to industry is below the rate at lower rates of protection. The result is that the domestic prices of tradable goods from agriculture are lower relative to the prices of protected tradable goods from industry and of non-tradable goods. This drives up the prices of labour and other inputs to agriculture relative to the output prices, reducing the profitability of producing tradables in agriculture. It is postulated that most products in agriculture are tradables, and thus the main force behind real exchange rates will be intersectoral resource flows, essentially labour and savings, toward the non-traded (in and outside of agriculture) and import-competing activities outside agriculture. The real exchange rate can also be influenced by exogenous factors, such as a drastic shift in external terms of trade and oil or mineral discoveries (so-called 'Dutch disease'), and by policies affecting capital movements (including foreign aid). If they appreciate the real exchange rate, these phenomena reduce the profitability of farming on tradable products.[2]

It is hypothesised that one of the most dramatic manifestations of the combined effects of a Dutch disease phenomenon and the implicit and presumed strong bias against agriculture resulting from the trade and exchange rate policies in LDCs in the 1950s throughout the 1970s, is the massive flow of labour out of agriculture during this period. This suggests that the severe production constraints emanating from rural labour shortages, for example in sub-Saharan Africa, may not be independent of real exchange rate phenomena. But labour also flowed out of agriculture in developed countries, even in those that protected agriculture. What we suggest is that the rate of out-migration in LDCs was higher than it would otherwise have been, other things being equal. It is an empirical question which could be tested.

THE APPROACH AND BROAD CHARACTERISTICS OF THE MODEL

The analysis of the incidence of trade regime and exchange rate policy presented here for a 'small' open economy is based on a simple three-sector

model, with the three sectors being importables, exportables and home goods. General equilibrium is implied by equilibrium in the home goods market and assumed equilibrium in the balance of payments (BOP) and in the monetary sector. Such an approach helps identify which sector loses and which sector gains. It also suggests that the effects of trade and exchange rate policies on resource allocation and income distribution could be quite different from what the policy-makers intended, as suggested, for example, by a profile of nominal rates of protection.

Theoretical and methodological advances in recent years have elucidated the nature of some of the relationships involved. These include the work of Dornbusch (1974) and Sjaastad (1980). Empirical research on foreign trade regimes in LDC economies has generally emphasised the consequences on domestic industry (Little *et al.* 1970; Balassa 1971; Krueger 1978; and Bhagwati 1978), but little has been done on agriculture.[3] However, industrial policies, it is hypothesised here, often have unintended economy-wide repercussions which are particularly strong in agriculture.

A simple framework that examines the effects on relative prices quantitatively, and was initially suggested by Sjaasted (1980) for three sectors, was extended and applied to examine the effects on agriculture in several LDCs. A sketch of the reduced form follows.

The excess demand for importables (Me), excess supply of exportables (Xe), and excess demand for home goods (He) are assumed to depend only on relative prices (Pm/Ph, Px/Ph) and real income, where Pm, Px, and Ph represent the domestic prices of importables, exportables, and home goods. The domestic relative prices can be expressed as a function of world prices (Pm* and PX*), the nominal exchange rate (E), tariffs (t), and export subsidies (s). Then:

$$Pm/Ph = (E/Ph)\, Pm^* (1 + t), \tag{1}$$

$$Px/Ph = (E/Ph)\, Px^* (1 + s), \text{ and} \tag{2}$$

$$Pm/Px = Pm^*/Px^* (1 + t)/(1 + s), \tag{3}$$

where E/Ph represents the real exchange rate. In the short run, of course, the existence of large domestic stocks could alter this relationship, such as in (1) after a devaluation. Equation (3) shows that the domestic relative prices of importables (in terms of exportables) are functions of trade policy, that is, tariffs and subsidies (t and s, respectively), and of world prices. Tariffs (subsidies) in the model include tariff (subsidy) equivalent of quantitative restrictions applied at the border.

As policy-makers attempt to affect resource allocation by imposing a protective tariff on importables that compete with domestically produced goods, the relative price of home goods will rise relative to exportables (the real exchange rate will fall) and the unprotected tradables (including exportables) will be taxed. As a sector sheltered from trade, the home

goods market adjusts, as required, to maintain general equilibrium, absorbing and spilling resources to the traded sectors as relative prices change.

