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INTERNATIONAL TRADE AND AGRICULTURE: REAS-
ONS FOR CORRECTIVE POLICIES IN LDCs & MDCs

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INTERNATIONAL TRADE AND AGRICULTURE: REASONS FOR CORRECTIVE POLICIES IN LDCs & MDCs

BY B.MBUI WAGACHA

Economists have long recognized that growth and economic development present special problems to the agricultural sector of any nation. This chapter develops the following arguments; in growth, the secular problems faced by the agricultural sector of more developed countries (MDCs) and less developed countries, (LDCs), are partly derived from the same peculiar effects of supply and demand conditions on the sector. In this respect, the agricultural sector faces the same problem of relatively declining incomes as compared to the industrial sector. This decline, and the mechanism behind it, is in operation in both LDCs and MDCs. Hence, this phenomenon may be termed the neutral disadvantage of the agricultural sector. That is, neutral with respect to rates or levels of economic development.

When the agricultural sector of LDCs is examined in the light of popular industrialization strategies of the 'sixties and the 'seventies, it is further argued that these strategies have been operated to the serious disadvantage of incomes in the sector. This disadvantage which is of perhaps greater magnitude than the neutral disadvantage, may be termed the internal disadvantage of the agricultural sector in LDCs. This setback to agricultural incomes in LDCs is, however, accentuated by a further mechanism which operates externally.

Growth, interdependence and trade between MDCs and LDCs are rarely investigated in terms of their effects on the agricultural incomes of the respective partners. The literature relating the agricultural sector of LDCs to external effects has almost exclusively pre-occupied itself with two problems. One is the long-run price at which the agricultural exports of LDCs are exchanged with manufactured imports from MDCs.¹

1. The seminal contributions in this analysis are by R. Prebisch. [14] G. Myrdal [12] and H. Singer [15]. The opening up of the debate on the Terms of Trade between MDCs and LDCs which followed these contributions was viewed at first by orthodox trade theorists as "dissident" economics. The debate subsequently became popular, with academic contributions centering on statistical measurements. The simplest concept of the Terms of Trade is the ratio between export and import prices for a given period compared to the same ratio for a base period. If the pairs (P_{x_1}, P_{m_1}) (P_{x_0}, P_{m_0}) represent present period mean export and import prices and base period mean export and import prices, the commodity terms of trade reduce to $\frac{P_x}{P_m}$.

$\frac{P_{x_1}}{P_{m_1}} / \frac{P_{x_0}}{P_{m_0}}$

This has given rise to the Terms of Trade debate. The second is the potential contribution of the agricultural sector (in terms of constant low-wage labor) to the capital accumulation process, in which domestic and foreign capitalist profits grow as a proportion of the GNP.

The first problem is directly related to agricultural incomes as they are affected by international trade. Prebisch [14] argued that productivity gains of LDCs in primary commodities are dissipated to external markets through the price inelasticity of demand characterizing these products. We argue in this chapter that commercial agriculture in LDCs has induced minimal productivity gains, instead pursuing surplus venting expansion. Productivity gains would however, complement the second problem to the extent that lower labor requirements in agriculture permit the growth of employment in the capitalist sector. We shall argue later that this growth of employment has been minimal.

There is an element of external disadvantage which has characterized the agricultural sector of LDCs and which would tend to be masked by the preoccupation of the literature with the two problems mentioned above. This disadvantage is related to the curious failure of commercial agriculture in LDCs to take advantage of specialization and improve factor productivity, especially of labor, at the same rates that MDCs raised their productivity.

Movement of labor from agriculture, even with unchanged techniques of production and with mean output constant a la W.A. Lewis [15] raises partial (labor) productivity in the sector. Terms of trade may thus be declining and the external disadvantage be in operation, reducing agricultural incomes in LDCs, without the latter aspect of disadvantage being evident in statistical computations of domestic mean per capita incomes in agriculture or the terms of trade. This disadvantage will be examined in this chapter through what Myint [9, p.190] has termed the "productivity" theory in international trade. It is also argued that, in other aspects not related to international trade, the "productivity" theory operates to reduce agricultural incomes relatively to incomes in industry in both LDCs and MDCs. First we examine the operation of the "productivity" theory, including the external disadvantage to LDCs. Secondly we deal with the internal disadvantages of LDCs agriculture emanating from the industrialization process. Lastly we analyse the neutral effects arising from the supply and demand conditions in the markets for agricultural commodities.

The most distinctive aspects of modern economic growth that set it apart from earlier periods of economic change are (a) the extent to which sectors of the domestic economy and the international economy have become interdependent, and (b) the extent to which science and science based technologies have supported the growth of the interdependence. Simon Kuznets ^[1] suggests that modern economic growth has been supported by and, simultaneously, given rise to highly specialized institutions. The work of research institutes in universities, inventors, and R&D departments in industry, has played an important role in the growth process in MDCs. The development of new production techniques and methods has in turn stimulated an increasing demand for inputs from outside of the MDCs. The techniques and methods have themselves been diffused to a certain degree into the international economy. The results of these developments are that the quantity/quality of resources required for transformation into goods and services is secularly reduced/increased.

Increased production and exchange among sectors of MDCs on the one hand and among trading countries on the other, has particularly encouraged the growth of a vast market for intermediate goods. This dramatic growth process, almost wholly confined to the industrial countries, has had wide implications for the agricultural sector of MDCs on the one hand, and of LDCs trading with MDCs on the other.

