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Agricultural Globalization in Developing Countries: Rules, Rationales and Results

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Agricultural Globalization in Developing Countries: Rules, Rationales and Results[*]

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ABSTRACT This paper aims to provide a descriptive and analytical account of the extent to which agriculture in the developing economies has become integrated with external markets. For most developing economies (DEs), the 1980s were a time of crisis when liberal reforms, including domestic and external liberalization of agriculture, were also initiated. This was followed by the coming into force of the Agreement on Agriculture under WTO aegis. The evidence on trade flows does indicate increased agricultural globalization in developing economies (DEs) following these regime shifts. But increased trade flows have not been accompanied by relative price convergence as between the DEs and the advanced economies (AEs) suggesting both that the policy shifts have been asymmetric and that significant parts of agricultural trade between North and South remain complementary rather than, as is often assumed, competitive. Moreover, the "fallacy of composition", implicit in any global imposition of trade liberalization and not confined to primary products as such, also seems to have been at work for most of the period. At the same time, the threat of higher consumer prices (especially for the poor and vulnerable in both importing and exporting DEs) looms large. Its impact will be felt as and when production and export subsidies in the AEs are dismantled. Meanwhile, the regime shifts seem to have induced, on the one hand, excessive faith in the efficacy of agricultural prices to produce agricultural supply response and, on the other, reduced fiscal and organizational capacities to provide public agricultural inputs and services. These conclusions are consonant with a structuralist understanding of global trade and production possibilities that DEs confront.

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1   Introduction

In developing economies, the policy regime in general, and trade policies in particular, underwent significant change toward "opening up" during the 1980s and 1990s. Much of the impetus for the change came from the wider reach and tightening of Bank/Fund conditionalities in the wake of the debt crisis and the growth slowdown that most developing nations suffered during the 1980s. Internal and external liberalization of agriculture, especially in the poorer developing countries, was a major focus of the reform packages implemented. Subsequently, the Uruguay Round (including the Agreement on Agriculture) institutionalized and multilateralized these conditionalities not only by virtue of the unequal bargaining capacities of developing countries but also via far-reaching new rules that permitted multilateral monitoring and disciplining of national policy regimes. But the impetus was not altogether external. In many cases, national decision-making, to the extent this was autonomous, also grew increasingly receptive to neo-liberal revisionism in development thinking and policy nostrums. The paradigm of development policy, not just its effective agency and underlying interests, thus shifted during this period.

This paper aims to provide a descriptive and analytical account of the extent to which agriculture in the developing economies has become integrated with external markets. In descriptive terms, we seek to discern patterns in trade flows and price changes that may signify globalization. We also take note of collateral changes in the growth of value added, productivity and labor absorption with a focus on agriculture. Analytically, we try to make connections between these patterns and the above-noted regime shifts, and to see whether these connections are better rationalized, if at all, in terms of neo-liberal or structuralist understanding of the mechanisms involved.

In identifying trends toward policies of opening up and any consequent increases in external trade integration, we have relied upon a "before/after" periodization of the data with 1980 taken to be the dividing date across the overall period 1961-1997. Each half of this periodization is further divided into two sub-periods. At least in most developing economies (DEs), the 1980s were a time of crisis when liberal reforms were also initiated. By the end of the 1990s, a good deal of the reform initiatives had had a decade-long run to permit an assessment of their consequences. The period "before" is also similarly divided into the 1960s and the 1970s. This division rests on the consideration that the 1970s witnessed the oil shocks and the relatively easy availability of external finance for the DEs while most advanced economies (AEs) had taken significant steps toward external liberalization.

The analytic focus is on discernible average (or aggregate) differences in the experience of developed and developing countries, setting aside, for the most part, what variance there may be within these groups. Of course, the analysis of world trade relations in a "North/South" framework has respectable antecedents and retains considerable relevance. This said, disaggregated analyses of cross-regional and cross-national evidence is also certainly called for, but goes beyond the scope of this paper.

The evidence on trade flows does indicate increased agricultural globalization in developing economies (DEs) coinciding with the regime shifts. However, increased trade flows have not been accompanied by relative price convergence as between the DEs and the advanced economies (AEs) suggesting either that the policy shifts have been asymmetric and/or that significant parts of agricultural trade between North and South remain complementary rather than, as is often assumed, competitive. Moreover, the "fallacy of composition", implicit in any global imposition of trade liberalization and not confined to primary products as such, also seems to have been at work for most of the period. At the same time, the threat of higher consumer prices (especially for the poor and vulnerable in both importing and exporting DEs) looms large. Its impact will be felt as and when production and export subsidies in the AEs are dismantled. Meanwhile, the regime shifts seem to have induced, on the one hand, excessive faith in the efficacy of agricultural prices to produce agricultural supply response and, on the other, reduced fiscal and organizational capacities to provide public agricultural inputs and services. Each of these conclusions seems broadly consonant with a structuralist understanding of global trade and production possibilities that DEs confront.

Distributional consequences arise, both as between DEs and AEs and within the DEs, from both the demand and supply sides, both within agriculture and at the economy-wide level. Admittedly, there are also important divisions of interest within the DE and AE groupings. But it is not merely that there are distributional consequences from the regime shifts; the regime shifts themselves are not a little due to interest conflicts implicit in national and international economic structures. The political economy of agricultural globalization is no more than broached in the concluding section of this paper.

2   National and Global Rules

There is no doubt that the multilateral trade regime enshrined in the World Trade Organization has drastically reduced the scope for pursuing autonomous national trade policies. This holds for agriculture too which had been left out of previous rounds of the GATT. The Uruguay Round (UR) Agreement on Agriculture (AA) of the mid-1990s introduced new disciplines in respect of agriculture that have already required changes in key aspects of DE agricultural policy regimes although some of the new constraints are likely to bind only in the future with the phasing-in of the AA and as the economic structures of DEs evolve.

But it is not the AA alone that has paved the way for agricultural globalization. Many DEs had gone through one or more rounds of stabilization and structural adjustment a decade or more before. In most such cases, institutional, fiscal and trade policy changes strongly impinging on agriculture had been prescribed and implemented. Since these changes, both in vision and in specifics, had a remarkable uniformity, the trend toward policy convergence had already set in long before the UR and the AA gave an additional boost to, and institutionalized, such convergence.

By their timing and scope, structural adjustment and the AA together have effected a double transition, national and global, in the regime governing DEs. At a national level, there has been a shift from import substituting industrialization with considerable emphasis on public investment and domestic savings to trade-guided allocations in which mobile corporate investment and foreign savings are given freer reign[1]. At the global level, apart from the UR itself, there has been a shift from the Golden Age to a leaden age which is at once cause and consequence of all other regime changes. This section describes the specific regime changes impinging on DE agriculture.

2A   Adjustment Before the Uruguay Round

World economic slowdown together with the build-up of third world external debt in the aftermath of the oil crisis prepared the conditions for the transition of the 1980s. The rise in interest rates, the Reagan-Volcker recession and declines in external terms of trade triggered the debt crisis for many DEs. In all countries undergoing stabilization and structural adjustment under Fund/Bank tutelage, large changes in macro prices (exchange rates, interest rates and real wages) and the fiscal stance were essential parts of the overall package. Most notably, cuts in public expenditures, drastic in many instances, were prescribed not merely to correct external and public sector deficits but also to diminish the role of government in long-term growth in favor of the market.

Agriculture-related pricing or trade policy conditionalities were part of 60 percent of all World Bank adjustment lending, 80 percent in the case of Africa (FAO, 1991). The internal and external market liberalization involved the following:

- reduction or abolition of export taxes and quotas
- reduction or elimination of government controls on agricultural trade, and disbanding of state marketing agencies or boards
- reduced import tariffs, and elimination of import licensing, quotas or prohibitions
- elimination of internal market regulations or controls (including pan-territorial or pan-seasonal pricing) and of restrictions on the private sector in product and input marketing
- decline in public production and infrastructural services including research and extension, product distribution, input supply and agricultural credit.

The main thrust of the reforms was to undercut the anti-agriculture or urban bias that, in the liberal assessment, plagued the third world (see Schiff and Valdes, 1991). The bias was taken to derive from the economic strategy of import-substituting industrialization and from political regimes that represented urban or bureaucratic interests. The macro reforms (currency

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[1]   It is notable that the earlier regime choices, though much less constrained or orchestrated by international pressures, were nevertheless also convergent to a high degree.

devaluations in particular) together with external trade liberalization were meant to be the main instruments for reversing urban bias. It is noteworthy that, in conjunction with such macro-economic discrimination, many countries are noted to have "subsidize[d] inputs, sometimes to astonishing degrees" (p 48) or provided rural credit at negative real rates of interest (Pinstrup-Anderson and Pandya-Lorch, 1992).   Subsidies for fertilizers, both budgetary and implicit in the exchange rate, were among the most important. Yet, in sub-Saharan Africa, such subsidies seem to have merely neutralized higher landed costs (on account of small volumes and monopoly premia) and higher distribution costs. As part of the reforms, agricultural subsidization has generally been reduced.

The share of government expenditure on agriculture fell particularly sharply in countries undergoing structural adjustment. Among the countries that witnessed steep reductions were Ghana, Zambia, Bolivia, Brazil, Mexico and Indonesia although there were a few such as Kenya, Malawi and Zimbabwe which saw increases (Pinstrup-Anderson and Pandya-Lorch, 1992). One part of the reductions came in the form of reductions in input subsidies. Another was through cuts in public good or services provision. Although it is widely acknowledged that public expenditures promoting agriculture were often disproportionately cut in structural adjustment programs, these are often attributed to political motivation on the part of the relevant governments rather than to Bank or Fund instigation..

Consider the instance of expenditures on agricultural research. Many countries, particularly in Latin America and sub-Saharan Africa have had to cut back sharply on already low levels of allocations to agricultural research. Whereas such expenditures grew rapidly during the 1960s and 1970s, they experienced real absolute declines thereafter in many cases. In this respect, the results of an OECD study (Brenner, 1993) are noteworthy:

- The dominant trend in public sector investment in agricultural research has been negative with both sharp reductions in overall levels and major changes in the composition of investment. Structural adjustment radically worsened chronic budgetary constraints, particularly in Africa.
- For the countries hardest hit by debt and macroeconomic crises, structural adjustment failed to restore research and other production-related investments such as irrigation. In Brazil, for example, fiscal constraints have even frustrated the very possibility of adapting research organizations and efforts to the economic restructuring. Private sector research, mostly organized in a cooperative system, has also suffered since it was also financed by levies on state marketing quotas.
- Although the growing privatization of research is in part due to the very changes in agricultural technology that have been generated, structural adjustment has played an indirect role via the fiscal retrenchment that it induced or legitimized.
- In the area of technology diffusion, seed production and marketing, for example, have become increasingly privatized, not only adding to private trader margins but also raising the production costs of seeds.

In sum, numerous DEs had already gone the distance toward agricultural liberalization, privatization and globalization prior to the Uruguay Round. To be sure, there were some developing countries, notably in semi-industrialized Asia, that managed to retain agricultural policies that were not derived from the imperative to globalize. Their relative success in import-substituting industrialization and manufactured exports enabled them to weather the crisis better while their agricultural achievements ensured domestic self-sufficiency despite rapid growth in food demands. Both allowed them to shape agricultural policies that were primarily geared to their home markets. On the other hand, the AEs themselves were of course engaged in massive agricultural mercantilism. The next section considers Uruguay Round provisions that affect all three groups of countries but by no means uniformly.

2B   The Agreement on Agriculture

The outstanding features of the earlier Kennedy and Tokyo rounds of trade agreement under GATT were that (1) most of the commitments on trade liberalization were made by the advanced economies and (2) there were explicit agreements that exempted the developing countries from the disciplines and standards that were then established. The Uruguay Round seems to have all but jettisoned this principled recognition of the relevance of international inequality in global trading arrangements. In addition, agriculture entered the GATT/WTO fold with the UR Agreement on Agriculture, reflecting the outcome, to some extent, of a battle between the Cairns group of agricultural exporters and the protectionist European Union. But whether this inclusion was to the benefit of or at the expense of the DEs remains a contentious issue. This section summarizes the major requirements, norms and standards under the AA leaving the analysis of whether the Agreement creates a level international playing field (or whether that field should be level in the first place) for section 5.

To advance global agricultural trade, the AA includes the following provisions in regard to *tariffs and quotas*:

- All quantitative and other non-tariff restrictions to be converted to tariff equivalents, added to existing tariffs and the tariffs bound. For DEs, staples in traditional diets were exempted.
- AEs to reduce bound tariffs by an average of 36 percent and a minimum of 15 percent on each item by the end of 1999.
- DEs to reduce tariffs by 15 percent on average and a minimum of 10 percent on each item by the end of 2004.

But the actual implementation of these accords has involved widespread "dirty tarrification" of quotas. In particular, AEs have chosen greatly inflated tariff equivalents for the base period 1986-88. For the EU, the inflation factor was as much as 61 percent and for the US it was 44 percent. Since these factors exceed the reductions conceded in the Agreement, the final bound tariffs will involve an actual rise in the rate of tariff protection. Moreover, the method of calculating the average tariff cut allows the AEs to actually achieve the cut by lowering higher

tariffs less and lower tariffs more (Ingco, 1996). This formula also allows tariffs to escalate with the stage of processing thus raising the effective rate of protection against processed exports from DEs.

