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Diversification and International Trade

INTRODUCTION

We have struggled mightily with trying to understand the deeper meaning of our assigned title. What are the critical issues linking diversification of agriculture and international trade? Are they competitive, or even antagonistic, concepts in the broader context of food security and agricultural development? Are they complementary and synergistic and, if so, how? Or are they two ships passing in the night which have little if any linkage? We share our problem in searching for a conceptual framework for the paper with you because we are still not sure we have got it right.

We begin with a stylized review of conventional wisdom regarding diversification as a desirable strategy for agricultural development. We then note that much of the agricultural development literature assumes, implicitly or explicitly, a closed or at least closely managed economy. We then ask the question, what happens if you open the economy? Here we use a simple three-good trade model to explore the consequences for the agricultural sector of an open economy setting. We look at the effects on production, consumption and trade as well as the implications for price and income variability and overall economic performance. We then return to the two supposed advantages of a policy of diversification – expanded sources of growth and employment and use as a risk management tool – and ask a basic question: in a world of economy-wide reforms, including trade liberalization, deregulation and privatization, is agricultural diversification a relevant policy objective? To anticipate our answer, we conclude that diversification as a policy goal is not relevant. Those of you who came only for the bottom line can now leave; those who want to know why are invited to stay!

DIVERSIFICATION IN THE LITERATURE OF AGRICULTURAL DEVELOPMENT

Significant strands of the literature of agriculture development argue that agricultural diversification is a desirable outcome either of the dynamics of the development process or as a result of deliberate policy choice (Millikan and

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Hapgood, 1967; Bainard and Cooper, 1968; Jabara and Thompson, 1980; Jaffee, 1992; Delgado, 1995). In many developing countries, agricultural production is seen as excessively specialized because of a limited natural resource base or deliberate policy choices or distortions. In the latter case, three examples come to mind.

- (1) A strong focus on specialized primary tropical exports for export tax revenue – coffee, tea and cocoa in Africa, rubber and tea in Sri Lanka, among others.
- (2) Centrally planned economies where regional agricultural specialization was mandated (FSU and Eastern Europe).
- (3) Mandated staple food production for food security; for example, rice in Indonesia, rice and wheat in India and China, rice in Japan.

Diversification, then, is seen as having two highly desirable properties: it expands the production possibility set, thereby expanding opportunities for income generation and employment creation, and it reduces the risk of having all of one's eggs in a basket with a few commodities with potentially high covariance risk. Two common characteristics of this literature are an implicit or explicit assumption of a closed economy (often as a component of an import substitution, inward-looking development strategy) or, to use Hla Myint's term (1975), a 'semi-open economy', where there is a pervasive, proactive role for the government in the rural sector. Government policies with respect to border control and taxation, internal movement regulation, import subsidization, price control, extensive enterprise regulation, parastatal marketing and supply organizations and direct government operation and ownership of infrastructure and marketing firms were, and still are, frequently encountered (Krueger, 1992). Clearly the semi-closed economy, import substitution model, with extensive government control, dominated in Africa, Latin America, FSU and Asia through the 1960s, 1970s and most of the 1980s. It still persists in a considerable number of countries in Africa and South Asia today.

Open economy, export-oriented policies in the NICs (newly industrialized countries), or what are now called the 'Asian Tigers', beginning in the 1970s foreshadowed a fundamental shift of development paradigms towards more open economy policies featuring export orientation, macroeconomic stabilization, deregulation and privatization. This was an economy-wide strategy. These economic reforms have become the order of the day in most of Latin America (after the Chile model) and in all of East Asia, and are at various stages of evolution in the former Soviet Union and Eastern Europe and pockets are even emerging in sub-Saharan Africa and South Asia. This process of general economic liberalization is opening traditionally closed agricultural sectors to trade for the first time,¹ and is raising many concerns about agricultural development and trade linkages.