Assuming that expenditure equals income and BOP equilibrium, equilibrium in the home goods sector implies that $H^d = H^s$, where the demand (H^d) and supply (H^s) of home goods is given by

$$H^d = H^d(Pm/Ph, Px/Ph, I), \text{ and} \tag{4}$$

$$H^s = H^s(Pm/Ph, Px/Ph, K, L, T) \tag{5}$$

where K, L, and T represent the productive capacity of the economy, determined by existing capital (K), labour (L), and technology (T). After displacement from equilibrium, and holding I, K, L, and T constant, a new equilibrium is reached where

$$\hat{H}^d = \hat{H}^s = (\eta m - \varepsilon m)\, \hat{Pm/Ph} + (\eta x - \varepsilon x)\, \hat{Px/Ph} = 0, \tag{6}$$

where $\hat{}$ represents a percentage change and ηm and ηx represent the demand elasticities for home goods with respect to price of importables and exportables, respectively, and εm and εx are the corresponding supply elasticities.

Given world prices, the incidence of a change in trade barriers on exportables is given by

$$\hat{P}h - \hat{P}x = \omega(\hat{P}m - \hat{P}x), \tag{7}$$

where $\omega = \eta m - \varepsilon m/(\eta m - \varepsilon m) + (\eta x - \varepsilon x)$, with $0 \leqslant \omega \leqslant 1$, represents the incidence parameter, which consists essentially of substitution relationships. Let d represent the change in the price of home goods, then, as shown by Sjaastad,

$$d = \omega t + (1 - \omega)s. \tag{8}$$

The nominal distortion introduced by trade policy consists of $(t - s)$, where $(t - s) = (t - d) + (d - s)$, where $(d - s)$ represents the proportion of the 'distortion' shifted in the form of an implicit tax on producers of exportables. Government policy determines the size of $(t - d)$ but cannot determine how this is allocated between import-competing activities and exports.

After some algebraic manipulations and assuming constant ω, after integration, the basic equation for the estimation of ω becomes

$$\ln(Ph/Px) = a + \omega \ln(Pm/Px), \tag{9}$$

which is estimated using ordinary least squares.

Garcia for Colombia (1981) and Bautista for the Philippines (1984), in order to capture the effect on agricultural exports, disaggregated equation (9) to

$$\ln Ph/Pxa = a + \omega_1 \ln Pm/Pxa + \omega_2 \ln Pxna/Pxa \quad (10)$$

where a represents agricultural and na represents non-agricultural products. To distinguish between agricultural importables (Pma essentially food) and other importables, in his work on Peru, Valdés also disaggregated importables, into

$$\ln Ph/Pma = a + \omega_1 \ln Pmna/Pma + \omega_2 \ln Px/Pma \quad (11)$$

Expressing $\hat{P}h$ as a weighted average of $\hat{P}m$ and $\hat{P}x$, after some transformations, the real exchange rate (E/Ph) is shown to relate directly to world prices and trade policy (t and s):

$$E/Ph = [(Pm^* (1 + t))^{\omega} \cdot (Px^* (1 + s))^{1-\omega}]^{-1} \quad (12)$$

A fall in the real rate (E/Ph) implies that prices of tradables fall relative to those of home goods, therefore diverting some resources from tradable to home goods (in and outside of agriculture), on the reasonable assumption that intersectoral resource flows are sensitive to changes in relative price. Under industrialisation policies (that is, an increase in t), Pm rises and, in turn, raises Ph, depending on the value of ω. If importable and home goods are close substitutes (in consumption or production), higher tariffs will not influence Pm/Ph much but they will lower Px/Ph and Px/Pm. That is, part of t becomes a tax on exportables. This implicit export tax argument applies as well to other importables, like food, when they are given less protection than industrial products.

SOME EVIDENCE

The incidence of the protection parameter (ω) aggregates the net effects of a country's trade restrictions to show how the burden of the changes in relative price is shared by the sectors. The value of ω reflects the proportional change in the price of home goods relative to exportables as a function of the proportional change in the price of importables relative to exportables. Three-sector studies for the 1960s and 1970s by Sjaastad and by IFPRI staff give the following figures for ω:

Argentina (Sjaastad)	0.4 to 0.5
Chile (Sjaastad)	0.5 to 0.6
Colombia (Garcia)	about 0.9
Nigeria (Oyejide)	0.6 to 0.9

Peru (Valdés)	about 0.7
Philippines (Bautista)	about 0.8
Zaire (Tshibaka)	about 0.8