Even after implementation of the accords, the average tariff will be as high as 36 percent in AEs and 20 percent in DEs. Bound tariffs will remain in the region of 50 to 250 percent. On a trade-weighted basis, agricultural tariffs in the AEs remain almost six times higher than those in the industrial sector (FAO, 1999, p. 8).

The AA also made certain additional provisions in order to prevent adverse effects on *market access* from dirty tarrification. These provisions are:

- For products which previously had been allowed to be imported under non-tariff measures, that explicit quotas be used to maintain imports at least at base period levels
- For products which previously had not been much imported, that a tariff quota be introduced to raise the share of imports in domestic demand to at least 5 percent by the year 2000. (This was to be implemented by means of a lower tariff applied for the in-quota imports together with a higher bound rate for the remaining imports.)

At the same time, the AA makes an egregious provision that allows AEs but not DEs the power to invoke "special safeguard" measures i.e., to limit imports in the event of unexpectedly large import increases or declines in world (import) prices!

On export subsidies, which is a major plank of AE policies, the AA standards include

- Total fiscal expenditure on export subsidies to be cut by 36 percent in AEs and by 24 percent in DEs
- The volume of subsidized exports to be cut by 21 percent in AEs by 2000 and by 14 percent in DEs by 2004.

It is noteworthy that the vast majority of DEs have no export subsidies in the first place. In consequence, they would be precluded from imposing any such subsidies in the future.

The accord also introduced a set of requirements in regard to domestic support for agriculture that may well prove to be the most consequential for DEs. After being capped at base 1986-88 levels, the Agreement requires reductions in the "aggregate measure of support" (AMS) to the tune of 20 percent over a six-year period in AEs and by 13 percent over a ten-year period in DEs. But the provision excluded the EU compensation program under the 1992 CAP reform and the US deficiency payments program.

These norms are to be applied at the aggregate rather than at the commodity level. While excluding specified input subsidies from the AMS (see below), the AMS also allows a *de minimis* exclusion of 5 percent of total support in the case of AEs and 10 percent in the case of

DEs. Notably though as many as 88 developing countries reported zero or even negative levels of AMS or positive but less than *de minimis* support. Only 12 countries have support levels subject to the reduction commitments.

Apart from the *de minimis* provisions, there are two critical exemptions for DEs:

- Agriculture and rural development measures: input subsidies to low-income or resource-poor producers and general investment subsidies.
- "Green Box" measures: these include general services to agriculture such as research and extension, pest control, environmental programs, crop insurance. The key *proviso* is that such measures be minimally trade- or production-distorting.

Finally, Article 27.3b of the Agreement on TRIPS (trade-related intellectual property rights) excludes plants and animals but requires members to provide intellectual property protection for microorganisms and plant varieties. In the case of the latter, member countries may employ patents, a *sui generis* regime or a combination of the two. It remains to be seen whether effective rights to protect traditional knowledge and common domain genetic resources, of great value in DEs, will remain intact even as it is clear that the TRIPS agreement will have far-reaching implications for the conditions under which new agricultural technologies become available in the context of the bio-tech revolution.

3   The Rationale for Globalizing Agriculture

In most DEs, food consumption levels remain low and agriculture remains underdeveloped, whether in terms of labor or land productivity. Agricultural underdevelopment explains not merely the low supply of food products but also the low effective demand for food because agriculture accounts for a large share of total employment and income. The relative price of food is of overwhelming importance for consumers in these countries. It is also a principal determinant of the real distribution of incomes both directly, via the share of rent, real wage levels and the overall rate of profits, and through its influence on core inflation.

In view of this, it would not appear debatable that the value of international trading opportunities in food staples must be assessed in relation to the objectives of food security and equitable development. But controversy abounds. One prong of the controversy concerns food security directly. In the neo-liberal view, food imports or exports do not have to conflict with the objective of food security. On the contrary, the gains from specialization that obtain from trade make it easier for countries to pursue the goal of food security. The alternative view holds that exposure to narrow and unstable international markets is a major source of food price instability and associated food insecurity. Both vulnerable producers and consumers, lacking other means for achieving food security, would be better off in domestic markets that are, in some significant measure, sheltered from such instability. In addition, countries may value a significant level of domestic self-sufficiency for non-economic reasons. The other prong of the controversy has to

do with the means for promoting equitable growth. Again, the neo-liberal claim is that international trade provides opportunities for developing countries to specialize and secure gains from trade. Hence, policies to secure domestic self-sufficiency are misguided and detract from long-run growth. As against this view, others insist that free trade provides the wrong signals while also weakening national capacities required for economic diversification and equitable growth. These proximate goals of long-run development can only be pursued with domestic and trade policy instruments that, to a considerable extent, conflict with the policy of free trade.

3A   The Gains from Trade

Is agricultural underdevelopment primarily due to the price/trade regimes within DEs and in the world at large? An affirmative answer to this question is the received wisdom. Thus, in a chapter that provides considerable illumination on the unequal bargains that recent trade negotiations have imposed on DEs, a major FAO report unhesitatingly avers that "the past policy bias against agriculture [within] these countries and distortions on world agricultural markets due to the protection and subsidization of this sector in many developed countries" are the two key factors explaining agricultural underdevelopment (FAO, 1999, p. 119). By implication, producer prices are taken to be powerful determinants of supply within DEs.

In the conventional view, production and trade subsidies in AEs have served to raise AE output and exports world-wide while production and trade taxes, whether explicit or implicit, in the developing countries have reduced DE output and net exports. Hence, at a global level, the *two sets of policies have worked against each other* so far as their impact on world supplies and world prices is concerned though the net impact would depend on the precise magnitudes and responses involved. Applied general equilibrium calculations (with thoroughly neoclassical closures) concur that the AE expansionary effect exceeded the DE contractionary effect so that past policy regimes *lowered* world prices on balance. The conclusion is that real incomes and welfare were consequently reduced in both sets of countries, the impact effects being concentrated in agriculture in DEs and in non-agriculture in AEs.

In turn, this implies that liberalization is expected, on the one hand, to reduce AE outputs and exports and therefore raise world agricultural prices and, on the other, to open up their markets for exports from the rest of the world. Trade expansion due to increased import market access will raise net world demands, cause world prices to rise and generate supply responses in the DEs. Although benefits will primarily accrue to the established DE exporters (Argentina, Brazil and Thailand among others), additional benefits will accrue also to others who are poised to become exporters at the higher prices and to producers everywhere in the DE, many of whom are impoverished. While the dismantling of both DE taxation and AE subsidization of agriculture will hurt net importers of previously subsidized products, economy-wide trade liberalization is presumed to produce net benefits for all liberalizing countries.

In the following section, the conventional premises that lead to the above conclusions will be critically scrutinized. For now, let us suppose that the putative transfer, whether visible or invisible, of resources out of agriculture in the DEs is evidence of inefficiency in neoclassical terms. Let us also assume, as is typical in the literature, that all agricultural goods are fully tradable and take the initial situation of the prototypical DE to be that of a substantial exporter. One may then ask, first, how much of an efficiency gain would in fact accrue. Empirical estimates of the long-run supply elasticity of aggregate agricultural output in developing countries are in the 0.1-0.5 range[2]. Even with parameter values that are generously biased in favor of the free trade position, the efficiency gain works out to about 3 percent of national income. As with other types of allocative inefficiency, this estimate is clearly a small number[3].

While for most DEs the one-shot efficiency gains, with conventional premises, are likely to be vanishingly small, globalizing reforms are likely to impose large income redistributions. In the numerical example noted above, agricultural consumers stand to lose 13 percent of national income and government revenue declines 5 percent while producers gain as much as 21 percent of national income or 50 percent of agricultural value added.

In much of the relevant literature, distributive questions are couched entirely in terms of `producers' versus `consumers' or urban versus rural dwellers. Such a categorization masks rather than reveal significant sources of distributive conflict. Even in terms of orthodox trade theory within a full employment setting, it cannot be supposed that raising food prices will help the mass of workers. Along Stolper-Samuelson lines, incomes from agricultural land will rise and returns to capital, used mainly in industry, will fall. Given the large weight of land and capital incomes in agriculture and industry respectively, the effect on labor incomes is ambiguous. Since agriculture is labor-intensive, wages will tend to go up but because food is a large fraction of consumption expenditures of both rural and urban workers, real wages need not rise. Since supply responses tend to be small so will be the employment response and, therefore, the decline in real wages may well swamp any employment gains. Nor is there a presumption that land-owning peasant producers will gain from higher prices since large segments of rural producers tend to be net food buyers.

The general point is that even within the orthodox calculus, getting domestic food and agricultural prices in line with international prices will produce but a small gain in `national' welfare whereas the resulting redistributions of income will be of a large order of magnitude. There is no assurance whatsoever that these redistributions will enhance food security and reduce poverty; on the contrary, there is reason to believe that the rise in food prices will reduce

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[2] See Rao (1989b) for a critical review of the literature on agricultural supply response in developing countries.

[3] The parameter values assumed are: domestic agricultural prices 50 per cent of their border levels; demand and supply elasticities equal to -.5 and .25 respectively; agricultural exports 25 per cent of domestic production; and agricultural value added 40 per cent of total value added.

per capita consumption of food and, that redistributions will expose vulnerable segments of the population to an increased level of food insecurity.

3B   Structural Constraints and Uneven Development

Openness to global agricultural markets can at best provide allocative efficiency gains. Unlike industry - where the interaction between scale economies, market size and product and process innovations, on the one hand, and the degree of competitive pressure, on the other, is sometimes taken to imply that openness fosters firm-level dynamic efficiencies in resource use and resource development - the competitive structure of farming generally precludes any such claim being relevant. To the contrary, resource development for moving backward agriculture irreducibly hinges on collective action (including public sector efforts) and is fraught with many externalities and inappropriabilities. The question thus arises: are there reasons to believe that openness might come in the way of dynamic growth in agriculture? This involves a consideration of structural relations: north/south, industry/agriculture, public/private and large-farms/small-farms.

There is strong and robust evidence that developing countries with a higher share of primary commodities in total exports grow more slowly than those which do not[4]. Reasons have to do with both the North/South relation and the industry/agriculture relation in low-income economies. First, given low income and price elasticities, historically there is a tendency for the primary terms of trade to decline. But note that the actual course of the terms of trade is endogenous to policy: from a policy viewpoint, the terms of trade with export restrictions need to be compared with what they would be under free trade. Second, price instability in global commodities produces foreign exchange instability which causes stop-go growth not only because import capacity suffers but also because revenue instability reduces a steady expansion of the supply of public goods. Finally, the prior development of an industrial base seems essential to take advantage of economies external to firms and industries but internal to the industrial sector or even the economy as a whole.

Given the constraint posed by the *initial pattern* of international specialization, it is worth recalling the liberal diagnosis of what ails DE agriculture and the liberal remedy. An interesting facet of that diagnosis is that although there were national variations, policies nonetheless converged, with DEs taxing and AEs subsidizing their respective farm sectors. Now, to the extent that "tropical/temperate" agricultural specialization is complementary rather than competitive[5], the two policy norms, far from canceling out, would have reinforced each other. That is to say, AE subsidies reduced DEs' agricultural import prices while DE taxes raised DEs'

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[4] For recent surveys, see Khor (2000) and Oyejide (2000).

[5] Major agricultural exports from developing countries include cotton, tobacco, coffee, cocoa, tea, tropical fruits, coconuts and palm oil, and sugar; key imports are wheat, rice and maize.

agricultural export prices. Together, the two sets of agricultural policies shored up the DE agricultural terms of trade. Conversely, implementing the `remedy' of trade liberalization would produce terms of trade losses (revenue losses for producers rather than gains).

A second difficulty for the orthodox diagnosis, complementary to the one just raised, is that a good deal of DE agriculture is nontradable not only because traditional basic foodstuffs are often produced as subsistence crops but also because transport and taste barriers localize both supply and demand. To that extent, therefore, the burden of agricultural trade-restricting policies in developing countries would have augmented the output of such home crops and import substitutes. Conversely, trade policy reversal would cut down the domestic supply of agricultural non-tradables in addition to adversely affecting the value of exportables (due to terms of trade losses). Agricultural value added would suffer on both counts.

Turning next to the supply side, price volatility and risks strongly influence small and subsistence producers' willingness to diversify output, adopt new technologies and produce for the market. This is not merely because income risks loom large for poor farmers but also because private insurance options are limited or costly. Hence, domestic price stabilization measures and shelters against world market price volatility can be a good bargain even at reduced average prices (see Storm, 1999). The conversion of quotas into tariffs as well as reductions in tariff rates need not be a benefit but a burden on DE producers[6].

The low aggregate elasticity of agricultural supply to prices is *prima facie* evidence that incentive-driven private input use in DE agriculture is just not powerful enough to account for dynamic supply responses and agricultural growth. Public investments in land-augmenting infrastructure such as irrigation, in rural electricity and transport networks and in supply-shifting factors such as agricultural research and extension services remain the key growth elements. This is one reason why `getting prices right' does not translate itself into faster agricultural growth.