Why should the issue of trade liberalization be a concern? Perhaps it is because the following scenario is often encountered. The potential for trade is based on comparative advantage and therefore opening to trade should lead countries to *specialize* in things they are good at producing (exportables) and to contract, or cease producing, import-substituting goods (importables). Fur-

ther, trade would clearly reduce the range of non-traded goods. A useful indicator of the changes in openness is the ratio of $(X+M)/GDP$ which, although this is usually measured for the economy as a whole, also applies to a large tradable sector such as agriculture. The countries which have liberalized trade have, almost without exception, experienced a sharp rise in this ratio (for example in Colombia, from 36 per cent until 1990 to 58 per cent after the reforms). If the agricultural/rural sector does not have significant comparative advantage in a wide range of agricultural products, trade could lead to reduced diversity of production and, perhaps, to sectoral contraction. In addition, opening the economy by removing border controls – often quantitative restrictions and/or export taxes – allows international market price variability to enter a previously sheltered, but distorted, domestic sector, increasing price variability and therefore income uncertainty. Hence the potential conclusion that trade is antithetical to a desired policy of diversification.

THE CONSEQUENCES OF OPENING THE ECONOMY

To address the impacts of trade on diversification we first use a simple three sub-sector model to explore the comparative static consequences of opening the economy. We then turn to a more detailed consideration of diversification – trade linkages with respect to the consequences for growth and risk management.

Assume the agricultural sector in a semi-closed economy produces three types of goods (import substitutes or 'importables', non-traded goods or 'home goods' and potential exports or 'exportables') on a continuum from comparative disadvantage to comparative advantage (see Figure 1). The shape of the function is arbitrary. It is simply a descending array of commodity production costs. Whether it is linear, concave or convex would depend on the particular resource endowment of the country. Given import protection and export taxation, as a typical policy set (Schiff and Valdés, 1992), the regime is depicted in Figure 1(a) showing small imports and exports and a large home goods sector. Protection, by tariffs and/or quantitative restrictions, is positive for importables and, from implicit or explicit export taxes, negative for exportables. With the removal of protection and the opening to trade, production of import substitutes contracts (imports increase), the home good sector contracts to contain only those goods whose domestic costs of production fall between c.i.f. (cost, insurance and freight) and f.o.b. (free on board) prices and the export sector expands.² Consumer prices of exportables will rise and prices of imports will fall. The basket of consumer goods should be more diversified, now defined by the global rather than the domestic production possibility set, and the basket should be cheaper given that the countries' resources are now more efficiently allocated, with lower average costs of production. The consequences for the degree of diversification in the agricultural sector are potentially ambiguous. The number of importables will decline, as will the number of home goods. However, the diversification of the export sector will increase, as will the volume of exports. The net impact, in a static sense, would appear to be to reduce diversification, but if trade is an engine of growth leading to the

