# AGRICULTURAL COMPETITIVENESS: MARKET FORCES AND POLICY CHOICE

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*Synoptic View*

We have met now for eight days in Harare at the 22nd International Conference of Agricultural Economists under the theme of 'Agricultural Competitiveness: Market Forces and Policy Choice'. There are about 650 participants from 76 countries in attendance, of whom about 300 have had some part in the programme. All of us from other continents owe our Zimbabwe hosts a great debt of gratitude. They have worked extremely hard to organize this conference, and it has been very well executed by them.

This is only the second conference of the IAAE to be held in Africa. Three years ago, when the IAAE Council voted in Tokyo to choose Harare for this meeting, we hoped there could be a large African participation. We had a strong desire for the conference to help strengthen the African agricultural economics profession by making it possible for as many participants as possible from the continent to participate. As we have looked around the meeting rooms, it has been clear that we succeeded in this objective. We have had an unprecedented number of travel grants available to help defray the expenses of participants from countries with foreign exchange constraints. I am very proud of our colleagues who worked extremely hard to raise these funds. I hope that we will be able to maintain a large involvement of African agricultural economists at the next conference, in Sacramento, California.

On behalf of all participants, I want to thank publicly Douglas Hedley, Roger Rose and Larry Sivers for their roles in organizing the programme, including the plenary and invited papers, contributed papers, discussion groups and organized symposia. Their tasks were extremely time consuming and, at times, thankless ones. As a result of their efforts, we have had a rich conference agenda.

## CHALLENGES CONFRONTING OUR PROFESSION

Before beginning my overview of the conference proceedings, I want to note that our agricultural economics profession is confronting a number of difficult challenges. Budgets are extremely tight at universities and in government agencies which employ numerous agricultural economists in many countries. As a result, the number of positions is declining. Tight budgets in these agencies are also reducing the number of contributions 'in-kind' available to

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support the IAAE and its conferences. Such help has been an important source of resources to sustain the IAAE in the past. In the future a larger fraction of our resources may have to come from dues and conference fees. Moreover, the situation confronted by our developing-country colleagues employed in home-country institutions is particularly difficult, as has been so eloquently articulated by Godfrey Mudimu.

Behind these trends, at least in some countries, is an erosion of confidence in the agricultural economics profession. We are perceived as having become too disciplinary and theoretical, with insufficient understanding of the real world of biological production processes and the ways in which markets and the policy process really work. Despite all of these developments, the need for good economic analysis at both the micro and the macro levels as our world of agriculture undergoes rapid change and adjustment has never been greater.

## WORLD AGRICULTURE IN TRANSITION

The theme chosen for this conference, 'Agricultural Competitiveness: Market Forces and Policy Choice', is particularly timely in light of the many changes and adjustments to which agriculture in many parts of the world is being subjected. Economic analyses, such as presented here, are desperately needed to help decision makers understand the adjustments now under way, and to help ease the process of adjustment through design of appropriate public policies. Let us review briefly these changes and adjustments that are under way.

First, population and per capita income are each growing rapidly in some parts of the world, but not in others. Those left behind in poverty are the principal people suffering from hunger and malnutrition. Where incomes are growing rapidly, there is rapid change in diets, with significant increases in consumption of animal protein and fresh fruits and vegetables. The combined impact of these forces is rapid growth in demand for food. This is expected to continue over the next several decades. If we accept the United Nations' median population growth projection, world population will double before it stabilizes around the middle of the next century. When you add to this the effect of growth in per capita incomes, the world's farmers may be asked to produce two to three times more food by the middle of the next century, and to do this in a manner that does not degrade the environment!

Second, the transition to a market system of the formerly socialist countries of central and eastern Europe is posing significant adjustment stress on them, as they try to privatize their farms, develop private input and output marketing channels, and seek the appropriate role of public policy both during and after the transition.