But at low levels of development, agricultural prices also have a fiscal function. Tax revenues are raised mainly by imposts on international trade and domestic taxes on the non-agricultural, primarily industrial, sectors[7]. Even as agriculture features mainly on the subsidy side and is conspicuously absent on the tax side as regards domestic interventions, this is largely reversed in

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[6] True, when all countries' internal prices are linked to world prices, the latter will become less volatile than otherwise. But this says nothing about the compounding of market risks that this may entail. At any rate, given the thinness of most world agricultural markets, "domestic" insurance options still remain better options compared with relying on trade. It is also noteworthy that AEs have, under the AA, enabled themselves to vary tariff rates below the high bound rates (resulting form dirty tarrification) in order to stabilize their domestic markets.

[7] For an analysis of the fiscal constraint in developing countries before and after external liberalization, see Rao (1999).

the case of trade taxes and subsidies. Export taxes (subsidies) are generally agricultural (industrial) whereas import taxes tend to be predominantly on import-substituting manufactures. But while import protection for non-agriculture transfers resources from agriculture to non-agriculture, domestic taxes on non-agriculture in turn transfer resources from non-agriculture to the government. The two sets of interventions work together to raise revenues from agriculture. If revenues are a binding constraint on public investment, this method of raising revenues may be better than not investing in agriculture at all even though it distorts resource allocation.

Given such fiscal constraints, an increase in the relative price of agriculture will restrict the capacity to finance public investments though private incentives are improved. Hence, agricultural output will rise to the extent that private inputs increase but fall to the extent that public inputs decline. This provides a second important reason why observed values of aggregate agricultural supply elasticity are small. The hypothesis also helps explain why governments persistently underprice agricultural output and simultaneously subsidize public inputs. This seemingly contradictory policy package reflects the large weight of public investments and the ubiquitous constraint on direct agricultural taxation or pricing of public inputs.

The FAO report cited earlier gives prominent recognition to the fiscal considerations that have played a role in trade-based agricultural taxation (FAO, 1999). To the extent these considerations continue to hold sway, however, it needs to be recognized that foregoing such taxation may reduce the fiscal base and thus limit agricultural development itself. At the least, we are left with the question whether the dismantling of the anti-agriculture trade `bias', which is now recognized to have run almost its full course, has been favorable or unfavorable to an agricultural supply push.

Apart from the structure of demand for agricultural home goods and for exportables, the level of domestic effective demand is another factor that has powerful implications for agricultural pricing and trade policy in DEs. Low income countries are comparatively closed (after controlling for size) and this reflects the relative share of agriculture in GDP. The force of this factor arises at least on two counts. First, as already noted, the pattern of initial specialization makes domestic diversification an imperative of development. This entails trade taxation to protect industrial growth since subsidies, once again, may be fiscally constrained. But at the same time, with a limited base of manufacturing exports, industrial acceleration cannot meet its food demand and capital/intermediate goods import requirements on its own. To avoid a profit squeeze from adverse movement in the terms of trade, supply constraints in exportables and domestic agriculture must be confronted. The conventional supposition that price movements will suffice to elicit the required supply response is not empirically supported.

Second, and conversely, agricultural acceleration cannot provide a market for itself. Again, to avoid dampened farm incentives from a price scissors effect, industrial investment and/or the employment intensity of agriculture must be raised. It might be argued that the demand constraint can be relieved through agricultural import substitution and/or export expansion.

However, the former route may be constrained if agricultural home goods and imports are not easily substituted on the demand side whilst the latter route may be limited by low supply response, low foreign demand elasticities and/or quota constraints in export markets. Only the last of these considerations is changeable through trade reforms.

The upshot is that the *domestic* agriculture/industry terms of trade is a potent variable in income distribution and effective demand. Consider then a trade opening that raises net exports and domestic agricultural prices. The resulting fall in the purchasing power of urban and rural workers and poorer peasants will compress effective demand facing the non-agricultural sectors with attendant losses of output and government revenues. This will tend to reduce medium-term growth if investment responds to the state of demand and also reduce the crowding-in effects of public expenditures on infrastructure and agriculture. If the trade reform is not supplemented by a supportive agricultural policy medium-term stagflation may result (see Nayyar and Sen, 1994, and Storm, 1997).

Taken together, the internal terms-of-trade/demand channel and the fiscal/supply channel suggest that overall agricultural growth rates will be raised by trade-restrictive policies. But unlike our earlier North/South argument, we cannot be certain that AE and DE policies worked in the *same direction*. This would depend on whether net agricultural or food demand in DEs rose or fell as a result. If domestic diversification is successful (in the sense of both raising growth and spreading its benefits so that food demands could rise rapidly), then, it is quite possible for net agricultural demands to have risen and thus spilled over into the global market raising prices. In this case, North and South policies would work in *opposite directions*, just as in the liberal view, but for dynamic rather than static reasons.

It is true that such success has eluded many a country undergoing import-substituting industrialization. And in retrospect, even the static gains promised by a liberal trade regime may seem attractive compared with the costs incurred. Reasons for failure seem to be contextual and not easily generalized. Perhaps, the `agrarian question' proved politically intractable; or an agricultural revolution could not be engineered with available technologies; or predatory state extraction came to prevail in the face of one or another constraint. What is clear, however, is that the moderate or miraculous growth successes *cannot* be distinguished from the evident failures by their pursuit of free trade and non-taxation of agriculture (in this regard there is little difference, as we argue further below). This conclusion is not any the less instructive for being merely negative.

Despite turning the terms of trade against agriculture, successful agricultural transformation was effected via effective public action and investments to internalize externalities, create public goods and correct other market failures. The central task of agricultural transformation is not getting prices "right" - in line with global markets - but properly getting them "wrong":

preventing the external terms of trade from turning unfavorable and turning the internal terms of trade in favor of non-agriculture without reducing rural living standards[8].

4   Trends and Patterns

This section describes and analyzes trends and patterns in production and trade with a focus on developing economies. We examine patterns in trade flows and price changes that may signify globalization. We also take note of collateral changes in the growth of value added, productivity and labor absorption paying particular attention to trends in agriculture. Analytically, we try to make connections between these patterns and the changes in rules and regimes described in preceding sections.

In identifying trends toward policies of opening up and any consequent increases in external trade integration, we have relied upon a "before/after" periodization of the data with 1980 taken to be the dividing date across the overall period 1961-1997. Each half of this periodization is further divided into two sub-periods. At least in most developing economies (DEs), the 1980s were a time of crisis when liberal reforms were also initiated. By the end of the 1990s, a good deal of the reform initiatives had had a decade-long run to permit an assessment of their consequences. The period "before" is also similarly divided into the 1960s and the 1970s. This division rests on the consideration that the 1970s witnessed the oil shocks and the relatively easy availability of external finance for the DEs while most advanced economies (AEs) had taken significant steps toward external liberalization.

4A   Production and Trade Structures

Table 1 presents evidence of changes in the structure of income and employment that have taken place in DEs during the period 1965-1997. Here, we highlight important differences between DEs and AEs (to save space, parallel information for AEs is not shown).

As compared to the 1960s and 1970s, average GDP growth in the DEs slowed down by about 40 percent during the 1980s and 1990s (see *Table 1*). Although the average slowdown is comparable with that in the AEs, DE growth rose somewhat between the first two decades and fell slightly between the last two (see *Figure 1*). This contrasts with significant declines for the AEs in every decade[9] . High DE growth in the earlier decades is accounted for by strong performance in both industry and services. DE agricultural (GDP) growth during the period of high import substitution (until the early 1980s) was also high and stable by historical standards. During the crisis period of the 1980s, agricultural growth actually rose while both industrial and

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[8] Taiwan is a case in point (see Lee, 1971).
[9]   Growth deceleration in the DEs would be greater if the phenomenal acceleration in China is excluded.

services growth was halved. Although acceleration in China is one part of the explanation, Latin America and sub-Saharan Africa, which were most hurt by the crisis, also shared in this increase (Lele, 1992). However, the 1990s saw a sharp reversal of sectoral fortunes in the developing economies: while industry experienced a modest recovery, average agricultural growth has fallen by nearly 60 percent. Notably, the growth rate of per caput agricultural income was -0.3 percent per annum, negative for the first time in 4 decades.

The transformation of DE structures of income, employment and productivity has been relatively modest. The decline in the share of agriculture in real GDP in DEs (by 7 percentage points from 25 percent in the '60s to 18 percent in the '90s) has been accompanied by a rise of 5 points in the services' share in GDP (and by only 2 points in the share of the industrial sector). The share of agriculture in the DE labor force has declined by about 5 percentage points per decade. But despite this decline, the labor force share of agriculture is still over 3 times as large as its GDP share reflecting a level of labor productivity only one sixth that of non-agriculture.

During the last two decades, trend growth rates in the total labor force of the DEs have been above population growth rates. Although the demographic transition is well underway in DEs as a whole, high growth in the labor force can be expected to continue for a few more decades in most low-income economies. Strong labor productivity growth (in all sectors) is a necessity in order to generate sufficient investable surplus to maintain employment while also combating poverty and improving well-being.

Unfortunately, however, the picture on the labor productivity front is scarcely encouraging. While labor productivity growth was high (particularly in industry) and constituted over one half of GDP growth during the 1960s and 1970s, it fell steeply during the 1980s, constituting only a quarter of GDP growth, and did not improve during the '90s. Industry and services registered negative productivity growth in these decades (see *Table 1*). Agricultural labor productivity improved in the 1980s but deteriorated dramatically in the 1990s. Given that agriculture continues to be the major source of employment and that overall growth shows no signs of accelerating, an understanding of these productivity trends and their implications for employment and distribution has become urgent (considered below).

Turning next to the AEs, average agricultural GDP growth was high in the 1960s and especially in the 1970s, but declined in the 1980s and has been about zero during the 1990s. Overall, therefore, agricultural growth during the last two decades has fallen by a much larger margin in the AEs than in the DEs. But in common with the DEs, the 1990s witnessed the slowest agricultural growth rate in the AEs. The average growth rate of per caput agricultural income, which was well in excess of 1 percent per annum in the earlier decades, fell to -0.5 percent during the 1990s. For the world as a whole, therefore, agricultural GDP per caput has declined at an annual rate of -0.4 percent during the 1990s.

The major change in the structure of AE GDP is a decline in the share of industry and a rise in the share of services. Equally notable is the dramatic decline in the share of agriculture in the

AE labor force from 22.5 percent in the '60s to 9.2 percent in the 1990s compared to a modest fall in its GDP share. Thus, agricultural labor productivity has grown considerably faster than either industry or services as the sector has been continuously modernized, capitalized and industrialized, all under the impetus of growing production and export subsidies. While AE population growth has declined steadily throughout, AE labor force growth in agriculture has been strongly negative. Labor shedding in agriculture was never higher than in the 1990s when output stagnated.

The drop in world-wide growth rates in agriculture also coincides with a rise in the price of world-wide agricultural exports relative to all exports. The trend rate of growth in that price relative had been negative in the 1960s and 1970s, nil in the 1980s and rose to 1.6 percent per annum in the 1990s. Agricultural demand growth was no doubt slowed by the overall slowdown in world growth and further by the Asian crisis. But world-wide agricultural supply growth also declined and, on balance, raised prices. The pressure on government subsidies in the AEs and the constriction of government investment in the DEs may well account for this decline and of course both are related to the context of globalization. Ultimately, therefore, the agricultural slowdown cannot be separated from the impact of globalization on either the supply or the demand side.

Between 1960 and 1995, the per person availability of food for direct human consumption rose 19 percent to 2720 Kcal/day (FAO, 1999, p. 80). The DE gain was 22 percent if China is not included (32 percent if it is). Sub-Saharan Africa saw its average availability rise from 2050 to 2150 Kcal/day whilst south Asia's grew from 2000 to 2350 Kcal. For other parts of the developing world, availability is in the range 2700-3000 while in the OECD countries it is around 3500 Kcal. The world-wide incidence of undernutrition is estimated to be about 830 million persons in 1995. The slow progress in alleviating hunger, undernutrition and low levels of food is related to the slowed decline in poverty and in agricultural growth in the DEs.

Evidence on the changing structure of world trade during the period 1961-1997 is now highlighted in terms of trend growth rates in the volume of exports and imports, for DEs and AEs. World trade grew fastest (at 8.8 percent per annum) during the 1960s, fell sharply in the 1970s and further in the 1980s. But trade growth has recovered smartly during the 1990s reaching a trend rate of 7 percent. Rising globalization is indicated by the fact that trade growth in the 1990s has been 3.3 times as fast as GDP growth compared to only 1.6 times as fast in the 1960s. The share of agriculture in world trade (at current prices) has declined from a fifth in the 1960s to less than a tenth in the 1990s. Although the share of agriculture in world trade remains larger than its share in world GDP, the differential has narrowed greatly to the vanishing point indicating that agricultural products now are no more "tradable" than industrial products and services taken together. But this is not because agriculture has become less tradable over time but because the traded part of non-agriculture has risen.

Although the share of DEs in total world exports (again at current prices) has risen over the whole period, the greater part of the rise occurred under regimes of import substitution in the

Golden Age[10]. This is even more the case if agricultural exports are excluded. Export trends in agriculture and non-agriculture are also related to regime changes: the DE share of world non-agricultural exports has risen from 15.4 percent to 26.3 percent while their share of agricultural exports has fallen from 38.8 percent to 28.3 percent. At the same time, their share in agricultural imports rose from 16.5 percent to 25.3 percent. Thus, while the DE import surplus in non-agriculture has declined since the 1960s, their agricultural export surplus has practically vanished. Note, however, that DE agricultural exports rose at a faster clip in volume terms during the 1980s and 1990s compared to the earlier periods, especially the 1960s (see *Figure 2*).