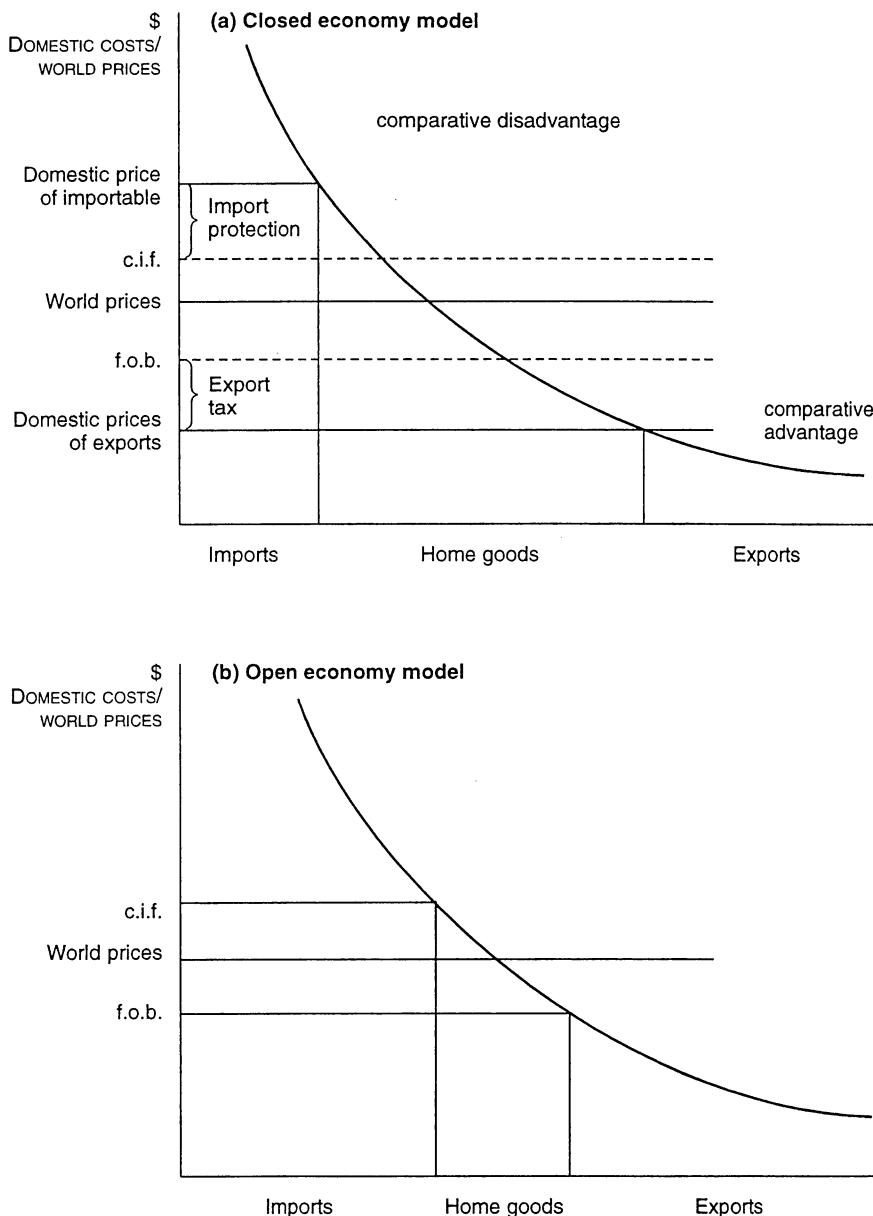


FIGURE 1 *Continuum of comparative advantage in the agriculture sector*

commercialization of the sector then diversification should increase at the economy-wide level and the sector level. However, there could be increased specialization at the firm or production unit level. We return to this point later.

We now need to explore further the impacts of opening the economy on (1) price variability, (2) farmer income, (3) the agricultural sector, (4) consumers, (5) government revenue and (6) the economy as a whole.

Price variability

The movement from a small closed economy to a small open economy fundamentally alters the sources of price variability. In a closed economy, price variability is a function of domestic supply variability. Its amplitude is determined by the elasticities of domestic supply and demand, increasing the greater the inelasticity of either or both. Policies of course could attempt to moderate price variability through storage, subsidies or price guarantees, but fundamentally market price variability is driven by domestic weather.

When the economy is opened, the source of domestic price variability is now world price variability, though it could, of course, be modified by border measures such as quotas, surcharges or variable levies. Whether induced domestic price variability in the semi-closed economy case is greater or less than world price variability cannot be determined *a priori*. Variability will be a function of production and trade composition of a country, of the elasticities of domestic supply and demand, plus the probabilities and magnitude of domestic supply shocks versus world supply and demand elasticities and the magnitude of global shocks. The normal presumption would be that, in a world of open markets, with large numbers of producers and consumers adjusting to shocks, the amplitude of price variation in international markets would be less than in domestic markets.

However, although the presumption is that a more open economy would probably increase the volatility of farm prices, this was not the result observed in Ghana during the economic reforms in the 1980s (Shively, 1996). Shively concludes that, in years subsequent to Ghana's adoption of reforms, a reduction in price volatility occurred in the important northern markets. While the immediate effect was higher and more volatile prices, these were followed by lower and less volatile prices in the longer run.