Third, the structural adjustment taking place in many developing countries is changing the incentive structure of agriculture as the implicit taxation of farm products declines, though input subsidies are reduced at the same time. Many such countries are also moving towards more of a market system in agriculture than has been the case in the past. It is important to note, however, that the pronounced urban bias in public investments and the provision of public goods continues in many such developing countries.

Fourth, in a number of high-income countries, the levels of agricultural subsidies and protection have been reduced in response to internal budgetary and political pressures. There has also been a pronounced shift in the mix of public policies affecting high-income country farmers as the roles of food safety policy, environmental policy and animal welfare policy increase, while traditional farm price and income support policy declines.

Fifth, the recent international trade agreements, including the multilateral GATT agreement as well as regional trading bloc creation and expansion, are further reducing protection to agriculture, as domestic subsidies are reduced, non-tariff barriers to imports are converted to tariffs and then cut, and the volume and value of export subsidies are reduced.

As a result of all of these changes, and their associated adjustment processes, there is great concern about competitiveness all over the world: of farms (large and small), of agribusiness firms and food processors, of rural people versus urban people, of countries in traditional markets as well as in potential new markets and, yes, even in the competitiveness of agricultural economists. Observers are concerned about the effects of moving to more market forces and of the appropriate future role of public policy in all of the situations described above. Therefore I feel that our conference theme is extremely timely.

## DYNAMICS OF AGRICULTURAL DEVELOPMENT AND COMPARATIVE ADVANTAGE

The economic principle that underlies international competitiveness is comparative advantage, which predicts what a country would export and import under free trade. Government intervention in the form of provision of public goods may alter the locus of comparative advantage over time, and public policies in the form of taxes, subsidies or quotas may enhance or mask a country's underlying comparative advantage in given products at any point in time.

One of the truly felicitous outcomes of the way our programme was structured was the juxtaposition of considerations of agricultural competitiveness and agricultural development. These are relatively independent literatures within agricultural economics, but their juxtaposition here has revealed many common themes. In particular, a number of the key sources of economic growth and agricultural development are the main shifters of agricultural comparative advantage over time.

If you will indulge me for a few pages, I can illustrate this by means of a highly stylized characterization of the transformation of an economy as it undergoes economic growth from a low- to a high-income stage. In a low-income country, the production possibilities are determined mainly by its endowment of land and relatively unskilled labour. The country has relatively greater production possibilities in agriculture than in manufacturing. National income is relatively low. The bulk of the nation's resources tend to be found in agricultural production, and the largest fraction of national income originates in the agricultural sector.

The process of economic growth involves expanding the country's production possibilities to increase national income and, in turn, per capita income. This is accomplished through investment in physical capital, such as machinery and equipment, human capital (education and health), research and infrastructure. As the production possibility frontier expands, output of both agricultural and manufacturing goods grows, but the increase in manufacturing output (and eventually services) is relatively much larger. The fraction of national income originating in the agricultural sector declines as economic development progresses. In addition, land becomes a much less important factor of production, and capital in the form of machinery, education and research results plays a relatively much larger role in agricultural production than does land.

When a country embarks upon economic development, there is a wide range of investment alternatives among specialized physical capital (in each sector, rural or urban), human capital and infrastructure. In the planning period there is a wide variety of investment alternatives, whether capital investments are made by private or public decision makers. This range of possibilities defines, in a sense, a meta-production possibilities frontier. However, once the investment capital is sunk in specific forms of physical or human capital, which have low opportunity costs, the production possibilities become much more restricted.

In a market economy investment decision makers respond to the expected relative prices in making their investment allocations. In the absence of externalities, the most efficient investment criterion to maximize the growth in national income from available investment capital is relative international market prices, undistorted by government policies. If the price of agricultural goods is raised artificially relative to industrial prices, as is common in high-income countries, relatively more of the country's investment capital tends to be allocated to agriculture. The opposite occurs if a low-income country artificially depresses the relative price of agricultural output. This leads to underinvestment in agricultural production capacity. When distorted relative prices guide investment decisions, national income grows less than it would if investment capital were allocated on the basis of expected relative world market prices. This reduction in potential income is the social cost of a country following an inefficient path of economic development. It has been observed that economies that have undergone a trade-oriented development strategy have experienced faster economic growth than countries that have followed a protectionist, import-substitution industrialization strategy.