The results suggest a high degree of substitution between home goods and importables. A clear implication from these results is that at least one-half of the burden of protection is borne by exportables. Since the exports of many LDCs are predominantly agricultural, an import-substitution strategy taxes agriculture substantially more than a comparison of the nominal rates of protection would suggest. For example, the values of ω for Chile and Argentina indicate that a uniform tariff on imports of 20 per cent – which is not high by LDC standards – represents an implicit tax on exports of approximately 10 per cent. If exports are taxed directly, say at a rate of 15 per cent (as beef exports in Argentina were in the past), the total tax rate on exports is 15.6 per cent. Similarly, only part of the tariff is a tax on consumers of importables and protection to producers of import-competing goods. The rest is an implicit tax on producers of exportables (and of import-competing activities with lower protection, such as food) and an implicit subsidy to consumers of exportables and of those importables (like food). The implications of these results for economic policy are strong.

It is necessary to recall, however, that the discussion above is based on comparative statics, assuming that total production capacity, total expenditures and technology remain constant and that there is no surplus in the current account. Several tests were performed by the authors to establish whether the exclusion of these variables could affect the estimated value for ω. In all cases the results showed that the value of ω was highly stable for the sub-periods, indicating the robustness across different specifications.

In an effort to disaggregate the analysis further and capture the same type of incidence parameter for subsectors of agriculture (m_a and x_a), the same approach used here was applied to Peru for the period 1940–83 (see Table 1).

The results in Table 1 indicate that, using 1966–83 data, if the uniform tariff on non-agricultural importables is raised by 10 per cent and tariffs on agricultural goods did not change, an implicit tax of 5.6 per cent (with respect to home goods) is imposed on import-competing agricultural activities (such as rice) and an implicit tax of 6.6 per cent is imposed on exportable agricultural goods (such as cotton and sugar). When prices are compared to the prices of non-agricultural importables, the implicit tax on both types of agricultural goods is 10 per cent. In contrast, similar calculations made with respect to an increase in protection of agricultural importables (Pma) resulted in a much lower incidence on the price of home goods. That is, during the same period in Peru, changes in the prices of non-agricultural importables had a much greater effect on the prices of home goods than changes in the prices of agricultural importables. This was unexpected, given that food items dominate the

TABLE 1 *Implicit tax on agriculture resulting from a 10 per cent increase in protection[a] to non-agricultural imports, Peru, 1949–1983*

	With respect to the price of	
Agricultural	Home goods	Non-agricultural Import-competing
Importables[b]		
1940–63	3.8	10.0 If Δt applies
1966–83	4.6	10.0 to Mna
Exportables[c]		
1940–63	6.4	10.0 If Δt applies
1966–83	6.1	10.0 to all imports (Mna and Ma)

Notes: [a] Increase in the uniform tariff equivalent.
[b] Includes cereals, oil crops, beef and dairy.
[c] Includes sugar, cotton and coffee.
Source: Alberto Valdés (1985).

last item. Similar computations for agricultural exportables indicate that an increase of 10 per cent in the price of agricultural exportables raises the value of home goods by 2.6 per cent, compared to 0.6 per cent resulting from a rise in the price of non-agricultural exportables. This was to be expected, as the former are partly consumed in the domestic market while the latter are practically all exported.

As part of an industrialisation strategy through protection, the real exchange rate falls consistently through time. That is, the higher average tariff implies a fall in the equilibrium real exchange rate. The evidence for Peru is consistent with this presumption. In fact, the evolution of the uniform tariff equivalent (Table 2) suggests that during the 1960s and 1970s, the Peruvian economy became more closed, with increases in restrictions on trade. The real exchange rate underwent a major and persistent decline after the 1960s, reducing the profitability of producing tradables *vis-à-vis* non-tradables. Preliminary evidence suggests that this decline began in the mid 1960s.

Such declines in the long-run real exchange rate have been particularly harmful for the production of agricultural tradables in LDCs, slowing their production and speeding up increases in the domestic consumption of tradables (imported cereals and exportables), reducing the contribution of agriculture to growth and to the balance of payments, and making LDCs more dependent on imported food. It is important to recognise, however, that a falling real exchange rate is not necessarily a sign for a devaluation. The external accounts of a country could be in equilibrium at a low real exchange rate, because of restrictions on imports or larger inflows of capital, including foreign assistance. A result would be that agriculture, together with exportables in general, would be taxed implicitly. This penalty on agriculture is inherent and lasts as long as

TABLE 2 *Evolution of the level of protection and of the real exchange rate in Peru, 1949–1983*