In order to consider the role played by external trade in the "early" development of MDCs compared to the "late" development of LDCs, it is instructive to look at the argument developed by H. Myint ^[2] concerning the "productivity" and "vent-for surplus" theories versus the "comparative costs" theory of international trade. Myint invokes a key passage from Adam Smith's Wealth of Nations to distinguish the "productivity" theory of international trade from the Comparative costs theory.²

"The productivity doctrine differs from the comparative costs doctrine in the interpretation of "specialisation" for international trade. (a) In the comparative costs theory, "specialisation" merely means a movement along a static "production possibility curve" constructed on the given resources and given techniques of the trading country. In contrast, the "productivity" doctrine looks upon international trade as a dynamic force which, by widening the extent of the market and the scope of the division of labor, raises the skill and dexterity

2. See Myint, (9 p. 190)

of the workmen, encourages technical innovations, overcomes technical indivisibilities and generally enables the trading country to enjoy increasing returns and economic development.....Mill even went on to extend this doctrine to countries, at "an early stage of industrial advancement," where international trade, by introducing new wants "sometimes works a sort of industrial revolution"

The beginnings of the process referred to by Myrdal in the early-developing countries will be illustrated below with the case of the United States. Two conditions seem to be important to the process. One is that the market must be expanded. That is domestic sales and exports must be increased through a hitherto untapped surplus-venting demand. The agricultural sector in early development is central to the process, and the surplus-venting demand is related to (a) a budding industrial sector and (b) external demand for agricultural commodities. The "vent-for-surplus" theory of international trade implies that the agricultural sector, in both "early" and "late" development, should supply both the demands of a growing industrial sector and an export market without reducing its own consumption. The agricultural sector simply draws on previously unused productive capacity to supply the additional demands.

But as production is expanded, the "productivity" theory implies that total factor productivity is increased. In particular, the agricultural output per head increases, so that the production for both domestic consumption and export is more efficient and releases labor for alternative employment. The importance of interdependence between agriculture and an expanding industrial sector is that, as labor is released through productivity improvements in agriculture, it is absorbed in industry. Industry in turn develops new methods of doing things in agriculture through invention, research and development, and higher quality inputs, such as chemicals and fertilizer.

The evolution of a market network linking the agricultural sector to industry not only raises factor productivity, but also raises national per capita product. Three sources of increased national per capita product may be identified. First in terms of the "productivity" and "vent-for-surplus" theories of international trade, untapped land, labor and entrepreneurial skills will be drawn into productive use in greater proportions than the growth

of the labor force.³

Secondly inter-action and interdependence between the agricultural and industrial sectors will infuse competitive pricing into all commodity markets. The outcome is that market signals will direct domestic savings and investments into areas where marginal rates of return are highest. Without considering the problem of externalities, the process leads to efficient resource allocation and increased labor productivity and also generates the third source of higher per capita incomes. This is the operation of financial markets. As the dispersion among rates of return to capital in different economic activities is narrowed, capital accumulation proceeds more evenly and reduces the constraints of self-finance in all sectors of the economy.

In looking at the comparative experiences of the agricultural sectors of early-developing countries and late-developing countries let us first consider the case of United States. In early nineteenth century approximately 75 percent of the labor force was engaged in agriculture. The natural population growth rate was approximately 3 per cent annum for most of the nineteenth century. Although this growth rate of population was argued, by labor force increments in agriculture through immigration, the non-farm sector in the United States during this period was obviously very small. The agricultural sector also seemed to pursue the goal of producing to cater as fully as possible to its own demands, actively limiting its transactions with other sectors, and foregoing unused productive capacity which could have been taken up in supplying foreign demand.

According to C. Danhof (1,p.16-17) early economic development in the United states was characterized by limited markets for agricultural produce. Producers of agricultural commodities minimized cash transactions with other sectors of the economy, so that the proportion of total agricultural output

3. Simon Kuznets II Chap.27 would seem to have measured the relative contributions of the "vent-for-surplus" and "productivity" processes to the growth of per capita national product for 15 advanced economies. He examines input and product data for a long term period and concludes that the growth of inputs, measured in conventional accounting methods, explains only 20-25 per cent of the growth in per capita product. One may infer from this that total factor productivity and technological change account for 75-80 per cent of the growth in per capita product.

consumed within the sector was high. The narrowness of the market for agricultural commodities was socially internalized, so that the successful farmer became associated with the ability to minimize off-farm transactions. As far as possible, the farms demands were supplied by the farm itself. Specialization was limited under the circumstances and welfare levels persistently approximated those to be found in the subsistence farming of most late-developing countries today.

By the nineteenth century, the patterns of agricultural marketing and transactions had changed. According to Danhofs' estimates, the proportion of agricultural output sold to urban markets in the U.S. increased from 20 per cent in 1820 to 40 per cent in 1870. But these figures both understate and overstate the importance of the domestic U.S. Market as a source of farm incomes. Purchases by non-farm rural population are not included and Danhof adjusts his figures to 25-50 per cent to take account of this. The overstatement arises from the observation that the same period was characterized by high growth rates in U.S. agricultural exports. Throughout the nineteenth century, the agricultural sector was the major source of foreign exchange and earned a high proportion of total farm incomes.

The expansion of the market for agricultural output, the growth of productivity and technological change implied that (a) the proportion of total labor force engaged in agriculture would fall, (b) with a falling agricultural share of the total labor force and increased productivity, direct on farm consumption of agricultural output would decline and (c) transactions between agriculture and industry would grow.

In Table 1, agricultural employment in selected MDCs and LDCs is presented. Figures for the proportion of the GDP earned by agriculture are also presented.