The key point of the discussion to this point is that an economy's production possibilities undergo a significant structural transformation during the process of economic development. In the process, the products in which the country has a comparative advantage change. We must now bring in the structure of demand, since a country's imports and exports are the resultant of its structure of both supply and demand. As per capita income rises under economic development, one of the first changes in people's expenditures is in their diets. This usually means increased animal protein and fresh fruit and vegetable consumption, which also translates into larger feed grain and protein meal consumption. However, the income elasticity of demand for all food is less than unity (in

absolute value) and declines as incomes rise. This means that, while consumption of food rises, consumption of manufacturing goods, and eventually services, rises even faster. The percentage of income spent on other goods than food rises. That is, preferences are distinctly not homothetic under economic growth.

In this stylized presentation, low-income countries tend to have a comparative advantage in, and export, agricultural products, and have a comparative disadvantage in, and import, manufactured goods. However, because the structure of production and consumption changes during economic development once a high-income status is reached, the same country will be likely to have a comparative advantage in, and export, industrial goods and a comparative disadvantage in, and import, agricultural goods. That is, there is a transformation in the country's comparative advantage during economic development. This pattern has been observed in numerous high-income countries and in newly industrialized countries of East Asia. It should be clear that comparative advantage is a dynamic concept subject to significant changes over time as the structure of production and consumption changes during the process of economic growth.

At any point in time, in the real world of multiple goods, one can conceptualize a hierarchy of sectors ranging from that in which a country has the greatest comparative advantage to that of its largest comparative disadvantage. The country will always be a net exporter of the good in which it has the greatest comparative advantage and always a net importer of that good in which it has the greatest comparative disadvantage. In the middle are what we might call 'swing sectors' which, depending on the exchange rate at any point in time, may be net export or net import sectors. The position of a sector in the hierarchy is influenced by unique natural resources (such as fertile soils, forests or mineral deposits). But, just as in our simple two-sector model, the cumulative capital investments in sector-specific physical capital, human capital and infrastructure are the most important determinants of the relative position of sectors in the hierarchy.

Similarly, a country's comparative advantage also changes in sectors which are intensive users of certain inputs whose relative scarcity changes during economic development. For example, low-income (and therefore low-wage rate) countries have a comparative advantage in labour-intensive production processes, such as footwear and textile manufacturing. However, as wage rates rise during development, such countries lose that comparative advantage and the industries tend to move to lower-wage rate countries. It should be pointed out that agriculture tends to undergo factor intensity reversals as the wage to rental ratio rises during economic development. That is, agricultural production tends to be relatively labour-intensive in countries with low wage to rental ratios and to become capital-intensive as the ratio reaches a high level.

In a world in which markets were permitted to function without government intervention, international trade would tend to flow in response to the underlying comparative advantage at any point in time. However, the expression of a country's underlying comparative advantage in a given product can be either enhanced or masked by government policies that subsidize or tax, production or consumption of that product. In this sense, a county's international competi-

tiveness in a given product at any point in time is a function, not only of its underlying comparative advantage, but also of government policy interventions in the market.

## SOURCES OF AGRICULTURAL DEVELOPMENT AND SHIFTERS OF COMPARATIVE ADVANTAGE

Clearly the natural resource endowment, in the form of soils, climate and water for irrigation, plays a fundamental role in determining agricultural comparative advantage in a low-income country. Investments in agricultural research and development, however, can relax these constraints by developing crops resistant to drought or salinity, for example, or land-saving inputs. This can compensate for inadequacies in the natural resource endowment and increase the country's agricultural comparative advantage. By the same token, soil or water supply degradation, from inappropriate production technologies or natural forces, can cause a country to lose a comparative advantage that it previously enjoyed. Several papers at the conference have addressed both aspects of this issue.