Farmer income

In the case of farmer income, there are also substantial differences between the closed and open cases for both stability and level. Given supply shocks, in the closed economy case, income is a function of the domestic demand elasticity. If demand was inelastic, farmer incomes would rise with supply shortfalls (fall with big crops), would be stable if the elasticity of demand was unitary and would fall (with shortfalls) if the demand was elastic.

However, in the open economy case farm income fluctuates directly with the magnitude of the supply shock because world prices are given. Short crops

lead to a contraction of income; big crops lead to gains. This is the exact opposite of the traditional closed economy outcome with inelastic domestic demand. It seems clear that farm income from a particular commodity in the open economy case would be more unstable. Thus for the individual farmer, if opening to trade led to increased farm-level specialization, farmer income would be more unstable.

So far in this analysis we have not recognized the effect of fluctuations in the exchange rate on domestic price and income fluctuations. Under the open economy model we expect to observe frequent and relatively small adjustments in the nominal rate, in contrast to a regime of fixed rates which could be subject to large and less frequent devaluations under the semi-closed model. Thus it is hard to make the case for a general case of more or less instability in domestic prices induced by nominal exchange rate fluctuations under these two trade options. What the literature seldom recognizes, though, is the significant impact of fluctuations in the 'real' exchange rate (RER) on the variability of domestic 'real' farm prices (Valdés, 1996). A simple comparison of RER fluctuations between developed and developing countries indicates that these are much more pronounced in developing countries; this reinforces the perception that more emphasis should be given to the influence of RER on agricultural price stabilization policy for developing countries.

The agricultural sector

There is less that can be said *a priori* about the impact on the agricultural sector of opening the economy to trade. If the sector price to liberalization was heavily taxed, both directly and indirectly (Schiff and Valdés, 1992) liberalization would lead to expanding production of those commodities where the country has comparative advantage, which, coupled with higher prices, clearly should increase sector income. What can be said about the variability of income is less clear, as this would depend on domestic shocks and the degree of covariance risk among commodities compared to the variability of world prices.

Consumers

Consumers would experience access to a more diverse bundle of goods, prices of importables would fall, as would prices of home goods, while prices of exportables should rise. Overall, the real incomes of consumers, and real costs of intermediate producers, should become far less dependent on domestic supply shocks which, together with diversification in consumption, should make their incomes more stable and, on the average, higher.

Government revenue

If governments were directly protecting imports with high tariffs or were selling import quotas, revenue from previously imported goods would fall. If,

however, after liberalization all imports were subject to a lower uniform tariff, revenue could rise if the range and quantities of imports increased. Clearly, export tax revenue would be lost. It is likely on balance that the government could lose revenue. Perhaps this is an explanation for governments being less than enthusiastic about liberalizing agriculture if trade taxes are a significant source of revenue.

The economy as a whole

The empirical evidence of gains in overall economy performance from policy reform and trade liberalization is overwhelming. Clearly, in the process there are losers as well as winners, but overall the economy is better off.

Summary

To sum up, the presumption is that, as part of the endogenous response to economic reform and trade liberalization, the new policy framework encourages the development of additional production alternatives and the economy becomes more diversified at the sectoral and economy-wide level, while becoming more specialized at the firm/farm level.

DIVERSIFICATION AND AGRICULTURAL DEVELOPMENT

On the basis of this general analysis, we can now return to the main theme. Basically, commercialization and diversification are part of an endogenous process determined largely by market forces. Commercialization of agricultural systems is an irreversible phenomenon, triggered by economic growth. It is not a frictionless process, as there will be some losers, although the majority should be winners. How government policies might alleviate many of the possible adverse transitional consequences was the theme of a special issue of *Food Policy* (Pingali and Rosegrant, 1995). Their analysis concludes that the key elements of a long-term strategy to facilitate commercialization and economy-wide diversification are (1) research and extension, (2) economic liberalization, including trade liberalization and deregulation of agriculture, (3) development of rural capital markets, (4) development of land markets, and (5) infrastructure investment. We agree with the key elements, but they seem to be applicable to a long-term rural development strategy which encourages growth, the result of which leads to commercialization and diversification. In other words, diversification becomes an inherent and desirable outcome of a growth strategy, rather than an objective *per se*.