TABLE 1: SHARE OF AGRICULTURE IN LABOR FORCE AND GDP: (a)

COUNTRIES		% SHARE OF LABOR FORCE		% SHARE OF GDP	
(A) LDCs	(B) MDCs	(A) LDCs	(B) MDCs	(A) LDCs	(B) MDCs
Kenya	U.S.A.	88	12	34.9	6.1
Tanzania	Belgium	95	12	54.1	8.8
Nigeria	Canada	80	16	54.9	12.5
India	Norway	70	18	46.1	8.4
Zaire	Sweden	69	18	21.5	7.0
GHana	Denmark	56	22	35.7	20.4
Colombia	United Kingdom	50	5	31.1	6.0
Brazil	Germany	48	23	22.3	12.3
Chile	Austria	26	32	10.4	15.5
MEANS		64.7	17.6	34.6	10.8

Table 1 Continued

(a) The data for MDCs are based on the period 1950-1951 and that for LDCs is based on the year 1965.

Sources: Data from Food and Agriculture Organization of the United Nations, Production Yearbook 1970. (Rome 1971)

Table 1 shows a wide dispersion between LDCs and MDCs in the extents to which (a) the labor force is engaged in agriculture and (b) the economies are dependent on the agricultural sector in generating their GDP. The extremes are Tanzania and the United Kingdom with respect to (a) and Nigeria and the United Kingdom with respect to (b). In 1965, the labor for LDCs was engaged to a far greater degree in agriculture than was the case for MDCs fifteen years earlier. The agricultural sector of LDCs generated several times over the percentage contribution of this sector to the GDP in MDCs.

Turning to on-farm direct consumption of agricultural output, the same pattern of dispersion appears. Table 2 shows the percentages of total agricultural output devoted to on-farm consumption in a sample of countries including South Korea.

TABLE 2

ON-FARM CONSUMPTION OF AGRICULTURAL OUTPUT IN
SELECTED COUNTRIES

<u>COUNTRY</u>	<u>YEAR</u>	<u>ON-FARM CONSUMPTION (PER CENT)</u>
U.S.A.	1950 ⁴	17.0
West Germany	1959	37.7
Netherlands	1959	30.0
South Korea	1960	73.5

Source: R. Weitz, From Peasant to Farmer, (Columbia U. Press, New York, 1971, p.124).

The three MDCs consumed, at most, approximately one third of their total agricultural production on the farm, while South Korea consumed about three quarters of her total product. The high proportion of total agricultural output which is produced for non-farm consumption in MDCs is almost wholly directed to industrial processing complexes such as fruit and vegetable canning, dairy products, meat processing, oils and fibres. It is to this subsector of MDCs that the predominantly agricultural commodities of LDCs have been exported traditionally.⁴ In this trading pattern, Myint has argued that the

4. See table 4

exports of LDCs can be characterized as surplus-venting. The transformation of many economies of LDCs into surplus-venting export producers at once yielded a import capacity to augment domestic consumption and infrastructure without necessary reductions in the consumption of domestic commodities. But it also created a permanent disadvantage generated by (a) the vulnerability of this export trade to external disturbances, and (b) the long-term worsening of the terms of trade for agricultural commodities vis-a-vis manufacturing.

The processing and manufacturing sector of MDCs is sensitive to the forces of the business cycle. Investment, employment and demand for inputs into this sector fluctuate according to the climate of economic activity. In slack periods of MDC economies, the inelastic demands of primary commodities cause the prices offered for LDC commodities to be cut drastically. These cut-backs in commodity prices which also affect the agricultural sector of MDCs) would not present a major problem to a poor country which has developed surplus-venting export trade if it was possible to switch surplus production capacity to domestic uses with higher opportunity costs. But LDCs are today attached almost inextricably to surplus-venting production for export markets. Moreover, the individual producer or employee in the agricultural sector of LDCs does not enjoy any agricultural price supports or social welfare benefits which are accorded to his counterparts in MDCs during economic depressions.⁵

5. In fact a number of policies pursued by MDCs in defence of incomes in their agricultural sector and in manufacturing which intensively uses LDC primary commodities, are detrimental to their welfare, the economic development of LDCs and international trade and specialization. Protection of the agricultural sector of MDCs and manufacturing from competition with LDC exports promotes inefficient resource allocation in MDCs. Consumers in MDCs lose potential gains from specialization while manufacturing by LDCs for export from inputs in which they are abundantly endowed, -labor, primary commodities and land, - is retarded. As Little, Scitovsky and Scott (8, chap.8) show, freeing of trade in these areas would benefit both MDCs and LDCs, and it is possible for MDCs to engage the released factors in activities where the opportunity costs are higher. These moves are at least as important as the granting of aid and would cost the MDCs nothing except the management of temporary disruption for the factors involved. It is curious that many MDCs giving aid also protect their agricultural and manufacturing sectors where LDCs would have an economic-development-generating comparative advantage if trade was liberalized. Quite clearly trade restrictions in both LDCs and MDCs are aimed at a small sector of the economy and are operated at the expense of the larger sector of the economy, the domestic consumer, international specialization and the economic development of LDCs. In the case of MDCs the small sector is agriculture and primary-commodity-using manufacturing. In the LDCs the small sector is industry.

Apart from the further adversity suffered by the agricultural sector of LDCs in worsening terms of trade for agricultural commodities, the operation of Angel's Law predicts that as world incomes rise, greater proportions of incremental incomes will be allocated by international consumers to processing and manufactured commodities relatively to food items. Therefore the reliance of LDCs on surplusventing exports is disadvantageous to them not only with respect to the vulnerability of the export sector, but also significantly in respect to the failure of their export commodity mix to capture increased export earnings in proportion to incremental changes in world income, especially the changes in their major trading partners the MDCs. Table 3 shows the relationship between increases in per capita incomes, income elasticity and the GDP generated by various commodities.