A central theme of our meeting – in the opening papers and repeated in numerous papers throughout the conference – concerns the important role of government in supplying public goods to the agricultural sector and rural areas. Three types in particular were emphasized: infrastructure, human capital and research. It is striking that none of the three is a current priority for many of the international aid donors. A very important contribution of this conference could be the priority that the research presented here gives to investments in these three public goods.

Infrastructure, in the form of roads, bridges, ports and communications, was emphasized as an essential public investment to stimulate agricultural and rural development and to help markets work better. Sarris even went so far as to argue that infrastructure investments in early stages of development are even more important than 'getting the prices right'. Infrastructure investments are also essential to rural economic development, through creating off-farm employment opportunities in rural areas. No society has ever solved the problem of rural poverty 'on the farm'. Those countries that have effectively reduced rural poverty have created off-farm employment opportunities that permit many farm families to supplement their farm earnings, and to make it possible for others to migrate out of agriculture completely without moving away from their home communities. Adequate infrastructure is a necessary condition for rural development to occur.

The second area of public investment identified was human capital formation. In particular, many authors identified rural primary school education that results in permanent literacy and numeracy for boys and girls as the most important investment in this category. The poor quality of rural schools, where they exist, relative to urban schools, was also cited by several authors as a source of competitive disadvantage of rural people. Primary school education was given a significantly more important role than either vocational agricultural education or agricultural extension. These can both contribute to agricultural development,

but primary schooling was found to be more important. The latter is, of course, also an essential condition for successful rural economic development. Idachaba argued that a key human capital deficiency in Africa relative to Asian NICs when they were at the same level of development was the lack of well-trained public- and private-sector administrators in management, as well as the lack of well trained policy analysts for government agencies.

The third public good is investment in agricultural research to develop new technologies. The role played by research in the development of agriculture in the present high-income countries and in the Asian NICs was noted by several authors. A strong case for much larger investments in agricultural research in Africa was made by Spencer and Badiane, and Otsuka and Delgado, among others. A number of papers, for example that of Byerlee and Pingali, emphasized that the technologies developed must be sustainable, and consistent with maintaining a quality environment.

It is particularly important to recognize the importance of investments in agricultural research and development to meet future world food needs. It was pointed out above that the world's farmers are likely to be asked to grow two to three times as much food as today by the middle of the next century in environmentally benign ways. Malthus has been proved wrong for over 200 years because he failed to recognize the power of technological change to raise agricultural productivity. But research is not a free good, and there is a long lag between research input and new, applicable, technologies. Unfortunately, real expenditures on agricultural research in many high- and middle-income countries have been falling, as have been funds provided to the international agricultural research system. If the world's farmers tried to produce two to three times more output by bringing two to three times more land into production, it would create an environmental disaster. Production would be expanded onto lands which are at present forested, destroying wildlife habitat and biodiversity, and onto fragile land subject to rapid degradation. The only alternative is to develop higher-productivity technologies that are environmentally benign by bringing the best that science has to offer to bear on the problem. However, research is not a free good. These new technologies will be found only if society invests in agricultural research, and we should not delay.

The implication of many of the papers presented at the conference is that, if developing-country governments and international donors are really concerned about reducing hunger and poverty in developing countries (and avoiding further crowding in their cities), they should allocate substantially more funds to investments in rural infrastructure, education and agricultural research. This is one of the most important points to come from our discussions and should be noted by the international aid donor community.

Another significant contribution of the conference is the relatively large number of papers considering appropriate indicators of competitiveness. For example, Traill and da Silva were very creative in developing a family of indicators for competitiveness among firms in the European food industry. Westgren's paper provided a very useful juxtaposition of the approaches taken by agricultural economists and management scientists, respectively, in analysing competitiveness. Thirtle, Ball, Bureau and Townsend performed interesting EU–USA agricultural productivity comparisons, including analysis of cross-

border borrowing of technology. There were numerous other papers addressing empirical and methodological issues in competitiveness analysis. The proceedings volume should become an excellent reference for works in this area.