Tables 2 and *3* present a more detailed picture of agriculture in world trade employing period averages of DE and AE exports and imports for major commodity groups (expressed as a percentage of world trade). The upper panel of *Table 2* shows these shares based on trade flows at current prices while the lower panel is at constant (1980=100) prices. *Table 3* presents bilateral trade balances (commodity-wise and aggregate) derived from *Table 2*.

The already-noted long-term decline in the share of agriculture in total world trade as well as in the trade of DEs and AEs is also manifest for each of the commodity groups. DE agricultural exports made up 7.4 percent of world trade (at current prices) in the 1960s but only 2.5 percent in the 1990s. AE agricultural trade amounted to 11.7 percent of total world trade in the '60s but only 6.4 percent in the 1990s. The advanced economies are a much bigger agricultural exporter than the developing economies (the AE share being about 2.6 times as large as the DE share). Nearly half the decline in the relative importance of agricultural trade is caused by "other food" and the remainder is split roughly equally among cereals, fibbers and other non-food. It is notable that cereals trade which features so prominently in international fora and politics constitutes only 13 percent of total agricultural trade while the other food category has a commanding share of 67 percent.

In terms of destination, intra-AE agricultural exports are by far the largest export category, followed by agricultural exports from DEs to AEs. Thus, AEs are the major buyers of agricultural products. Intra-DE agricultural trade constitutes less than 10 percent of total agricultural trade.

Cereal imports accounted for about 14 percent of DE consumption in 1997, up from less than 10 percent two decades earlier. In most countries other than China and India, increased food availability was mainly explained by rising food imports. Based on the three-year average food trade balance for 1995-97, 105 out of 148 developing countries are net food-importers (Valdes and McCalla, 1999). But regional contrasts are sharp. Growing Asian imports were due to relatively rapid economic growth and demand expansion and despite accelerating domestic supply. The complementarity between agricultural and non-agricultural growth in these countries shows up as a positive relationship between agricultural demand growth and rising

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[10]   Current-price shares, of course, include the effects of changing terms of trade which will be considered below.

agricultural imports. By contrast, the growing dependence on imports in Africa is a complex result of supply failure, rapid population growth and consumer substitution of importer cereals for domestic crops such as millets, sorghum and cassava. There was also a symbiosis between the failure of domestic supply and the subsidized overproduction in the AEs: but it is debatable that this symbiosis obtains via the price mechanism.

There are wide differences over time between trade shares at current and constant prices from which the implicit relative price trends may be calculated. *Figure 3* shows the tradable prices facing DEs (period averages relative to world tradable prices). DE agricultural export prices have trended downward in every period. The decline was steepest in the 1980s but continued into the 1990s. DE agricultural import prices followed the same trend through the 1980s but have been stable thereafter despite continuing rapid productivity increases in AE agriculture. Moreover, the relative prices of AE agricultural exports rose nearly 20 percent between the 1980s and the 1990s. These trends reflect a combination of factors including the impact of slowed agricultural growth in DEs and of the Uruguay Round Agreement on Agriculture[11].

Figure 3 also shows that *non-agricultural* exports from the DEs faced declining relative prices in the 1990s after trending upward over the preceding decades. By contrast the relative prices of non-agricultural imports into the DEs showed little movement. During the 1990s, real agricultural export prices have fallen by about 12 percent and real non-agricultural export prices have also fallen by about 13 percent. In the aggregate, therefore, there has been a 10 percent decline in the terms of trade facing the developing economies. This translates into a 0.8 percent GDP loss per annum for developing economies as a whole which is just about the same as their WTO-projected gain from the removal of all trade distortions in the post-UR regime.

These movements in the terms of trade of developing economies, in respect of both agricultural and non-agricultural trade, are best understood in terms of Prebisch effects. Recall that per caput income growth has been nearly the same in DEs and AEs whereas DE exports in both sectors grew faster (in volume terms) than AE exports. Non-agricultural export growth was 50 percent greater (agricultural export growth 16 percent higher) in DEs than in AEs.

For the least developed economies, the primary commodity terms of trade are very near to being their overall terms of trade and these countries have suffered large losses as the commodity terms have declined sharply in recent decades. For the period 1980 to 1992, non-fuel prices relative to manufactures fell by 52 percent. During the four-year period 1986-1989, sub-Saharan Africa suffered losses of $ 56 billion which translates into an annualized loss of about 4 percent of GDP. Similarly, 15 middle-income highly indebted countries lost an annual average of 5-6 percent of their GDP over the period 1980 to 1989 (UNCED findings cited in Khor, 2000).

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[11] For the world as a whole, relative prices of agricultural exports did not change.

These implicit transfers out of the South to the North are clearly related to globalization under the impetus of convergent liberalization[12].

The conventional diagnosis of DE agricultural performance laments the decline in its GDP share on the ground that it had adverse effects on DE growth, and trade policies in both AEs and DEs are blamed. However, this long-standing view about the ills of world agricultural trading arrangements has been at odds with the actual policy advice rendered (or conditionalities imposed) on developing countries by such multilateral institutions as the World Bank. It is only in the 1990s, particularly in the wake of the UR and its AA, that concerted multilateral policy changes have been recognized as necessary for DEs to derive the benefits. For example, the Bank has recently asserted that "without improved demand for developing countries' agricultural products, the agricultural growth needed to generate employment and reduce poverty in rural areas will not come about" (World Bank, 1997:61)).

For a quarter century prior to this, however, the bulk of the effort of liberal reforms in DEs, influentially led by the World Bank, has focused on unilateral agricultural liberalization, country by country. But if AE constraints on agricultural trade inflict welfare losses on DEs, then, in the absence of any AE reforms, DE attempts to liberalize their own trade constraints must add self-inflicted welfare losses to these. Hence, what amounted to unilateral agricultural trade liberalization in the DEs cannot be described as "progress" on the path to making an agriculture-led development and poverty alleviation strategy workable (as claimed, for example, by Binswanger and Lutz, 2000, p. 3).

Table 3 (and *Figure 4*) shows that the agricultural export surplus of DEs in relation to AEs has, at current prices, declined from 4.2 percent in the 1960s to 0.3 percent in the 1990s. In their trade with AEs, DEs have been cereal importers throughout the whole period, but the large decline in the DE export surplus in "other food" has now rendered them only marginally self-sufficient in food (+0.17 percent of world trade in the 1990s). At constant prices, the decline in the DE agricultural trade surplus is smaller, reflecting the adverse trend in the terms of DE agricultural trade.

According to one calculation, the expected world price increases from the Agreement on Agriculture would be of the order of 4 to 6 percent for the major food commodities (Valdes and Zietz, 1995).[13] It is believed that this will be swamped by the generally downward trend in the

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[12] The 1990s are the only decade during which average prices of both agricultural and non-agricultural exports from the DEs fell. Income losses from terms of trade declines have tended to rise over time precisely because liberalization has raised the trade/GDP ratios in the developing economies.

[13] Contrary to such expectations, actual agricultural prices in world markets have significantly declined since 1996, reaching their lowest levels in more than two decades in the year 2000 (see FAO, 2000). While the causes of this depression of agricultural prices need more investigation,

real prices of food. But this says nothing about the concurrent impact of these reforms on overall growth performance in low-income countries, and on agricultural growth and income generation for the poor who will be most affected by the price impacts. With the AEs slated to reduce food production further, the prospects for raising cereal supply and consumption in the DEs largely depends on the growth of internal production. That increase matters not only in providing supply but also in accelerating effective demand (or entitlements).

4B   External Market Integration

Agricultural trade ratios (relative to agricultural GDP), a measure of integration of domestic markets with external markets, are presented in *Table 4A* and *4B* (at current prices and constant prices, respectively). AE agriculture is far more integrated with external markets than is DE agriculture (see *Figure 5*), its trade ratio for the 1990s being 130.7 percent compared with only 31.9 percent for the developing countries. But aggregate DE agricultural trade (exports+imports) at constant prices grew from 22.2 percent of GDP in the 1960s to 31.9 percent in the 1990s - a clear rise in trade integration. The corresponding rise in current price terms is from 16.9 percent to 32.6 percent. What is noteworthy is that most of the increase occurs in the last two decades despite the much slower growth of overall GDP and, in the 1990s, of agricultural GDP. Thus, DE agriculture is indeed undergoing "globalization" of late.

But increased globalization is primarily due to a rise in agricultural imports relative to agricultural GDP rather than to increased relative exports. The negative trend in the DE agricultural trade surplus has continued right through the 1990s when agricultural trade was liberalized on many fronts. This does not, *prima facie*, support the contention, implicit in much of the literature on trade liberalization, that the developing economies have comparative advantage in agriculture.

Commodity-wise the rise in total import ratios is mainly accounted for by raw materials (from 1.5 percent of agricultural GDP in the 1960s to 5.3 percent in the 1990s) and cereals (from 2.7 percent to 4.3 percent). Exports (in real terms) relative to GDP declined for "coffee/tea/cocoa/spices" and "textile fibbers", but increased for "fruits and vegetables" and "raw materials". Evidence on DE and AE commodity-wise average shares in world agricultural trade (at constant prices) lends further support for the above conclusions. DE imports of food have risen from 16 percent in the 1960s to 21 percent in the 1990s, while the AE food import share has declined. The DE non-food import share is also rising. Taken together, DEs are becoming a

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it is clear that the continuing farm support schemes both in the EU and the US play a major role. Both schemes, of roughly equal size (US $ 25 billion per year), give direct income support to farmers, covering their fixed costs and reducing production risk, thereby providing an incentive to step up production irrespective of demand conditions (see Financieele Dagblad, 2001). Low agricultural prices depress export earnings of farmers in the South and reduce the DEs capacities to import (industrial goods and technology) and to service their external debts.

more important importer of agricultural products vis-à-vis AEs. In contrast, the DE export share declined.

External integration may be gauged alternatively by the extent of convergence in tradable prices. The table below shows movements in the prices of DE exports to AE exports (see also *Figure 6*). The DE-AE export price ratios show a tendency to converge during the 1960s and 1970s but have diverged since (for both food and non-food). The estimated trend growth rates of relative DE-AE prices are often not statistically different from zero in the 1960s and 1970s, but show a clear negative trend in the 1980s.

Agricultural Export Price Convergence	*1960s*	*1970s*	*1980s*	*1990s*
Food Exports	86.1	90.4	86.3	62.4
Agricultural Non-Food Exports	84.1	100.0	90.0	72.9
All Agricultural Exports	85.9	92.9	87.2	65.7

The divergence in prices in recent decades, when placed alongside the rise in trade integration, may seem puzzling. In the normal course, increased trade ratios are thought to arise from declines in natural (e.g., transport) or policy barriers but then one would expect price ratios to be converging. Price divergence then suggests either or both of two possibilities: that a greater part of agricultural trade between AE and DE consists of complements rather than substitutes (in production or consumption) or that policy barriers have, on average, actually risen in recent decades. The latter, however, is scarcely plausible.

Although external integration has increased in recent decades and is clearly related to liberalized policy regimes, DE agriculture appears to be less tradable than generally assumed. While the decline in self-sufficiency in regions outside Asia has been rapid, it is still the case that the vast bulk of the developing world's population live in nations that are within 5 percent of staple self-sufficiency. It is equally significant that only a handful among these nations (including Argentina, Thailand, Zimbabwe and Surinam) had a net export ratio for staple cereals exceeding 10 percent. It is no wonder that most global markets for agricultural commodities are thin and volatile. Coupled with the fact that non-cereals agricultural commodities entering global trade tend to be complementary (in the "tropical/temperate" sense), these observations belie certain common assumptions about the sector. A good part of DE agriculture is non-tradable and the part that is tradable tends to be predominantly complementary. While these observations are certainly not independent of trade regimes, the power of policies appears to be exaggerated. On the other hand, this misreading of the weight of policies to promote or retard agricultural trade can nonetheless lead to costly errors of policy as appears to have been the case in the era of agricultural "globalization".

5   Understanding Agricultural Globalization

The basic contradiction in the present world trade regime is between the Herculean efforts devoted to enforce international policy convergence and the radically divergent initial structural positions that actually exist across nations. Liberalized trade in food and agriculture, which is a critical sector for both growth and distribution in developing economies, has now been institutionalized in the WTO. But the new rules are far from creating a level playing field. While the promised gains from agricultural trade, even by orthodox calculations, are static and minuscule, they are already producing inequitable distributive outcomes. Even more worrisome are the possible dynamic consequences for growth and productive labor absorption in DEs. This concluding section considers just a few aspects of the forces underlying agricultural globalization including the constricted development options that it entails for DEs and the unequal international bargain that rules it.

5A   Beyond Gains from Trade

In understanding the techno-economic forces that may be driving agricultural globalization, it is instructive to examine growth trends in agricultural productivities between the advanced and developing countries. *Table 5* puts together sectoral productivity trends and relatives. Average labor productivity levels are calculated in US$ at 1980 prices. Within each of the country groupings, agricultural productivity remains only a fraction of industrial productivity and (a somewhat higher fraction) of services productivity. There is also a tendency toward "internal convergence" i.e., for agricultural productivity to catch up with the other sectors. However, the rate of catch-up has been considerably higher in the advanced countries compared with the very modest gains in the developing economies[14].