COMMODITIES, PER CAPITA INCOMES AND INCOME ELASTICITY:
LARGE AND SMALL COUNTRIES:

PER CAPITA VALUES OF GDP (1958 U.S. DOLLARS)

Manufacturing Activity	92	153	306	510	1020
	<u>PER CENT OF GDP</u>				
All Manufacturing:					
Large	12	16	22	26	31
Small	12	14	17	21	27
Food, Beverages and Tobacco:					
Large	3.8	4.7	5.1	5.1	4.6
Small	4.1	5.5	6.3	6.6	5.5
Textiles and Clothing:					
Large	2.6	3.4	4.1	4.2	4.1
Small	2.6	2.9	3.2	3.6	3.5
Wood, Paper, Printing, Leather:					
Large	1.2	1.8	2.5	3.0	4.0
Small	1.3	1.5	2.0	2.8	4.6
Rubber, Chemical, Petroleum products:					
Large	1.5	2.0	3.0	3.5	3.9
Small	1.2	1.3	1.6	1.9	2.4
Industrial Raw Materials:					
Large	1.2	1.5	2.4	3.0	3.5
Small	1.3	1.3	1.5	1.9	2.5
Fabricated Metal Products:					
Large	1.7	2.6	4.9	7.2	10.9
Small	1.5	1.5	2.4	4.2	8.5

Source: B. Johnson and P. Kilby, Agriculture and Structural Transformation, (Oxford U. Press, New York, 1975).
P. 40.

The data in Table 3 were computed in Kuznets study of 55 countries grouped into large, (population 10 million) and small, (population 10 million). All figures were mean cross section shares for 1953 and 1963. The first row (all

manufacturing,) shows that manufactures more than double their share of per capita GDP as per capita incomes rise from 92 to 1020. This indicates an income elasticity greater than 2 for aggregate manufacturing in all countries in the sample regardless of size. Looking at the item, Food, Beverages and Tobacco, their percentage share of per capita GDP is about one third of all manufacturing at a per capita income of \$92, regardless of country size. This proportion is roughly maintained for small countries through per capita incomes of \$153 - \$510, while there is a decline in the case of large countries. The item indicates an income elasticity of roughly unity in this range of per capita incomes. But in the range \$510 - \$1020, the share of the item declines to less than one fifth of per capita incomes for all manufacturing.

Consider the case of products which characterize the industrial sector of the mature MDC such as Fabricated Metal products. From a share of about one eighth of per capita incomes in all manufacturing at \$92, this sector grows to a share of more than one third for large countries and slightly less than one third for small countries. This growth also exhibits an income elasticity of about two. It is clear that manufacturing which absorbs the traditional exports of LDCs to MDCs, is slow in appropriating incomes as standards of living rise.

An analysis of 1970 data shows that exports of LDCs, which are predominantly agricultural and on which incremental per capita incomes are not allocated in proportion to the increments, were absorbed mainly by MDCs. Table 4 shows that while LDCs produced 40.1 per cent of the world's total value of primary commodities, they consumed only 15.7 per cent. The MDCs, on the other hand, produced 44.7 per cent of the world's total but consumed 72 per cent.

Table 4

ORIGIN AND DESTINATION OF WORLD PRIMARY PRODUCTS: 1970
(Current U.S. Dollars).

<u>World Origin</u>			<u>World Destination</u>	
<u>Area</u>	<u>Value</u> ('000\$)	<u>Per cent of</u> <u>Total</u>	<u>Value</u> ('000\$)	<u>Per cent of</u> <u>Total</u>
MDCs	46.3	44.7	74.6	72.0
LDCs	41.5	40.1	16.3	15.7
Eastern Areas	10.4	10.0	9.4	9.1
Australia, New Zealand & S. Africa	5.4	5.2	3.3	3.2
Total	103.6	100	103.6	100

Source: Based on International Trade, 1970: G.A.T.T., Geneva, 1971 PP. 22.23

It should be noted that the problems of the agricultural sector of LDCs arising from the business cycle, trade and the operation of Engels' Law are not specific to LDCs. They are specific to the agricultural sectors of

both LDCs and MDCs. Some of the explanations offered for the observed slow growth of agricultural incomes have been, (a) slow rates of technical change relatively to industry (b) lower educational levels in agriculture, hence the slower adoption of new methods in the sector. These factors are said to explain the consistently low levels agricultural incomes relatively to industry. But evidence from agricultural input data for MDCs in particular does not support these views.

Firstly, it is difficult to argue, at least in the case of early-developing countries, that the innovations and inventions of the last century have been biased towards increasing productivity in industry to the relative neglect of agriculture. This view is not supported by the remarkable changes which have occurred in farming methods, research efforts in agriculture, and the introduction of improved farming equipment. The rise in intersectoral transactions of the agricultural sector also include items which have appeared in the farmers' wants through science and technology. These items are new seed varieties, specialized farm tools and equipment, fertilizer, services in the maintenance of farm equipment and the increased reliance of agriculture on the whole agrochemical industry.

Secondly, the belief that agricultural incomes have been affected by the relatively lower levels of farmers education bears closer scrutiny. As commercial agriculture in MDCs and the export sector of LDCs became a permanent feature, agricultural practices in MDCs in particular became more competitive and the purchases and applications of inputs more widespread. Moreover, as shown above, Kuznets data suggests, from a fifty-five country sample of early-developing countries, that factor productivity and technological change account for as much as 75-80 per cent of the growth in per capita product, and this growth includes agriculture. Table 5 compares samples of four early-developing and late-developing countries to see the dispersion in per centages of gross value added in agriculture which is devoted to the purchases of inputs from the manufacturing and service sectors. These percentages may be taken as measures of the levels of interdependence between agriculture, and other sectors.