Uniform tariff equivalent[a] (percent)		*Real exchange rate (E/Ph)*			
1949–53	5.3	1966	100.0	1975	70.8
1954–58	29.9	1967	96.6	1976	57.1
1959–63	71.2	1968	122.7	1977	66.3
1964–68	133.0	1969	118.6	1978	86.1
1969–73	256.0	1970	109.7	1979	80.7
1974–78	181.7	1971	102.0	1980	65.3
1979–82	91.3	1972	96.2	1981	55.8
		1973	89.6	1982	47.4
		1974	78.9	1983	52.4

Note: [a] Uniform tariff equivalent represents the hypothetical value of tariffs and subsidies which, in replacing the prevailing structure of trade barriers, would result in the same volume (but not composition) of trade, without adjustments in the nominal exchange rate nor in the price of home goods. Calculations based on methodology suggested by Sjaastad (1981).
Source: Alberto Valdés (1985).

industry is highly protected. It cannot be eliminated by better management in other areas of economic policy.[4]

In an analysis of the effect of the foreign trade regime on Philippine agriculture between 1950 and 1980, Bautista found that it discriminated heavily against agricultural exports and favoured import-competing products. This was true not only during the 1950s, when import and foreign exchange controls were imposed, but also, rather surprisingly, during the 1970s when the official stated policy was to promote exports. The combined effect of exchange rate policy and industrial protection substantially reduced the incentive to produce agricultural exportables, relative to producing either home goods (including services) or, most strongly, import-competing industrial goods (Bautista 1984).

Garcia observed that in Colombia a uniform tariff of 30 per cent on all imports constituted a tax equivalent of 27 per cent on all exports, which implied that exports with high supply elasticities would be unable to compete in international markets. In the 1970s, sugar, coffee, barley and rice showed negative nominal rates of protection. The estimated 20 per cent overvaluation of the peso in the 1970s was in effect another tax that should be added to the tax on exports. Colombia recently broadened the coverage of its export subsidy scheme (previously restricted to manufactured goods) to include some agricultural products. This offset at least partially this implicit taxation of agricultural exportables. Garcia concludes that during the 1960s and 1970s, the implicit overvaluation of the peso resulting from the combined effect of exchange rate and trade policy in Colombia more than offset the nominal protection given to import-competing agricultural products, such as corn. But this was not true with milk, vegetable oils and wheat, the nominal protection of which

has consistently been above the measured rate of overvaluation of the peso (Garcia 1981).

CONCLUDING COMMENTS

The effects of policies directed at the macroeconomic management of the economy on agriculture can more than offset the sector-specific policies, in terms of its incidence through effects on the relative price signals guiding producers and consumers. This can be particularly influential for agricultural tradables. Observations from several South American countries and the Philippines show that agricultural tradables are usually discouraged across-the-board, whether they are import-competing commodities or exportables. This penalty on agriculture is inherent and lasts as long as industry is highly protected, but could apply as well following a heavy influx of capital.

It is postulated that in LDCs most products in agriculture are tradables. But home goods are important as sources of traditional food products, particularly in sub-Saharan Africa. The analysis and empirical evidence submitted in this paper indicates that producers of home goods can benefit indirectly from industrial and exchange rate policies, if the prices of home goods increase relative to tradables. However, the possibility that 'home good' foods (such as pulses, root crops, etc.), and tradable foods (such as cereals, oilseeds, milk, etc.) can be close substitutes in consumption puts a ceiling on the market prices of the home goods. This ceiling is determined by the effects of the foreign trade and exchange rate policies on the prices of the tradables. Furthermore, it is likely that foreign trade regimes in LDCs contributed considerably to their growing dependence on imported food, by taxing production and implicitly subsidizing consumption of tradables.

The disappointment shown in much of the current literature with the performance of agriculture in LDCs is centred on the production of tradables. It is usually associated with poor export performance and the growing foreign exchange requirements of food imports. This is particularly true of sub-Saharan Africa. However, the risk of a trade-oriented policy for agriculture is often cited as grounds for rejecting it (Valdés and Siamwalla 1984). This is essentially the risk as perceived by governments, with their own concerns about world price-related risks, fluctuations of government revenues and food security. As a result of these concerns, some governments have followed a variety of risk reduction policies. A warning is needed in an environment in which the production of agricultural tradables has been taxed rather heavily in many LDCs, usually implicitly and unintentionally. Policies to explicitly 'close' the economy more could dampen the very subsector with the highest potential growth.

NOTES

I am especially grateful to Romeo Bautista, F. Javier Leon, and Maurice Schiff for their helpful comments.