When the productivity growth rates of DEs and AEs are compared for each of the sectors, it is clear that the advanced countries have, in Ricardian terms, an "absolute productivity growth advantage" in all sectors. When the relative productivity differentials are compared across sectors, AEs are seen to have a "comparative advantage" in agriculture while DEs seem to have a comparative advantage in both industry and services.

Moreover, the comparison of productivity growth rates in DEs and AEs over time suggests growth or productivity "divergence" in all the sectors, and for all the periods. Such divergence is most pronounced in agriculture. That is, DEs' comparative disadvantage (advantage) in agriculture (industry and services) is rising over time. This is reflected, so it might be argued, in declining self-sufficiency in DE agriculture and implies that further liberalization will hurt DE agriculture.

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[14] The growth of total labor productivity is higher than all the sectoral growth rates in the first 2 decades and the last. Apart from the fact that growth rates are fitted time trends, this reflects strong changes in the sectoral weights.

Implicitly consistent with such a Ricardian argument is the proposal that in pushing for AE tariff concessions in the area of industrial products (including textiles and clothing), DEs could exchange these against further concessions in agriculture and services (see Panagariya, 2000). This seems to presume that AEs have trade advantage in agricultural products at least in comparison with the low end of industrial products.

But traditionally the matter has been viewed in a Hekscher-Ohlin factor-endowments framework with the presumption being that it is the DEs, given their high relative endowment of labor, that have comparative advantage in labor-intensive agriculture. From this viewpoint, agricultural liberalization will be good for national income and poverty alleviation in DEs. From this viewpoint, the previous inroads by AE exports are attributable to AE trade promotion. Moreover, trade liberalization (in both groups of countries) should aid DE agricultural advance.

All this needs to be seen in the context (1) that productivity growth rates reflect not just technological differences but also the deep influence of AE policies of heavy subsidization and protection, and (2) that agriculture in DEs is the mainstay of employment and livelihoods for a large fraction of the population and that it is the main form of "social security" there is. It is not merely that the assumptions of full employment and exogenous technologies colors both forms of the academic comparative advantage argument. Conventional interpretations of the Uruguay Round also misread the actual thrust of the AA which has not only left a good deal of earlier AE policies in place but also substantially constricted the pursuit of self-sufficiency in DEs (see the following section). There is besides, the impact from the confluence of the new regime of intellectual property rights under the Uruguay Round and the development of bio-technology that will have to be factored in.

Under these circumstances, opening up DE agriculture to global markets with only a partial dismantling of the protective-promotional regime in AE can have potentially large and unfortunate consequences for the former, a majority of whom are not net exporters of food but rather already exposed to significant imports in the crucial cereals sector or, at best, marginally self-sufficient. Consider, for example, the following scenario described by McMichael (2000):

> In the early 1990s, the U.S. Department of Agriculture estimated that Pacific Asia would absorb two-thirds of the over $ 3 billion increase in global demand for farm exports by the year 2000. Pacific Asian imports would be assisted by $ 1 billion in U.S. Export Enhancement Program subsidies to American exporters ... The USDA predicted: "In the absence of sustained, aggressive investment in infrastructure and increased competitiveness for corn production, the Philippines could become a regular corn importer by the end of the decade .... U.S. corn may be able to capture a large share of this growing market (p. 125).

McMichael also notes that under the Agreement on Agriculture, the OECD predicted that local corn prices would be undercut by 20 percent and threaten "half a million peasant households with income declines of 15 percent". What is noteworthy is that it is not textbook comparative

advantage revealed in market prices but comparative access to subsidies in the AEs and the comparative inability to create basic public goods and services in the DEs that pave the way for such outcomes. The latter, as argued in section 3 B, is *not independent* of the new trade rules. The AA, far from underwriting a level playing field for farmers across the field, actually serves to institutionalize uneven development.

Given the overwhelming importance of agriculture in providing employment and implicit social security in low-income countries, it is pertinent to examine trends in agricultural labor absorption (see the table below and *Figure 7*). It seems clear that periods of high (low) agricultural GDP growth have also witnessed low (high) elasticities of agricultural labor absorption.

Agricultural Labor Absorption	*1960s*	*1970s*	*1980s*	*1990s*
GDP Growth	2.70	2.76	3.39	1.45
Productivity Growth	1.21	1.04	1.81	0.42
Labor Force Growth	1.49	1.72	1.58	1.03
Elasticity of Labor Absorption	0.55	0.62	0.47	0.71

To be sure, productivity growth and labor absorption are related by definition: for any *given* GDP growth rate, high productivity growth translates into a low elasticity of labor absorption and vice versa. But if both productivity and labor force growth are taken to be exogenous (as in the neoclassical model), there is no reason to expect the observed inverse correlation between GDP growth and the elasticity of labor absorption.

A possible hypothesis consistent with the observed inverse correlation is that the rate of productivity growth is an increasing function of the rate of output growth. In turn, such a relationship (a "Verdoorn's Law" in effect) for agriculture may derive from increasing returns in research or indivisibilities in infrastructure investments. This will be reinforced if agrarian and rural market structures equitably diffuse technologies, infrastructure and growth[15].

Traditionally, agriculture in low-income countries has been a reservoir of surplus labor (and has thus acted as a sort of default safety net). Unmanaged globalization poses a potentially serious threat to this function by forcing agriculture to shed labor faster than it can be productively absorbed in industry or other high value-added activities. The threat of increased global competition to DE agriculture is real and much of it may well issue from within the DEs themselves as the viability of small farms is undermined by a combination of increased price volatility, reduced output prices, reduced subsidies and declining public (infrastructural) inputs, services and final goods. Agricultural transformation is more of a challenge (and an

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[15] By contrast, there has been continuing labor-shedding within AE agriculture throughout the post-War period. Indeed, during the 1990s, labor shedding has been as high as it has ever been even though this was a period of zero growth in output.

opportunity) in low-income countries struggling to industrialize than in middle-income economies. Globalization seems to be worsening the challenge and diminishing the opportunity.

5B   The Growing Corporatization of Agriculture

As part of the market-driven globalization process, the transnational corporations (TNCs) have managed to considerably increase their influence over agricultural production and trade, both in developed and developing countries (see Madeley, 1999), bringing with it a movement from local farming practices to corporate-capitalist agricultural production (Nanda, 1995). The agro-TNCs sell seeds, fertilizers and pesticides to farmers, patent "new" crop varieties and are all involved in plant genetic engineering, plant and animal breeding. They dominate production and trade in key agricultural inputs, such as chemicals and seeds, and process, market and export a vast number of agricultural products.

In production, while in the 1970s in as number of countries TNCs were expropriated from plantations (growing export crops), in the late 1980s and 1990s, the same corporations were invited back, often on a joint venture basis. In other countries, the plantations of colonial times have been replaced by out-grower schemes, in which large numbers of farmers grow (and sometimes process) a crop on contract. A recent FAO (1999) study of the experience of 16 developing economies in implementing the AA finds "a general trend towards the concentration of farms, in a wide cross-section of countries. While this led to increased productivity and competitiveness with positive results, in the virtual absence of safety nets the process also marginalized small producers and added to unemployment and poverty."

In addition to these trends, in many DEs, land under food crops is being transferred to export crops; according to an estimate by Madeley (1999), at a pace of a million hectares per annum. This has led - in Nanda's (1995) words - to the "transnationalisation of agricultural production": while the South's agro-food production is reoriented towards higher-value products for markets in the North, the North exports (indeed dumps) its domestic (food) surpluses. Or, as the FAO (1999) study concludes, in the post-AA period DEs experienced remarkable import surges in dairy products (mostly milk powder) and meat (mainly poultry), while at the same time significant supply-side constraints prevented them from increasing their exports and thus taking advantage of increased global market access. This explains the DEs' dependence on food imports from the AEs (as we report in Section 4A).

The global markets for inputs into agricultural production are all oligopolised. For example, eleven TNCs account for 81 per cent of worldwide agrochemical sales and 24 corporations control for half of the commercial seed market. In trade, TNC domination is even stronger. For instance, six corporations handle about 85 per cent of world trade in grain, eight TNCs account for 55 to 60 per cent of world coffee trade, seven account for 90 per cent of the tea consumed in OECD countries, three account for 83 per cent of world trade in cocoa, and three account for 80 per cent of banana trade (Madeley, 2000). TNCs increasingly use identical distribution channels

for seeds and crop chemicals, opening up the possibility of linking chemical and seed development and marketing. Unsurprisingly, the agrochemical and seed TNCs have not been slow to develop - often via genetic engineering - new crop varieties that are responsive to their chemicals.

Patents are the lifeblood of the agro-chemical industry, the means through which agri-business companies can exercise control. The large corporations have the money to research and develop products that are patentable, together with the legal means to protect them. The TNCs have not been slow to spread their patenting into the developing world: some 80 per cent of patents for technology and products in DEs are now held by TNCs (Madeley, 2000). This spread has been possible only now that TNCs have the WTO (TRIPs) rules firmly on their side – a situation which has been justified by pointing out that strong private intellectual property rights protection will also be in the self-interest of the DEs themselves. But the very little empirical evidence that is available on the economic impact of intellectual property rights (IPR) in general and TRIPs in particular suggests that the recent dramatic changes in IPR regimes have not had a positive developmental impact. Instead, they have only led to a transfer of royalty payments from the DEs (see Perrin, 1999). Case-study evidence, often collected by NGOs, clearly points to likely negative implications of TRIPs for DE agriculture, poverty and food security here (Madeley, 2000).

5C   Inequality and Autonomy

At the level of nation-states, international agricultural negotiations define three broad interest groupings. First, the United States and the Cairns Group (including some DE agricultural exporters such as Chile, Argentina and Brazil) have been the most insistent instigators of liberalization and opponents of export subsidies. Second, the industrialized countries including the EU and Japan resist the pressure to liberalize by counterpoising the multi-functionality of agriculture. Third, developing economies share a common concern about losing policy autonomy to global markets that may compromise the ability of their relatively large agricultural sectors to reduce poverty, provide food security and create employment. The last group lacks the cohesion of the others as it is divided depending on net trade position, the composition of exports, pre-existing trade preferences and the size of the agricultural sector.

Although the AA provides for increases in market access and cuts in export and domestic farm subsidies (the latter affecting past AE policies for the most part), the basic structure of AE trade interventions in agriculture has not been radically altered. By contrast, most developing countries have had to make major adjustments in policy. Moreover, the potential for development-oriented interventions seems to have been radically undercut by several provisions of the Agreement. According to a careful FAO analysis:

- DEs may come to find their policy options limited in the future if interpretation of the agreement disallows product-specific support based on low levels of support in the base year 1992.
- Since most product-specific support is devoted to basic foodstuffs and since, for several countries, such support is already near the *de minimis* levels, future increases in support for basic foodstuffs may be constrained.
- The scope for increasing non-product specific support - sector support including credit, transport, irrigation and fuel - is much more limited than for product-specific support. Since these are among the most important supply shifters, potential growth gains may be fettered.
- Many DEs have low levels of bound tariff rates so that their scope for limiting the adverse consequences of world price fluctuations has accordingly been narrowed.
- Given the status quo bias of export subsidy restrictions in the AA, DEs are obliged to forego "infant industry" promotion measures via exports since direct promotion of production is likely to be administratively constrained.
- Since many green box measures are bound to have long run effects on trade and production, their allowance under the stricture of "minimal distortions" of trade and production is likely to face future challenges.

Apart from the impact of TRIPS on agriculture (see below), the thrust of the accord is, first, to institutionalize international inequalities in the base year. Second, the fundamental norm of policy has been couched in terms of "free trade" rather than either development or equity. Third, the special and differential treatment of DE's is confined narrowly to threshold ceilings and transition times. As if these principles were not iniquitous enough, AEs have reserved the right to invoke "special safeguard" measures to protect their farm sector.

The TRIPS part of the Uruguay Round has also institutionalized inequities (not to mention inefficiencies) in the intellectual property rights regime with potentially large consequences in agriculture as well. Previously, DEs had exempted major areas including agriculture and pharmaceuticals from national patent legislation. Although TRIPS allows *sui generis* (rather than patent) systems of IP protection in regard to plant varieties, it remains to be seen whether effective rights to protect traditional knowledge and common domain genetic resources will remain intact. Apart from inequality in the monopoly rents accruing from the newly minted rights, DEs are likely to suffer losses from the open domain access of their own "property rights". The growing privatization of agricultural research will not only extract rents from farmers everywhere but also call into question the viability of peasants dependent on traditional technologies[16].

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[16] The new technologies also have trade-disruptive potential. The demand for labelling and segregation, for example, arises from both health fears and fears about unintended consequences for the food supply and the environment (Kirchhoff, 2000). To the extent that segregation is technically demanding and not fool-proof, global trade, and developing economies in particular, may end up paying a large price.

The central tendency in the world agricultural trade regime may be difficult to reverse but not impossible. While there is momentum building in favor of more of the same, these promise no more benefits for DEs than have the UR or unilateral structural adjustments[17]. On the other hand, the big players and their internal conflicts have ensured that global agricultural markets remain the most illiberal in the world. While agricultural development success still depends much on the DEs' own ability and will to steer a strategic course around their structural constraints, this feature of world trade may yet be turned to their advantage and to meet their central concerns even if these are not fundamentally trade-centered.