TABLE 5

AGRICULTURAL INPUTS ORIGINATING FROM MANUFACTURING AND SERVICE SECTORS

<u>MDCs</u>	<u>Year</u>	<u>AGRICULTURAL SECTOR</u>	
		<u>INPUTS AS PER CENT GROSS VALUE ADDED</u>	
		<u>Industry</u>	<u>Services</u>
UK	1960	28.4	14.6
Netherlands	1959	23.0	4.6
West Germany	1960	16.3	5.1
Japan	1960	13.5	3.6
<u>LDCs</u>			
Bolivia	1958	0.3	0.2
India	1960	1.8	0.1
Malaya	1960	6.6	2.4
Taiwan	1962	9.7	10.9

Source: R. Weitz: From Peasant to Farmer, (Columbia U. Press)
New York, 1971, p. 125.

From the sample of MDCs, the least value of agricultural value added expended in purchases of inputs from other sectors is in Japan where just under a fifth of value added is allocated to these purchases. Among LDCs, Bolivia spends the least percentage of agricultural value added in such purchases - 0.5 per cent. The level of interdependence with other sectors is significantly lower between industry and the agricultural sector of LDCs than between the same sectors in MDCs.

From Tables 1 to 5, the following pattern has emerged in the productivity, interdependence, trade and level of off-farm inputs, between LDCs and MDCs. It is clear that the retention of a large share of the total LDC labor force in agriculture is indicative of far lower achievements in labor productivity relatively to MDCs. The larger shares of GDP generated in LDC agriculture relatively to that of MDCs is indicative of smallness or low level of industry. The smallness of industry in LDCs in turn, combined with low labor productivity in agriculture means that a major proportion of total agricultural product is consumed on the farm besides being exported after little or no processing. We shall relate the low productivity of late-developing countries to the concept of the "productivity" theory of trade below.

Table 3 indicates the inevitable operation of Engels' Law against

agricultural incomes as per capita incomes are raised through economic development. Even had late-developing countries raised productivity significantly and established a high degree of interdependence between industry and agriculture low income elasticity of demand for primary commodities would alone have operated against agricultural incomes in the growth process. But to the extent that there have been any productivity improvements in late-developing countries' agricultural sector, these have implications to that sector's incomes through the effects on supply and demand.

On the supply side, productivity improvements and technological change imply resource-saving output growth shifting the supply curves of agricultural commodities outwards. Coupled with the growth of per capita incomes, less incremental incomes will be allocated to the consumption of agricultural commodities. On the demand side price inelastic conditions imply that the quantities of agricultural commodities demanded rise, but by a smaller proportion to the decrease in prices so that farmers' incomes are adversely affected.

Table 4 shows that at the beginning of the decade of the seventies LDCs were producing ^{40.1} per cent of the world's primary commodities but diverting a small percentage of it to their own domestic consumption, fabrication and processing. Hence there were low levels of industry and transactions between (any) existing manufacturing and the agricultural sector, as shown in table 5. We now examine the operation of the "productivity" theory and surplus-venting exports of late-developing countries to see what implications the opening up of trade has had on the agricultural sector.

The opening up of trade between late-developing countries and early-developing countries undoubtedly provided demand for the farmers' primary commodities. Myint (9, p. 194) argues that production by late-developing countries to supply external demand took up unused productive capacity, fully utilizing factors which had hitherto been employed suboptimally or whose opportunity costs to the colonial economy were about zero. In this sense the foreign exchange earned through the new productive capacity enabled colonial economies to purchase "costless" imports. That is, costless in the sense that they did not call for reductions in the consumptions of domestic commodities or combinations of them.

It may be argued that, over time, the opportunity costs of the original "unused productive capacity" of late-developing countries has changed. Apart

from the vulnerability of the export sector of late-developing countries to the price fluctuations of primary commodities, the productive capacity originally allocated to this sector proceeded along constant techniques related to the "cheap-labor" mentality of the colonial period. The use of constant techniques in turn ruled out parallel improvements in labor productivity between the agricultural sector of late-developing countries and the early developing countries. This failure of the "productivity theory" to operate in the agricultural sector of late-developing countries is related to the failure of late-developing economies to both bring their surplus-venting productive capacity into employment and increase the factor productivity of that capacity at the same rates as technical progress and factor productivity in early-developing countries. But the agricultural export capacities of most LDCs today, though vulnerable to both price fluctuations and worsening terms of trade, can not easily be switched to alternative productive uses. The problem of transfer of technology to agriculture or what Johnson and Kilby (2, chap.3) refer to as the "technological backlog" is thus the problem of inducing technical and productivity improvements into the agriculture of LDCs where these improvements occurred "in-step" among MDCs but were not generally introduced among LDCs. The crux of the matter then is the following question; why did commercial export production in LDCs not adopt technical progress and improve productivity at the same rates as the MDCs?

One explanation takes the scarcity-of-skilled manpower approach. There was undoubtedly an acute shortage of skilled labor in the late-developing countries as they entered into trade with early developing countries. Skills, however, are supposedly acquired through the "productivity" theory as trade continues, and are combined with technical innovations and increasing returns to factor employment in order to result in Adam Smith's concept of specialization.

In modern times among late-developing countries, low productivity in the agricultural and industrial sectors coexist with substantial unemployed skilled manpower. The argument of skilled manpower shortages must at one point have ceased to be tenable in explaining lack of technical progress and the combinations of innovations and skilled labor required to raise productivity. The growth of skilled manpower despite rising unemployment rates among LDCs must indicate domestic market supply responses to the traditionally high premiums paid to foreign skills - especially by foreign enterprise.

The lack of employment for educated labor force points to a lack of effective demand for it. That economies of LDCs have excess supplies of educated labor force poses the question whether there was demand for such labor at the opening up of trade.

Myint (9, p. 192) explains that western enterprise involved in the export sectors of LDCs tended to induce once-for-all improvements in productivity through (a) movement of labor from sub-optimal uses in peasant agriculture, sometimes through coercion to optimal uses in the plantations and mines, and (b) a general increment in man hours worked and a rise in the proportion of fully employed to sub-optimally employed labor force. But once the transfer of labor and accompanying productivity gains in the commercial production for export were achieved, most Western and European capital looked upon the domestic labor force of LDCs as an undifferentiated mass of unskilled and cheap labor.