The main components of economic liberalization and structural adjustment are a reduction in trade barriers on both imports and exports, an alignment of macroeconomic policies, and deregulation of internal factor and product markets in general. An outcome of this reform process is to accelerate the development of new production possibilities; that is, more diversification at

both the sectoral and economy-wide level. This is an endogenous process and thus does not require a specific government policy.

At both the producer and the sectoral level, the scope for diversification as a risk management strategy in response to trade liberalization is limited by the co-movements of world prices of agricultural commodities. As reported in Quiroz and Valdés (1995), the evidence for 1970–91 shows that 22 of 28 correlations in world prices are positive, and the negative correlations are small and restricted to a couple of commodities (bananas and rice). There are substantial positive correlations in world prices for important commodities, including the combinations of wheat–maize, rice–wheat, cotton–maize, cocoa–coffee, among others. Thus one should not be overly optimistic regarding the returns in terms of export price risk reduction by diversification, at least within this range of commodities. The situation regarding horticultural products is less clear, requiring further analysis.

It is reasonable to expect that, over time, these correlations should increase, owing to factors both on the demand and on the supply side, and also to the dramatic improvements in transport and communications. On the demand side, with income growth and factors associated with it (urbanization, increase in the value of time, technological developments which increase the shelf-time duration of products), food consumption patterns are becoming more flexible and diversified. For example, regions which traditionally had a diet concentrated on rice or legumes have experienced a rise in the consumption of wheat and livestock products. The opening to trade reinforces this trend, by reducing the price of substitutes for the traditional staples. Thus, over time, one expects a rise in substitution possibilities, which in turn induce a higher correlation on world prices.

On the supply side, the impact of new technology and new investment in irrigation, roads and storage facilities makes a more diversified output increasingly possible. Parallel to the case with consumption patterns, the opening of trade reinforces this trend towards substitution possibilities in production and thus diversification of production and trade. Thus, as more and more countries stop taxing agricultural exports, adopt a more flexible diet and enter into a more diversified output mix on a global scale, the more positive should be the correlation between prices and the lower the returns to diversification (in terms of price risk reduction).

But this is not the whole story. In addition to the higher substitution possibilities in consumption and production through time and improvements in transport and communications, world prices of commodities (agricultural and non-agricultural) are also positively correlated because they have a common reaction to macroeconomic conditions (interest rates and so on). Thus one would expect an increase in correlations in world prices between the prices of imports and exports of developing countries. In a very real sense, these correlations tend to provide substantial price insurance for developing countries. Specifically regarding food-deficit countries, what this analysis suggests is that, when the food insecurity problem of food-deficit countries is analysed within the context of their foreign exchange position, fluctuations in their food import bill may coincide with fluctuations of their export revenues, and thus their food insecurity problem may be much less severe than when one looks at

food imports alone. This relationship was analysed empirically by Valdés and Konandreas (1981) for 24 developing countries for the 1961–76 period. They found that the magnitude of the fluctuations in the food import bill shortfall is reduced considerably when adjusted for fluctuations in export revenues. Thus, while the higher positive correlation may not benefit a particular set of farmers, it would clearly help the economy as a whole.

TRADE POLICY AND DIVERSIFICATION

At the farm level diversification is a natural reaction to instability. It is well known that diversification of the production mix can be an efficient mechanism for diminishing the impact of risk on producers's welfare. Adding new products to the mix should contribute to reducing the variance of the value of production at the farm level; by how much will depend on the correlation between different prices. If this correlation is -1.0 , the variance of the portfolio is brought down to zero; if it is $+1.0$, the variance of the total is unaffected. For all cases in between some reduction in variance will be achieved (Newbery and Stiglitz, 1981).³

In a sophisticated market economy there are institutions that enable economic agents to manage risk to stabilize their consumption over time; thus diversification is less of a policy issue in developed economies. However, in agriculture in most developing countries, where these risk markets do not exist, farmers bear the full brunt of price and production risks. If they are risk-averse, they will undertake action – more diversification – that sacrifices mean income for a reduced degree of fluctuations; that is, risk will lead to underinvestment in risk-prone sectors. At the same time, there may be agents willing to accept increased fluctuations if they are given a higher mean income. Owing to a missing market for risk, they have the potential to buy insurance, but they cannot engage in this exchange which would increase their welfare. Thus the agricultural sector is somewhat 'trapped' in a lower risk/lower income situation.