Appendix: Data Sources and Notes to the Tables

Table 1: GDP Structure and Trends (World, DEs, AEs)

Data Sources: (i) World Bank (1999), World Development Indicators;
                       (ii) FAO (2000), Datastat.
Notes: (i) The percentage shares given in the tables are averages of the period 1965-1969; 1970-79, 1980-89 and 1990-97;
(ii) Growth rates are estimated trend growth rates for the periods 1965-69, 1970-79, 1980-89 and 1990-97. Only statistically significant growth rates are reported; a "0" indicates a statistically insignificant trend coefficient.
(iii) GDP data are in US$ at constant 1980 prices (not PPP adjusted).

Trade Structure and Trends

Data Sources: FAO (2000), Datastat.
Notes: (i) The percentage shares given in the tables are averages of the period 1961-1969; 1970-79, 1980-89 and 1990-98;
(ii) Growth rates are estimated trend growth rates for the periods 1961-69, 1970-79, 1980-89 and 1990-98. Only statistically significant growth rates are reported; a "0" indicates a statistically insignificant trend coefficient.
(iii) Growth rates of export and import volumes are based on trade flows in US $ at constant 1980 prices.

Table 2: Agriculture in World Trade, and Trade Balances

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[17] The net benefit from removing post-UR distortions in all goods markets of both OECD and developing economies are estimated at $ 45 billion (1992 prices) for all DEs in the year 2005 and $ 217 for all OECD economies (Anderson, Hoekman and Strutt, 1999). These amount to just 1 percent and 1.2 percent of the respective GDPs. Small as these estimates are, they hardly begin to address the processes of uneven development under structural constraints.

Data Source: UN, Yearbook of International Trade Statistics, various issues.
Notes: The percentage shares given in the tables are averages of the period 1965-1969; 1970-79, 1980-89 and 1990-97.

Tables 4: External Integration of DE and AE Agriculture

Data Sources: (i) World Bank (1999), World Development Indicators;
(ii) FAO (2000), Datastat.
Notes: (i) The percentage shares given in the tables are averages of the period 1965-1969; 1970-79, 1980-89 and 1990-97;
(ii) real GDP data are in US$ at constant 1980 prices. (not PPP adjusted).

Table 5: Labor Productivity Trends and Relatives

Same as for Table 4

References

Anderson, K, Hoekman B and Strutt A. 1999. Agriculture and the WTO: Next Steps. Paper presented at the Second Annual Conference on Global Economic Analysis, Avernaes Conference Centre, Helnaes, Denmark, 20-22 June.

Binswanger, H and Lutz, E. 2000. Agricultural Trade Barriers, Trade Negotiations and the Interests of Developing Countries. High-Level Round Table on Trade and Development: Directions for the Twenty-First Century. Geneva: UNCTAD.

Carliene Brenner. 1993. *Technology and Developing Country Agriculture: The Impact of Economic Reform*. Paris, OECD Development Centre.

FAO. 1996. *The Food Situation in the Least Developed Economies and the Net Food Importing Countries*. Rome: FAO.

FAO. 1999. *Agriculture, Trade and Food Security: Issues and Options in the WTO Negotiations from the Perspective of Developing Countries*. Report of an FAO Symposium held at Geneva. Rome: FAO.

FAO, 2000. *Commodity Market Review 1999-2000*, Rome: FAO.

Financieele Dagblad, 2001. `Boeren VS niet gebaat bij nieuwe handelsronde' (`Farmers in the US will not gain from new round of trade negotiations'), 9 August.

Ingco, M. 1996. Tarrification in the Uruguay Round: How Much Liberalization? *The World Economy*. 19(4):425-447.

Khor, M. 2000. Globalization and the South: Some Critical Issues. Geneva: UNCTAD, Discussion Paper No. 147.

Kirchhoff, Sue. 2000. Deepening of the Agricultural Divide: Farm Belt Fights Northeast-Backed Biotech Label Bill. *Boston Globe*, December 6.

Krueger, A, Schiff M and Valdez A. 1988. Agricultural Incentives in Developing Countries: Measuring the Effect of Sectoral and Economywide Policies. *World Bank Economic Review*. 2:255-271.

Lee, Teng-hui. 1971. *Intersectoral Capital Flows in the Economic Development of Taiwan, 1895-1960*. Ithaca: Cornell University Press.

Lele, Uma. 1992. Structural Adjustment and Agriculture: A Comparative Perspective on Response in Africa, Asia and Latin America. In Franz Heidhues and Beatrice Knerr

(eds.). *Food and Agricultural Policies under Structural Adjustment*. Frankfurt am Main: Peter Lang.

Madeley, J., 1999. *Big Business, Poor Peoples. The Impact of Transnational Corporations on the World's Poor*, London: Zed Books.

Madeley, J., 2000. *Hungry for Trade. How the Poor Pay for Free Trade*, London: Zed Books.
McMichael, Philip. 2000. Global Food Politics. In F. Magdoff, J. B. Foster and F. H. Buttel (eds.) *Hungry for Profit*. New York: Monthly Review Press.

Nayyar, D. and A. Sen, 1994. International Trade and the Agricultural Sector in India, in G.S. Bhalla (ed.) *Economic Liberalization and Indian Agriculture*, New Delhi: Institute for Studies in Industrial Development.

Nanda, M., 1995. `Transnationalisation of Third World state and undoing of the green revolution', *Economic and Political Weekly*, 30 (4), PE-20 - PE-30.

Oyejide T. Ademola. 2000. Interests and Options of Developing and Least-Developed economies in a New Round of Multilateral Trade Negotiations. Geneva: UNCTAD. G-24 Discussion Paper Series No. 2.

Panagariya, Arvind. 2000. "The Millennium Round and Developing Countries: Negotiating Strategies and Areas of Benefits." Geneva: UNCTAD, G-24 Discussion Paper No. 1.

Perrin, Richard K. 1999, "Intellectual property rights and developing country agriculture", *Agricultural Economics*, 21, 221-229.

Pinstrup-Anderson, P and Pandya-Lorch, Rajul. 1992. Poverty and Income Distribution Aspects of Changing Food and Agricultural Policies during Structural Adjustment. In Franz Heidhues and Beatrice Knerr (eds.). *Food and Agricultural Policies under Structural Adjustment*. Frankfurt am Main: Peter Lang.

Rao, J Mohan. 1989a. Getting Agricultural Prices Right. *Food Policy*. 14:28-42.

Rao, J Mohan. 1989b. Agricultural Supply Response: a Survey. *Agricultural Economics*. 3:1-22.

Rao, J. Mohan. 1999. Globalization and the Fiscal Autonomy of the State. In *Globalization with a Human Face: Background Papers*. New York: UNDP. Volume 1:327-360.

Schiff, M and Valdes A. 1992. The Plundering of Agriculture in Developing Countries. Washington DC: The World Bank.

Storm, S., 1997. `Agriculture under Trade Policy Reform: a Quantitative Assessment for India', *World Development*, 25 (3).

Storm, S., 1999. `Foodgrain price stabilisation in an open economy: a CGE analysis of variable trade levies for India', *The Journal of Development Studies*, 36 (2), 136-159.

UNCTAD. 2000. Impact of the Reform Process in Agriculture on DEs and Net Food-Importing Developing Countries and Ways to Address Their Concerns in Multilateral Trade Negotiations. Background note by the UNCTAD secretariat. Geneva: UNCTAD.

Valdes, A and Zietz, J. 1995. Distortions in World Food Markets in the Wake of GATT: Evidence and Policy Implications. *World Development*. 23:913-926.

Valdes. A and McCalla A. 1999. Issues, Interests and Options of Developing Countries. Washington, DC: World Bank.

World Bank. 1997. *Rural Development: From Vision to Action*. Environmentally and Socially Sustainable Development Studies and Monograph Series 12. Washington DC: The World Bank.

Table 1: GDP Structure and Trends (DEs)

	1960s	*1970s*	*1980s*	*1990s*
Share (%) in GDP				
Agriculture	24.8	20.1	18.9	18.0
Industry	41.6	44.7	43.5	43.6
Services	33.7	35.1	37.6	38.5
Trend Growth Rates				
Agriculture GDP	2.8	2.8	3.4	1.5
Industry GDP	6.4	5.8	2.9	3.4
Services GDP	4.8	6.0	3.1	3.1
GDP at factor cost	**5.0**	**5.3**	**3.1**	**2.9**
Population	2.5	2.3	2.1	1.7
GDP per capita	2.5	3.0	1.0	1.2
Labor Force Shares (%)				
Agriculture	74.4	69.6	64.1	59.5
Non-agriculture	25.6	30.5	35.9	40.5
Labour Force Trend Growth Rates				
Agriculture	1.5	1.7	1.6	1.0
Non-agriculture	4.1	4.4	3.9	3.6
Total	2.1	2.5	2.4	2.1
Labour Productivity Trend Growth Rates				
Agriculture	1.2	1.0	1.8	0.4
Industry	2.3	1.5	-0.8	-0.2
Services	0.7	1.4	-0.9	-0.4
Total	2.7	2.7	0.7	0.9

Table 2: Agriculture in World Trade

		1960s		1970s		1980s		1990s	
		Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
		(percent of world trade, **at current prices**)							
Cereals	DE	0.7	1.0	0.4	0.9	0.3	0.8	0.2	0.6
	AE	2.5	2.1	2.1	1.6	1.5	1.0	1.0	0.6
	World	3.2	3.2	2.5	2.5	1.8	1.8	1.2	1.2
Other food	DE	4.3	1.5	3.1	1.2	2.2	1.2	1.7	1.1
	AE	6.4	9.2	5.1	6.9	4.4	5.5	4.3	4.9
	World	10.7	10.7	8.2	8.2	6.7	6.7	6.0	6.0
Fibres	DE	1.0	0.3	0.4	0.2	0.2	0.2	0.1	0.2
	AE	1.1	1.8	0.6	0.8	0.4	0.4	0.2	0.2
	World	2.1	2.1	1.0	1.0	0.6	0.6	0.4	0.4
Other Non-Food Ag.	DE	1.4	0.3	0.8	0.3	0.6	0.4	0.5	0.4
	AE	1.7	2.7	1.4	1.9	1.1	1.4	0.8	1.0
	World	3.0	3.0	2.2	2.2	1.7	1.7	1.3	1.3
Agriculture	DE	7.4	3.2	4.7	2.6	3.3	2.5	2.5	2.3
	AE	11.7	15.9	9.2	11.3	7.4	8.3	6.4	6.7
	World	19.0	19.0	13.9	13.9	10.8	10.8	8.9	8.9
		(percent of world trade, **at constant 1980 prices**)							
Cereals	DE	0.5	0.7	0.3	0.7	0.4	0.9	0.3	0.7
	AE	1.6	1.4	1.6	1.3	1.6	1.1	1.1	0.6
	World	2.1	2.1	1.9	1.9	2.0	2.0	1.3	1.3
Other Food	DE	3.2	1.0	2.6	0.9	2.9	1.3	3.0	1.4
	AE	3.8	6.0	3.8	5.5	4.3	5.9	3.6	5.2
	World	7.0	7.0	6.4	6.4	7.2	7.2	6.6	6.6
Fibres	DE	0.7	0.2	0.4	0.2	0.2	0.2	0.1	0.2
	AE	0.7	1.2	0.4	0.6	0.4	0.4	0.3	0.2
	World	1.4	1.4	0.8	0.8	0.6	0.6	0.4	0.4
Other Non-Food Ag.	DE	0.9	0.2	0.6	0.2	0.3	0.3	-0.1	0.1
	AE	1.0	1.7	1.2	1.5	1.0	1.1	0.6	0.4
	World	1.8	1.8	1.7	1.7	1.4	1.4	0.5	0.5
Agriculture	DE	5.3	2.0	3.8	2.0	3.8	2.6	3.3	2.4
	AE	7.0	10.3	7.0	8.8	7.3	8.5	5.5	6.4
	World	12.3	12.3	10.9	10.9	11.1	11.1	8.8	8.8

Table 3: Bilateral DE-AE Trade Balances

(percent of world trade)

	1960s	*1970s*	*1980s*	*1990s*
At <u>Current</u> Prices				
Cereals	-0.3	-0.5	-0.5	-0.4
Other Food	2.8	1.8	1.0	0.6
Textile Fibres	0.7	0.2	0.0	-0.1
Other Non-Food Ag.	1.0	0.5	0.3	0.2
Total Agriculture	4.2	2.0	0.8	0.3
Non-Agriculture	-4.4	0.4	-0.1	-1.8
Total	-0.1	2.4	0.7	-1.6
At <u>Constant</u> 1980 Prices				
Cereals	-0.2	-0.4	-0.5	-0.4
Other Food	2.2	1.6	1.6	1.6
Textile Fibres	0.5	0.2	0.1	-0.1
Other Non-Food Ag.	0.7	0.3	0.1	-0.2
Total Agriculture	3.2	1.8	1.2	0.9
Non-Agriculture	13.6	9.8	2.1	3.9
Total	16.8	11.6	3.3	4.9

Table 4A: External Integration of Agriculture

(percent of Agric. GDP at **current** prices)