The cheap labor policies of the commercial agricultural and export sector of late-developing countries have traditionally encouraged a divide between domestic factors of production and foreign factors. The former constitutes the mass of workers in the agricultural sector while the latter is traditionally a highly paid group of skilled foreign workers. The wages of domestic factors of production were fossilised at low levels once commercial production for export commenced, while the wages of foreign factors remained high. Despite the supply response of domestic factors in raising their skills and education, they constituted what Myint has called a "non-competing" group. The plantations and mines looked upon the supply of domestic factors as infinitely elastic at low wages, permitting little vertical mobility from the non-competing group to the "foreign-factors" group.

The cheap labor policy, combined with the existence of surplus productive factors, especially agricultural land, meant that without improving the skills and dexterity of the agricultural labor force, output of primary commodities for export to the growing industries of early-developing countries could be expanded continuously. Technical improvements in MDCs could be developed without a great impact on the production methods in LDCs. When domestic supplies of cheap labor could not be induced further to transfer from the peasant sector to the plantations, commercial enterprise looked outwards for more cheap labor, inducing large scale movements from India and China to other late-developing countries. Thus indigenous labor force was deprived of the benefits which accrue from specialisation.

An even less recognized aspect of the asymmetry between technological change among LDCs and MDCs is the fact that the penetration of MDCs manufactures into the domestic markets of LDCs often induced de-industrialization. This de-industrialization in the case of India for instance, Bagchi (1976 p. 135-36) led to the contraction in employment and incomes of domestic artisans and traditional technicians. When in such instances the agricultural sector of LDCs absorbs the unemployed at lower incomes and on increasingly less productive land via surplus, a case can occur where (a) incomes of agricultural labor force are depressed through greater labor supply and (b) the effective demand in the LDC falls. The gains from specialization in this case can be overshadowed by the loss which has its highest incidence on the LDC agricultural sector. The release of surplus productive capacity is not conclusively beneficial to the LDCs and, coupled with the asymmetry in production techniques, the process can be detrimental to the incomes of the agricultural sector.

In modern times, LDCs have attempted a number of development strategies aimed at infusing their predominantly agricultural economies with a viable industrial sector. One of the arguments put forward to support import-substituting industrialization is directly related to what we referred to earlier as the vulnerability of surplus-venting exports. The depression of the 'thirties brought a particularly prolonged slump in the demand and value of primary commodity exports of LDCs to the industries of MDCs. The decrease in export values produced chronic shortages in foreign exchange and a fall in the ability of LDCs to import manufacturers from MDCs. Industrialization and the methods brought into operation to promote it were then justified as a move towards autarky. Another argument for industrialization is that there are concomitant benefits to be gained in improved skills of the labor force and technical innovations.

Three major devices have been used to promote domestic industry in LDCs; import restriction, tariff protection, and administrative controls. Administrative controls can take many forms, but the most widely applied measure is the control of foreign exchange.

All the three measures for promoting industrialization operate against the prices and incomes of the agricultural sector in LDCs. A close look at the effects of tariff protection can reveal that in the process of generating domestic industry by the use of this tool (often in combination with the other

two,) income distribution shifts in favour of manufacturing without a net gain to the economy. Since, as we argued earlier, colonial enterprises failed to incorporate new production methods in the agricultural sector of LDCs, leaving labor productivity low, the major proportion of LDC labor force is to be found in agriculture during the industrialization process. An income distribution shift in favour of manufacturing thus is a shift from the greater proportion of the labor force, to the smaller proportion engaged in industry.

It takes only a little analysis to establish that import tariffs, in the absence of equal subsidies on agricultural exports of LDCs, are a "tax" on the agricultural sector. Consider the imposition of a tariff of $X\%$ on imports which a given LDC government wishes to encourage in domestic production. Such a tariff raises the price of imports and their domestic substitutes to $P_w(1+x)$ where P_w is the world price of imports. Thus the relative domestic price of imports to exports rises by a margin of $\frac{(1+x)}{P_w}$.

The higher relative price of imports and their domestic substitutes imply higher consumer and producer prices to be paid for these goods by other sectors. In particular the tariff operates to draw resources away from the agricultural sector and other sectors of the economy and into the manufacturing of importables and their substitutes. Suppose that the export sector is instead taxed by the same margin $X\%$. The relative price of exports decreases to $\frac{1}{(1+x)}$, giving rise to the same resource allocation and shifts in investments as in the case of the import tariff. In both cases, it is more profitable for investors to move into the domestic manufacturing of imports and their substitute than to remain in exportable production.

The foregoing analysis suggests the following.

To reverse the bias frequently created against the agricultural sector of LDCs through import tariffs, a subsidy to agricultural exports equal to the tariffs would be required. Such a subsidy would restore the pre-tariff price ratio between imports and exports. But such subsidies are rare in LDCs. To see that most of the profits of the industrial sector and the higher wages paid there must be shifted away from other sectors, consider the tariff imposition of a small country on importables.

Under the influence of the tariff resources move to the industrial sector in the manufacturing of the higher domestically priced, ^{importable} The growth of the industry gives the appearance, on the surface, that the domestic industry

benefits to the detriment of foreign competitors whose product is displaced in the domestic market. This appearance is misleading. The country's import restriction does not lower the price at which imports are obtained. That is, there is little change in the terms on which the country exchanges its exports for imports. Protection yields little net gain for the country relatively to the rest of the world. The crux of the matter then is; if tariff protection offers no net gain to the economy as a whole, where do the handsome additional incomes which accrue to domestic industry, labor and management, come from?