[1]Home goods (or non-traded goods) are those goods where internal prices are not directly deduced from world prices plus the tariffs. These include services and in agriculture, in addition to perishables, could include many traditional food crops in tropical areas such as cassava, yams, potatoes and some types of beans, where transport costs and preference for local varieties are a real barrier to trade.

[2]These issues were developed further in Valdés and Siamwalla (1984).

[3]A remarkable exception is Cavallo and Mundlak (1982).

[4]There is more than one concept of the equilibrium exchange rate. What people usually have in mind when they describe rates as 'overvalued' or 'undervalued' corresponds to a rate that would clear the market in the absence of official intervention, given the country's average level of protection. In contrast, the equilibrium real rate of exchange referred to here relates to the exchange rate effect of trade policies. In another context, however, one could speak also of the protectionist impact of an overvalued currency, such as in the United States in early 1985, that is, when prolonged deviations of exchange rates from equilibrium can generate protectionist pressures.

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DISCUSSION OPENING – GERRIT MEESTER

The two papers we are discussing now deal with the impact of factors from outside the agro-food sector on price formation and supply and demand in this sector. In particular, the methodological aspects of the papers are of course of interest in this session on 'Theoretical development of

market and price analysis'. However, I will also give some comments about the relevance of the analyses for agricultural policy.

The Mundlak paper, which is rather technical, aims at analysing 'the determinants of the agricultural and non-agricultural inputs of food'. A central issue in the paper is the separation of food supply and demand, and of food prices into what Mundlak calls an agricultural component and a non-agricultural component. The hypothesis then is that the income elasticity of demand of the non-agricultural component is larger than that of the agricultural component. This means that economic growth generally will increase the volume as well as the price of the non-agricultural component relative to the agricultural component in food. This in its turn leads to a situation where, in general, demand for food increases more rapidly under economic growth than demand for agricultural products.

It seems to me that the proposed separation of food into two components is a rather interesting way of analysing the impacts of growth on the sector. The only question I have is about the hypothesis that the price of the non-agricultural component in food is in all circumstances equal to that of the non-food sector. This seems both from an empirical as well as a theoretical point of view rather unrealistic. It seems empirically unrealistic, for instance, for the EC, where one can conclude – from a simple interpretation of changes in recent years in prices of agricultural products, food and non-food prices – that prices of the non-agricultural component in food must have been different from those in the non-food sector. Moreover, the hypothesis seems theoretically unrealistic because the price formation as well as the rate and kind of technological change and the capital–labour ratio need not be equal in the food sector and in other economic sectors. Would not it be better therefore to distinguish separate prices for the non-agricultural component in food and the non-food sector?

The Valdés paper deals with another impact of economic growth on the agro-food sector, namely the consequences for agricultural prices and output of a tariff or similar protective measures in other economic sectors. The paper contains a very interesting and for policy-makers important analysis of the relevance of interdependencies between economic sectors. In general, I fully agree with the paper and have only some minor questions.

The first question concerns the level of the measured protection parameters for various countries. These levels seem rather high. One reason could be the open character of the economies of the countries that have been analysed. But is there not also another reason, namely the dual economy situation in some of these countries? Such a situation could mean that the market economy part of the home good sector is rather small and hence the impact of international trade on that sector rather large. The same occurs, as Dr Valdés mentions in his paper, for parts of the agricultural sector.

My second question is how far the unexpected relatively small effects of price changes of agricultural importables (in relation to price changes of non-agricultural importables) on the price of home goods in Peru,

mentioned in the third part of the paper, can be explained from the different kinds of imported goods. Changes in import prices of special consumer products for rich people, like condensed milk, cheese and wine, will probably have a much smaller effect on the price for home goods than changes in import prices of, for instance, transport means and other investment goods for the domestic processing, trade and retail sector. My question is: have there been any additional analyses in these respects?

My third question concerns the estimated equation (9). I presume that there is a time lag between the price change of imported goods and of home goods. What time lag is used in this estimation?

My fourth question, and maybe an item in the discussion on the food problem in some of the developing countries concerns the relative importance of the phenomenon discussed in the paper as an explanatory variable for this problem in comparison to other explanatory variables.