		1960s	*1970s*	*1980s*	*1990s*
Agric.Products,Total					
DE	Imports	6.1	9.0	12.3	16.4
	Exports	10.8	12.8	13.1	16.2
	Agr. Trade Balance (E-M)	4.8	3.8	0.8	-0.2
	Exports + Imports	16.9	21.8	25.4	32.6
AE	Imports	48.7	56.9	64.5	65.7
	Exports	34.6	44.3	55.2	61.2
	Agr. Trade Balance (E-M)	-14.1	-12.6	-9.3	-4.5
	Exports + Imports	83.3	101.3	119.8	127.0
Food and Animals					
DE	Imports	4.5	6.6	8.7	10.7
	Exports	7.0	8.9	9.2	10.6
AE	Imports	30.5	38.4	44.7	46.9
	Exports	22.6	30.1	38.0	42.7
Agr. Non-Food					
DE	Imports	1.5	2.4	3.5	5.7
	Exports	3.8	3.9	3.9	5.6
AE	Imports	18.2	18.5	19.8	18.8
	Exports	12.0	14.2	17.2	18.5

Table 4B: External Integration of Agriculture

(percent of Agric. GDP at **constant** prices)

		1960s	*1970s*	*1980s*	*1990s*
Agric.Products,Total					
DE	Imports	7.6	9.2	13.3	15.3
	Exports	14.7	14.2	15.0	16.6
	Agr. Trade Balance (E-M)	7.1	5.0	1.7	1.4
	Exports + Imports	22.2	23.5	28.3	31.9
AE	Imports	57.1	60.7	68.1	70.1
	Exports	38.8	44.9	57.6	60.6
	Agr. Trade Balance (E-M)	-18.3	-15.7	-10.5	-9.4
	Exports + Imports	96	105.6	125.6	130.7
Food and Animals					
DE	Imports	6.0	7.0	9.5	10.0
	Exports	10.4	10.3	10.7	11.2
AE	Imports	40.1	42	47.5	48.7
	Exports	27.4	30.9	39.7	41.3
Agr. Non-Food					
DE	Imports	1.5	2.2	3.7	5.3
	Exports	4.3	3.9	4.3	5.4
AE	Imports	17.1	18.7	20.5	21.4
	Exports	11.4	14	17.8	19.3

Table 5: Labour Productivity Trends and Relatives

|		*1960s*	*1970s*	*1980s*	*1990s*
Trend Growth Rates					
DEs					
	Agriculture	1.2	1.0	1.8	0.4
	Industry	2.3	1.5	-0.8	0.0
	Services	0.0	1.4	-0.9	0.0
	Total	2.7	2.7	0.7	0.9
	Non-agriculture	1.6	1.4	-0.9	0.0
AEs					
	Agriculture	6.2	5.4	3.7	3.3
	Industry	3.5	2.4	0.8	2.8
	Services	3.3	1.1	2.6	0.0
	Total	4.4	2.2	2.3	1.2
	Non-agriculture	3.3	1.6	1.9	0.9
Average Labour Productivity Levels (US$, 1980 prices)					
DEs					
	Agriculture	431	473	553	610
	Industry	4,583	5,537	5,264	5,049
	Services	2,898	3,379	3,484	3,325
	Total	1,280	1,643	1,876	2,013
	Non-agriculture	3,637	4,322	4,256	4,061
AEs					
	Agriculture	1,842	3,060	4,283	5,797
	Industry	11,913	14,462	16,641	18,806
	Services	11,227	13,052	14,832	17,058
	Total	9,499	11,898	14,113	16,488
	Non-agriculture	11,501	13,568	15,440	17,578

Figure1: GDP Growth Rates (DEs)
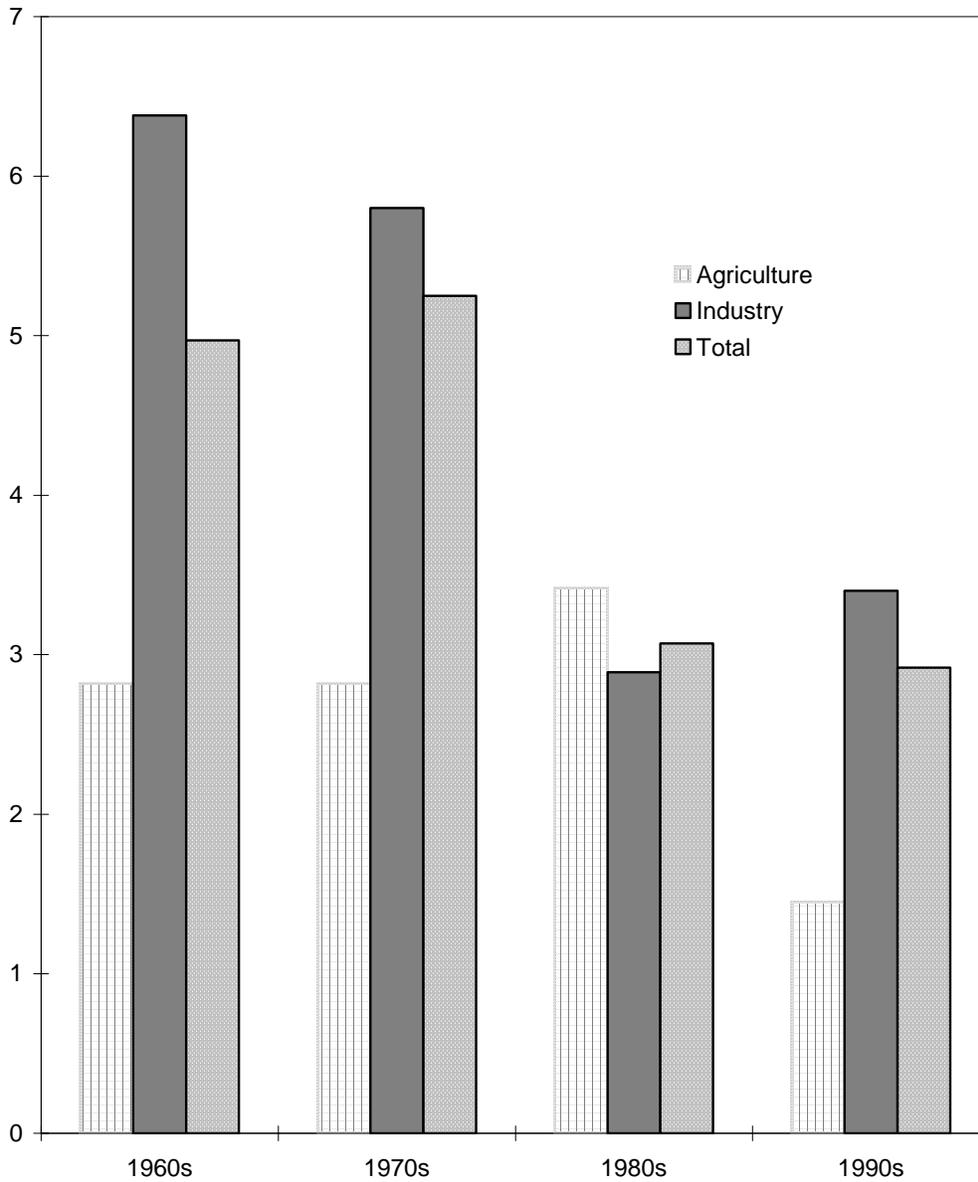
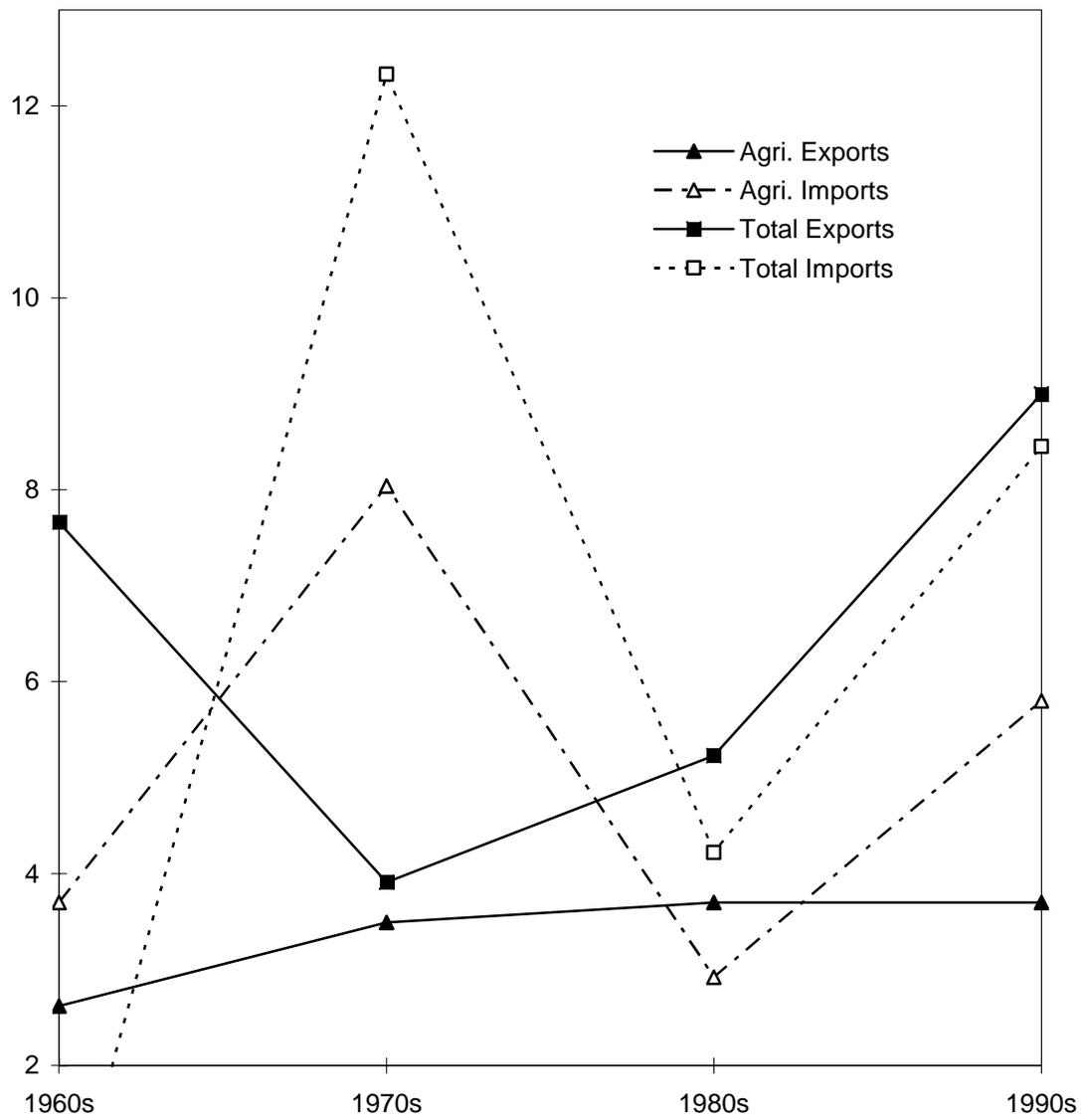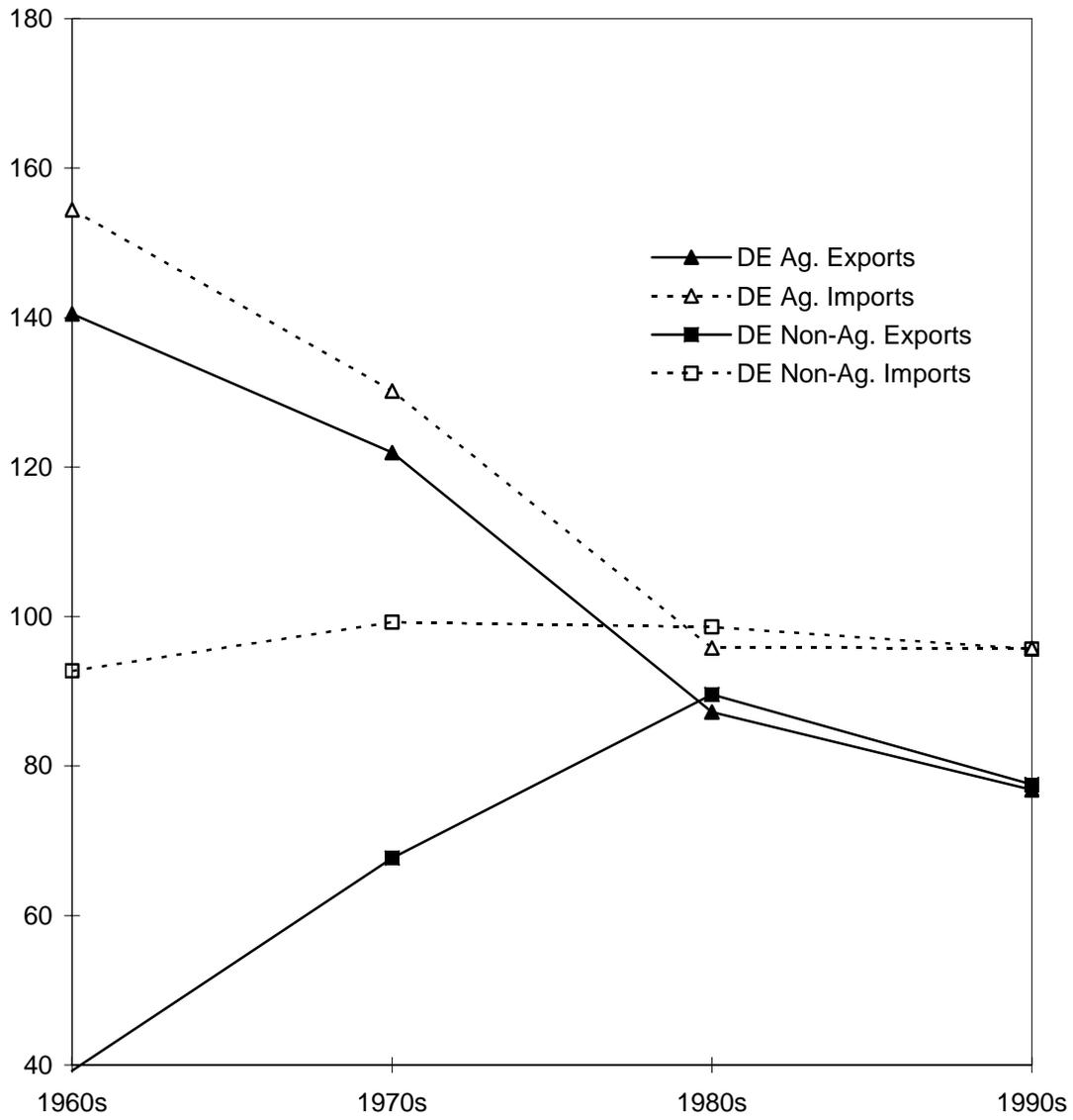**Figure 2: Trade Volume Growth Rates (DEs)**