It must be concluded that most of what new protected industry gains in profits and higher wages must be a loss to other sectors. In late-developing countries the agricultural sector is large and the industrial sector small. The "tax" per head to agriculture in the name of generating an industrial sector can be negligible, yet yield abnormally high rewards to the protected industrial sector. In MDCs, the reverse problem occurs; the growth of labor productivity released labor for employment in industry in the process of economic development. As agricultural incomes began to lag behind those in industry, it was possible to accord relatively high incomes to the sector by spreading the costs to the larger non-farm sectors. That is industry and services.

In their comparative study of LDCs, Little, Scitovsky and Scott (8,p.42) have shown that apart from the inequalities in income which tariff-protected industrialization results in, the development of such industrialization brings about worsening internal terms of trade between agriculture and industry. In the case of Pakistan, they show evidence that the prices of manufactures relatively to farm prices were twice as high as the world-market prices over a period of industrialization. They use Lewis's (5, chap.4) estimates showing that the domestic price distortion between agricultural products and manufactures resulted in a redistribution of income of \$500 million per year from farming to manufacturing. This constituted 11 - 13 per cent of what farm incomes would be under free-trade consumption of manufactures. This means that import-substitution which in Pakistan raises the ratio of manufacturing to farm prices to twice as high as it is in world markets, taxes away 11-13 per cent of farm incomes as they would stand at free-trade prices for manufacturing. In Argentina this tax on agriculture was estimated at 30-40 per cent during 1947-1955. The cumulative effects of this redistributive mechanism is that, in the presence of rising per capita incomes, the real incomes of the rural sector may be falling. Little, Scitovsky and Scott show that all additional per capita incomes in Pakistan accrued to the prosperous small industrial sector while the real income

of the rural sector declined.

The farm sector of LDCs often suffers further disadvantages from inputs which are generated from the industrialization process. The prices of these inputs, such as pesticides, fertilizer, seed etc. often increase relatively to output prices. This input-output worsening of terms of trade is thought by Little, Scitovsky and Scott to be of greater consequence to agricultural income than the internal terms of trade between agriculture and industry in terms of their output prices alone. They suggest (8,p.348) that a great deal of the bias against agriculture in LDCs can be removed through subsidization of the manufacturing inputs most intensively used by the farm sector. Thus an improvement of input-output terms of trade may be of greater importance to the farmer than the output terms of trade. This is suggested by observations in the agricultural sector of India, Pakistan and other LDCs.

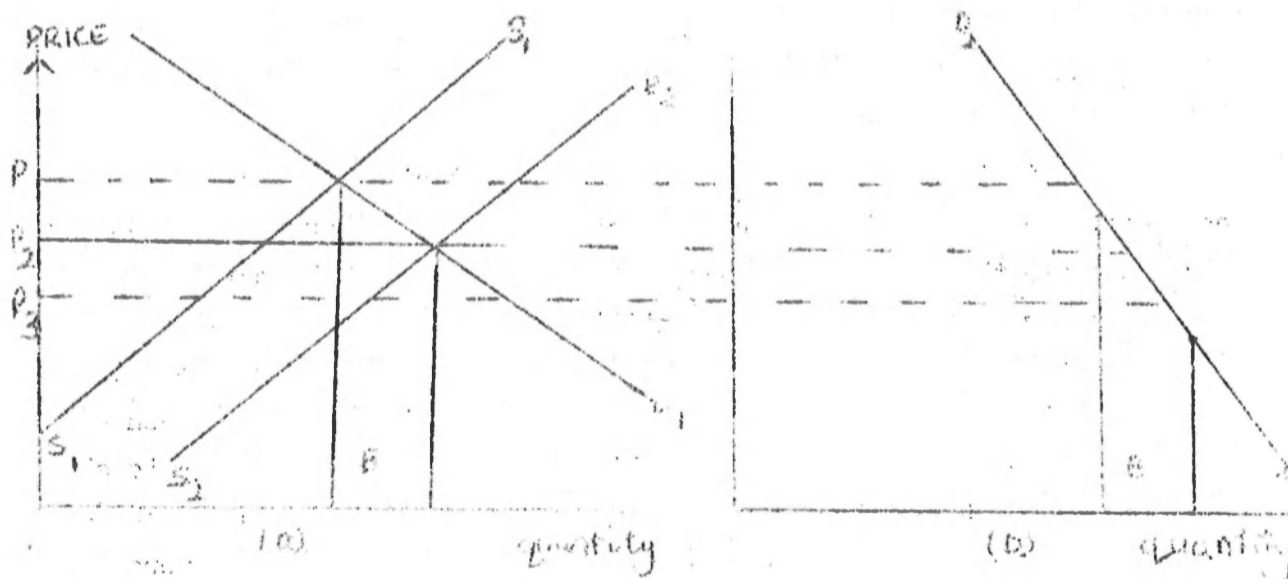
To conclude this chapter, we look at some neutral disadvantages which are faced by the agricultural sector of both LDCs and MDCs. The first may be termed the dilemma of alternative employment presented by the business cycle. During a down turn, demand-related reductions in farm incomes coincide with slack conditions in industry. Even in MDCs, the large industrial sector slows down or cuts back employment. Thus at the lowest point of the depression when the farm labor force is under the most acute pressure to find alternative employment opportunities are least likely to present themselves in other sectors. On the other hand during the boom the conditions in the farm sector and in industry are such that farm-incomes benefit from higher than average price increases relatively to industry.