But this is not the whole story. Three groups other than producers could be affected by increased exposure to agricultural price risk. There are the consumers of farm products, the producers of intermediate goods (based on farm products) and the government whose revenue fluctuates with the prices. Thus the spillover from fluctuations in farm prices can cause real income of consumers to fluctuate, as well as having multiplier effects on the costs and demand for intermediate goods (typically non-traded) and affecting government and foreign exchange accounts.⁴

In spite of the general conclusion of the theoretical economic literature arguing that the welfare cost from price risk in agriculture would be relatively small (*ibid.*), one observes that, historically, agricultural price interventions have been used to reduce domestic price instability *vis-à-vis* a counterfactual of no intervention. That is, this predicted low welfare cost is not consistent with the systematic effort by governments (revealed preferences) to smooth the transmission of border prices to domestic prices. This issue was analysed for 18 developing countries for the 1960–85 period in the Schiff and Valdés study (1992), where

they found that price variability of domestic agricultural prices was consistently lower than that of border prices for the same commodities. Using a different analytical approach, Mundlak and Larson (1992) subsequently published results which suggest that the transmission elasticity from world prices to domestic prices is close to one, which is at variance with Schiff and Valdés (1992). However, the methodology used by Mundlak and Larson has been challenged by Quiroz and Soto (1993), whose results confirm the great importance that policy makers attribute to the minimization of between-years price fluctuations. However, the real issue for this paper is the change in domestic price instability from before to after the reform. Except for the paper on Ghana by Shively (1996), who finds price variability is less after an initial period of greater instability, we do not have new evidence on the post-reform scenario.⁵

It is a common presumption that a more open economy is more specialized and therefore riskier. Precisely because of price risk and the lack of risk-diffusing mechanisms in developing countries, the endogenous response of the farm sector (which is risk-averse) is to underinvest in risk-prone activities, closing more of the economy to trade. If, on the one hand, the assumption that farmers are relatively risk-averse and the government is risk-neutral is reversed, the argument could be made that farmers overexpose the economy to risk. Such a proposition was advanced several years ago by Bainard and Cooper (1968) and Jabara and Thompson (1980), suggesting that corrective action by the government was called for. We question whether such corrective action is appropriate. What should not be done, in our opinion, is to implement a policy of diversification by means of trade and price policy. In practice, this would involve diversifying domestic production by means of supporting the production of import-competing products and a resulting (implicit) taxation of the production of exportables, narrowing the export base. This would be going back to the inward-oriented policy of the past, which failed in terms of growth and thus made the whole economy more exposed to risk (for example, risk hurts more if the economy grows at a slower pace).

CONCLUDING COMMENTS

Our conclusion is that there is no general rationale for an active policy of diversification, with the exception of the case of export promotion which we discuss below. In both the static and dynamic cases, the two traditional arguments for diversification, risk reduction and contributing to growth, are not strong arguments that warrant a proactive government policy of diversification. There is no evidence that opening the economy to trade will have a significant impact on increasing risk for agriculture. Diversification is a natural process of growth and in fact opening of the agricultural economy will probably contribute to accelerating the process of production and trade diversification. Trade and diversification are complementary, therefore, rather than conflicting.