Figure 3: Relative Tradable Prices Facing DEs

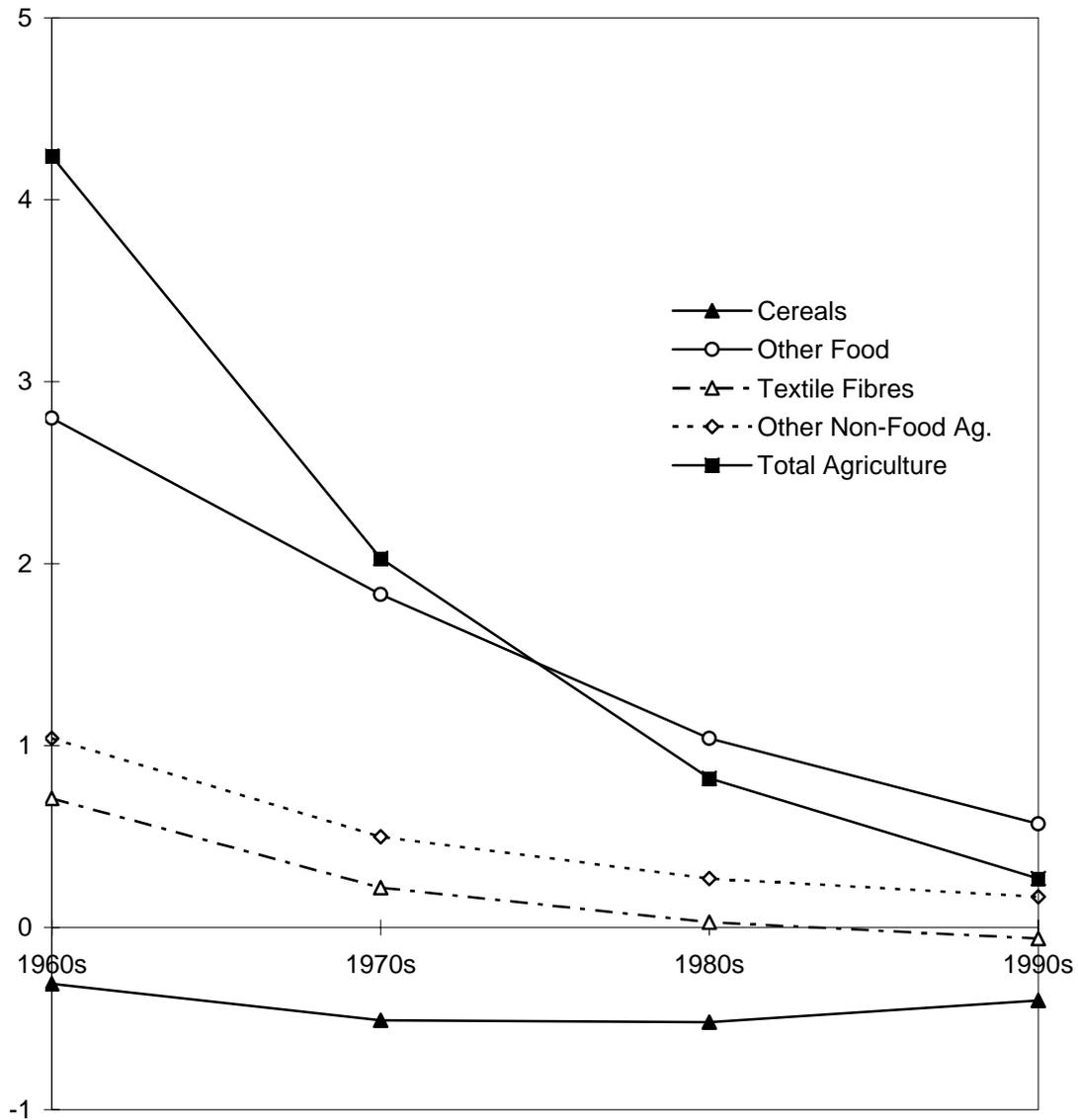**Figure 4: Agricultural Trade Balances (DEs)**
(at current prices)

Figure 5: External Integration of Agriculture (DEs & AEs)

Legend:
- —△— DE Exports
- ‑‑□‑‑ DE Trade Balance
- —○— DE Exports + Imports
- —■— AE Exports
- ‑‑✳‑‑ AE Trade Balance
- —●— AE Exports + Imports
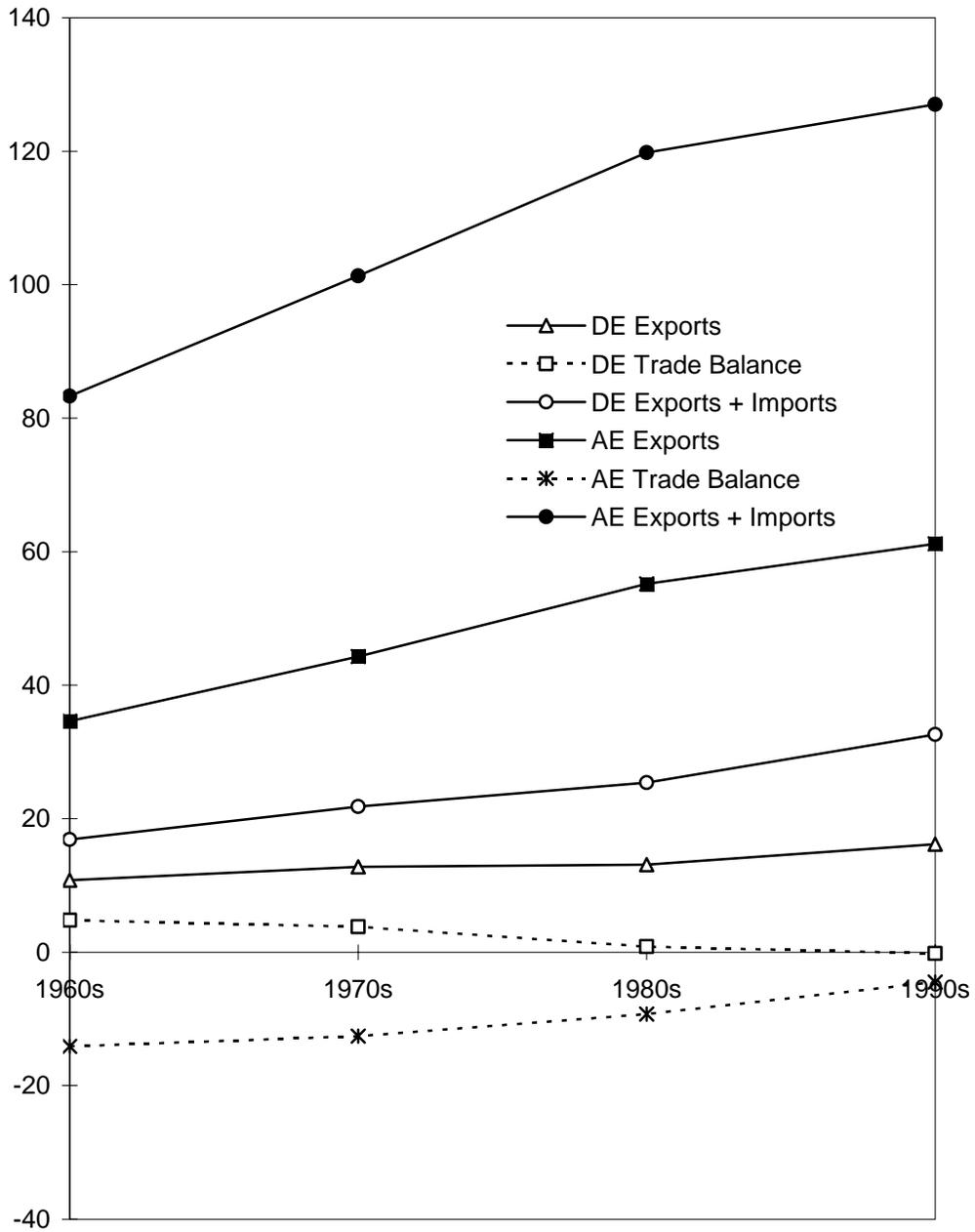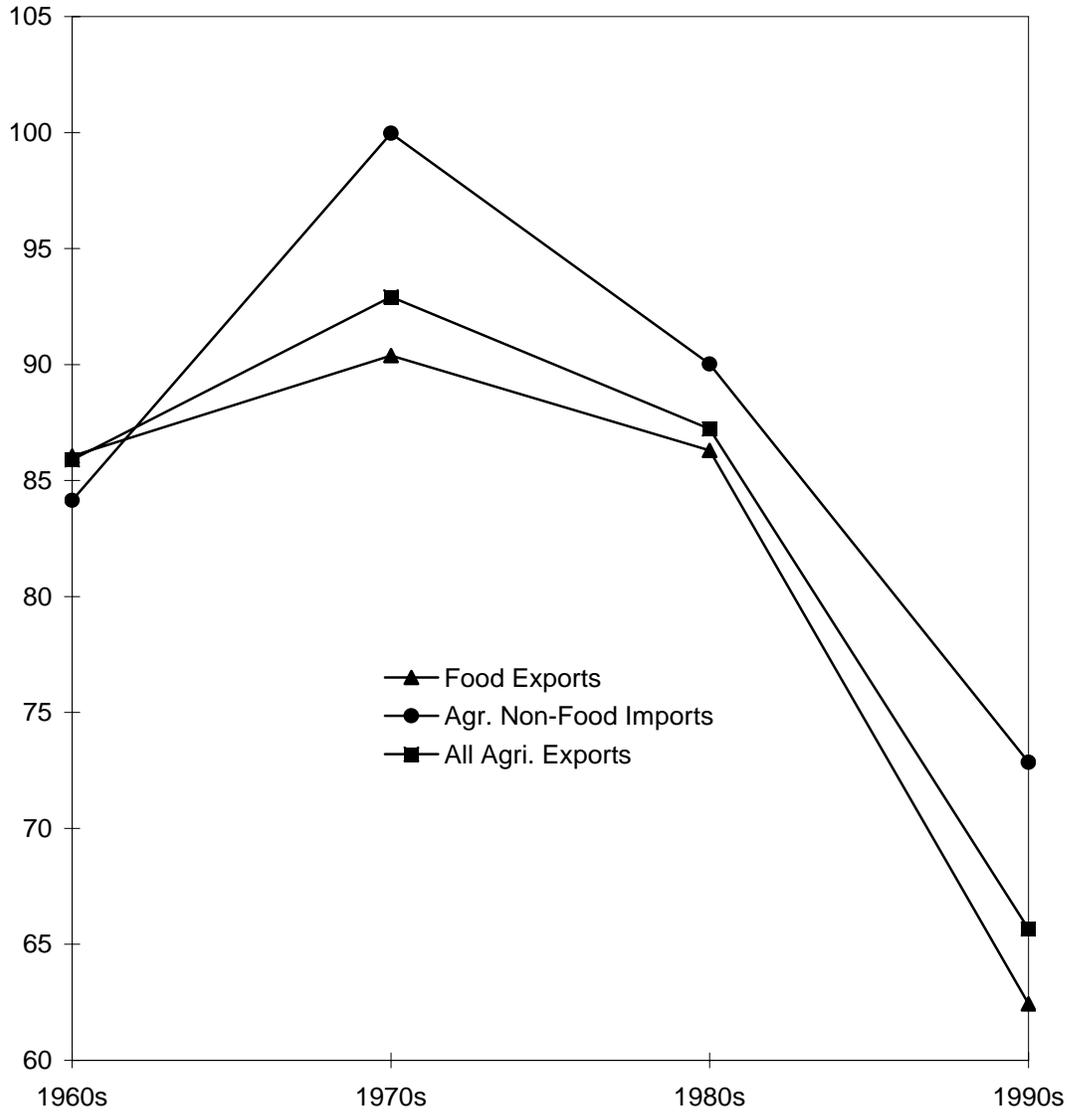
**Figure 6: Agricultural Price Convergence
(DEs relative to AEs)**

Figure 7: Growth and Labor Absorption in DE Agriculture