These are my questions on the paper presented by Dr Valdés and I repeat my already mentioned view about the importance for economic policy-making of the phenomenon that has been discussed in the paper. That is the case for import tariffs as well as for other exogenous factors, of which Dr Valdés mentions in his paper the effects of an oil or mineral boom, policies affecting capital movements and food aid. Many other examples can be added. One of these is the system of so-called monetary compensatory amounts in the Common Agricultural Policy of the EC. These MCAs compensate in the short run the effects for agriculture of an exchange rate change between EC member countries, but create in the longer run a relatively favourable position for the agricultural sector in countries with an appreciated currency, and a relatively unfavourable position for the sector in countries with a depreciated currency. The causal relationships for these changes in the relative position of agriculture are similar to those described in the paper. The MCA phenomenon explains partly why the West-German, Dutch and recently British self-sufficiency ratios for agricultural products increased more than those of France and Italy. It partly explains, too, why the so-called 'Dutch disease' did not affect the agriculture in the country where this disease was diagnosed for the first time after the natural gas boom at the beginning of the 1970s, nor in the UK agricultural sector after the North Sea oil boom at the end of that decade.

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GENERAL DISCUSSION – RAPPORTEUR: EWA RABINOWICZ

The discussion of the Mundlak paper centred on the assumptions made in the paper (in particular income elasticity of q and identity between p_Q

and p_N), and on additional factors which could be included in the analysis. The factors which were mentioned were: market conditions, share of women in labour force, age of housewife, new kitchen equipment, structural movements (drop of auto-consumption on farms) etc.

It was claimed that prices of agricultural products on the world market are determined by developed countries and that prices for developing countries are deteriorating. Furthermore the issue was raised about the substitution within agriculture (from grains to meat) as a result of increasing incomes. Such a substitution did not necessarily increase the service input.

In reply, Dr Mundlak stated that some assumptions were made for convenience and nothing in the results depended crucially on the assumptions. The price of service of food was equal to the price of non-food for the sake of simplicity. The assumption of income elasticity of q was of an empirical nature and could be replaced if other evidence were available. On the issue of additional factors, he agreed that the empirical analysis could be further elaborated by introducing demographical attributes such as age distribution or share of women in labour force, and market conditions. This would make the analysis more realistic without changing it qualitatively. On the issue of optimal strategy for developing countries with deteriorating terms of trade for agriculture, Mundlak pointed out that this problem was outside the scope of the paper but that the principle of comparative advantage should not be forgotten. Concluding his remarks, he emphasised that the major point was that the change of the share of agriculture in the expenditure on food was not only a function of income but also depended on prices.

In reply to the comments of the discussion opener (G. Meester) on the explanation of the high value of estimated incidence parameter (w) Dr. Valdés stated that value of w depended on the degree of substitutability between home goods and tradables and that he expected w to be lower at relative high levels of economic development. Furthermore he highlighted the role of the institutional setting of the country – in particular wage readjustment *vis-à-vis* changes in nominal exchange rate for the value of w. On the issue of time lag in estimating w, he pointed out that value of w had proved to be very robust with respect to different specifications of the time lag structure.

In reply to the question about the relative importance of trade regime/exchange rate phenomena, Dr Valdés stated that the importance of the factor studied would change according to the specific country situation and that an empirical test of the relative weight required an overall theory of agricultural growth which we still did not have. Efforts in this direction included work in this field at IFPRI.

In the discussion from the floor, scepticism was expressed about using world market prices as the opportunity costs. Furthermore it was questioned if more liberal trade regimes were advisable for LDCs and a point about industrial protection in India was made. The impact of

trade/exchange rate regimes on the income distribution was also mentioned. Finally a question about the implication of the author's analysis for IMF recommendations for devaluations and a question about empirical evidence on consumption effects were put.

In reply, Dr Valdés stated that for small countries which were 'price takers', there was really no alternative but world market prices to express opportunity costs, in spite of existing distortions. On the issue of appropriate trade regimes for LDCs, he pointed out that his prescription was one of more neutral trade (not necessarily free trade), as compared with the present situation where agricultural exportables were often taxed and agricultural importables were subsidized. The example of India, a country with a large domestic market was, he believed, a questionable one for most small LDCs' economies.

In reply to the question about income distribution, Dr Valdés observed that there was not much empirical evidence on long-term effects of alternative trade regimes. Concerning the IMF's recommendations, he pointed out that his analysis concerned long-term, real exchange rate phenomena while the IMF dealt with short- medium-term, nominal exchange rate problems. He mentioned also that a study on the consumption effects was on the way.

Participants in the discussion included K. Hassan, G. Jones, S. Simons, J. Berthelot, E. Grigshy, I. Elbadawi and E. Rabinowicz.