Another area in which an outstanding contribution has been made lies in notable cross-country and region comparisons and analysis of the differences in performance in agricultural development. Of particular note are the comparisons by Shaffer and Wen of the People's Republic of China and Africa; of Lele, Emerson and Beilock of the People's Republic of China versus India; of Martin and his colleagues on Africa and Latin America; and of Csaki and others on comparisons within the transition economies of Central and Eastern Europe. There have also been numerous excellent papers making comparisons within Africa. The paper by Calkins, which draws on the humanities and other social sciences to address social and moral dimensions of development and the new world order, is likely to be much read and studied.

## OTHER FORMS OF PUBLIC POLICY

The other key focus of public policies which we have discussed has related to measures which alter relative prices. The emphasis which came through in a number of papers was the importance of stability in macroeconomic policy for agricultural development. Exchange rate overvaluation was identified as a particular problem for agriculture, as it artificially taxes exports and subsidizes imports of agricultural products. A number of papers estimated the likely adjustments in response to changes in agricultural policies and trade policies affecting agriculture. In general sessions, as well as in discussion groups, there was significant discussion of the expected results of implementation of the recent GATT agreement and of the gain in social welfare that may be expected, begun notably by Kym Anderson.

These, and other, papers demonstrated that significant progress has been made in the empirical content of computable general equilibrium models, and that they are becoming operational for performing agricultural policy analysis in a general equilibrium framework. This represents a major advance beyond the partial equilibrium models that have been the standard approach used by most agricultural economists for analytic work. Several stochastic simulation models were also effectively used to evaluate alternative stabilization policies. Agriculture is an inherently risky business, and deterministic models have little appeal for analysing policies that are designed to neutralize adverse affects of yield or market price instability.

An important set of papers dealt with the issue of 'endogenizing' agricultural policy. These papers, which generally grow out of the Rausser school at Berkeley, represent an important advance in understanding why governments do what they do to, or for, their farmers. As Zusman pointed out, anyone with experience in government service in the formulation or implementation of agricultural policy often finds that what many agricultural economists write about the policy process is naive.

A number of papers recognized that the policy environment confronted by farmers in many countries is changing rapidly. Government price and income

support policy in many high-income countries is in decline, and the roles of policies relating to food safety, the environment and animal welfare are rapidly becoming much more influential in determining the well-being of farmers.

In a number of formerly socialist economies the transition to a market economy and privatization of agriculture is well under way. In the Presidential Address and in a number of sessions there were excellent reviews of the policy changes now taking place, and of the searching that is occurring in trying to identify the appropriate role for future government policy. Similarly, there were very useful reviews of policy changes in a number of developing countries undergoing structural adjustment, especially in Africa.

Finally, while there was much discussion of what will be likely to happen as the recent GATT agreement is implemented, thoughts also turned to the next GATT round, which some expected to begin as soon at 1999. Many perceived it as likely to be a 'Green Round', with significant focus on environmental issues. Others see process protection as the looming issue: for if farmers in particular countries are not permitted to use internationally available lower-cost technology because of environmental, food safety or other regulations, they will likely seek protection against cheaper imports of goods produced in other countries where use of that technology is permitted. These are areas where the profession needs to be starting analysis now, to be prepared in time for the next round when it begins.

## CONCLUSIONS

In closing, we can be confident that the papers presented at this conference will be regarded as making a significant contribution to the body of literature on agricultural competitiveness, market forces and policy choice. There are important inferences to be drawn for practical policy implementation and as guides to improved micro and macro decision making. The papers should help reassure observers that the agricultural economics profession is concerned about, and contributing to, resolution of important problems of the day.