This is so because of the price inelasticity of demand for farm products. The depression lowers the prices of these products by greater proportions than the quantities demanded. The boom raises the prices and incomes by greater proportions than the quantities demanded. It is thus at least not rational for the farmer to leave the farm for alternative employment in industry or the services sector during the boom. But this is the period when he is most likely to be absorbed easily. This dilemma at least operates to slow down the movement of labor from the farm sector to other sectors. The choice can not however, be said to present themselves clearly to LDC farmers. The problem of urban unemployment in LDCs is more or less indifferent to the business cycle. One could even investigate whether boom conditions induce movement from the urban areas to the rural sector.

The second problem arises from the fact that the agricultural sector is a market of many producers and is often unorganized and left to competitive pricing. This is the case in LDCs especially, where Marketing Boards and widespread cooperative organizations are recent phenomena in agriculture. Suppose that, in a period of slack economic activity the prices of farmers' output falls. This price fall can lead to a greater than proportionate fall in incomes. The response of the individual farmer may be aimed at defending his own income, and he may attempt to increase his sales at the lower price.

In the absence of regulated farm prices, the collective responses of farmers in this way will increase the total quantity supplied in the market at every price. Except in the case where the anticipations of higher incomes by some farmers are exactly cancelled out by other farmers who reduce quantities offered in the market, in expectation of higher prices, agricultural prices and incomes will be reduced further than if the farmers had done nothing to counteract the economic slump. But the farmers' expectations are not usually homoscedastic and their collective effects usually worsen their prices and incomes.

The importance of demand and supply conditions to farmers' incomes may now be demonstrated. Consider fig. 1(a) and (b)



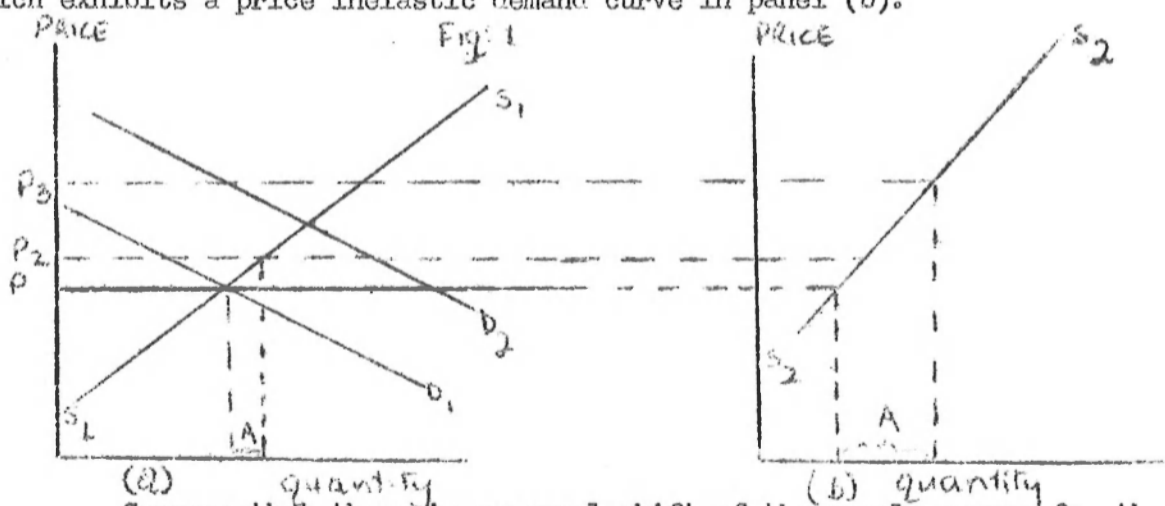
* NB: This fig. should have been on page 21, and the one on page 21 should have been on this page.

The elastic supply curve S_1 in (a) indicates that farmers are easily persuaded by price changes to supply more with a price increase and supply less with a price decrease. Crops which fit this supply pattern would tend to be quick-maturing and mass grown, such as vegetables, carrots, onions etc. These permit the farmer to quickly increase or reduce production and shift his investments to alternative opportunities accordingly. Cash crops such as coffee, sisal, tea etc. are not easily phased out or introduced with commodity price changes. They have a price inelastic supply pattern such as that in (b)

Suppose demand shifts for commodities in panels (a) and (b) such that an additional quantity A is demanded at every price. The commodity in panel (a) is faced with a price increase $P - P_2$ which does not imply a large increase in the farmers income. Conversely for a shift from D_2 to D_1 , where quantity A less is demanded at every price, the farmer is faced with a price decrease of the same magnitude. Market supply is adjusted without a drastic loss of income.

In the case of the commodity in panel (b) similar demand shifts increase/decrease the price by a margin $P_2 - P_3$ greater than in panel (a). The farmer's income from commodities in this class has thus a greater dispersion as demand curves shift in response to changes in tastes, incomes or the prices of other commodities.

Contrast the case of a commodity which exhibits a relatively price elastic demand curve D_1 in Panel (a) of Fig.2, with the case of a commodity which exhibits a price inelastic demand curve in panel (b).



Suppose that there is an equal shift of the supply curves for the two commodities such that at every price, quantity B more is supplied to the market. Such a shift in supply occurs as a result of technical improvements in agriculture

or a favourable change in the price of farm inputs which the farmer uses intensively in the production of the commodity. In panel (a) an increase of quantity B in the market induces a small price fall of $P - P_2$. In Panel (b) a similar commodity supply increment does not persuade consumers to pay the farmer a lower price in proportion the additional supply. The equilibrium price decreases by a greater margin $P_2 - P_3$ than in the case of the commodity in Panel (a). That is the price in panel (b) decreases, and adversely affects the farmer's income by a greater proportion than the increase in the quantity supplied.

Conversely, if the supply curves shift left, due to increases in the farmers input prices, or worsening of the technical methods used in agriculture farmers producing the commodity in panel (a) would gain lower price increases. But farmers producing the commodity in Panel (b) will gain a higher price and the increase will be by greater proportion than the decrease in supply.

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