It is revealing that the topic of diversification as such simply does not appear in such a well recognized book on the normative theory of trade policy as *Trade Policy and Economic Welfare* by Max Corden (1997). There are, however, three themes in this body of literature which have direct relevance for the

analysis in this paper. One is the literature on the optimal subsidy or tax to adjust for domestic divergence between market prices and social costs. This theme, in our opinion, is neutral regarding diversification of production or trade. The second is the topic of industrial policy (which Corden refers as the 'picking winners' approach) for the case of industries generating significant externalities and/or industries believed to have high growth potential, for which the infant industry argument applies. The third, often associated with agricultural exports in developing countries, concerns some dynamic aspects of trade policy and in particular refers to the case of fluctuations in export earnings and risk avoidance. More frequently in the past than today, the argument stated that there were conditions under which countries should reduce their dependence on trade and also diversify the pattern of their exports because of fluctuations in export earnings, which would filter through the economy to farmers, suppliers of inputs, government revenues and to consumers.

Whether or not the outcome of trade policy interventions to deal with any of these three policy issues will necessarily lead to more or less diversification is undetermined. Initial conditions vary from country to country and thus whether the outcome will lead to more specialization or diversification will vary accordingly. However, some analysts have argued that, at least for sub-Saharan Africa, a commodity (or commodity group)-specific agricultural diversification policy is a necessary component of adjustment, export promotion and employment promotion strategies (Delgado, 1995). There are three arguments: (1) Africa's dependence on agricultural exports, in a context of falling world prices for them, is inducing a significant diversification out of agricultural exports, but with little diversification within agriculture; (2) a large sector of non-tradable production exists as a result of high transactions costs (transport and others), so a large segment remains underdeveloped even if price policy distortions are removed; and (3) externalities and market failures provide governments with considerable latitude to influence the factor intensity of the long-run growth path. In a real sense, such a strategy favours an active pro-diversification policy as a way to improve competitiveness on a widespread basis. Delgado's analysis suggests a strategy focused on (1) promoting agricultural food production exports as a way to lower the risk of food insecurity, (2) trade-creating policies between low- and high-potential zones, and (3) the promotion of non-traditional agricultural exports, although these cannot be made the main component of agricultural development strategy in Africa.

What such an approach does not elucidate is whether the government should do this for the sake of diversification itself, or because these are initiatives which have a high payoff regardless of a diversification objective. The declining terms of trade argument seems to us to be an uninsurable risk; furthermore, if producers remain in these declining activities they must be obtaining higher returns than their alternatives, net of the cost of migration. Should the government step in to help declining industries? That would best be done through a social safety net, but not through commodity programmes. The cost of adjustment for unskilled farmers and farm workers with few alternatives is undoubtedly one of the most complex problems of adjustment; public policies should focus on retraining and labour mobility programmes, rather than on protecting particular sub-sectors for the sake of diversification.

We do find, however, that one can make the case for a proactive role of government towards promoting export diversification *per se*. This is through the partial funding of the cost of searching for new markets, including foreign ones. In the case of agricultural commodities, unlike industrial goods, the private sector will underinvest in the search for new markets, particularly as they would become open to other producers and exporters. The fixed costs of search could be high and there is a 'free-rider' situation. Thus there is, we submit, a public good element in favour of a government subsidy and/or direct assistance from export promotion agencies for the search for new markets. This is the only specialized case we can find that supports an explicit policy to support diversification in an open economy setting.

NOTES

¹In Latin America, for the first time since the Second World War. These economies were very open to trade between approximately the mid-1800s and first third of the 1900s.

²Under an open economy scenario, we envisage a trade regime based on a fairly uniform and low tariff on all imports (say between 10 and 20 per cent) with no quantitative restrictions, and no export taxes or other restrictions on exports.

³This is under the assumption that the expected return of the new products is the same as for the old.

⁴There may be special cases of countries where a particular export sector is also a relatively large economic sector (for example, cocoa in Ivory Coast) and thus where per capita income would be correlated with fluctuations in the world price of that commodity. However, the evidence for Africa indicates that, while dependence on a few export commodities remains high, agricultural exports as a percentage of GDP have declined (Delgado, 1995).

⁵The issue of price risk is also becoming more important now in the context of trade and price policy reform aimed at aligning international prices more closely with domestic prices, particularly under the 'tarification' rule agreed under the Uruguay Round Agreement.

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