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AGRICULTURAL COMPETITIVENESS: MARKET FORCES AND POLICY CHOICE

PROCEEDINGS
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DISCUSSION REPORT SECTION V

*David Colman (UK)*¹

The plenary session is based on the sub-theme titled 'The Environment and Sustainability in Agriculture: Latent Policy Conflicts', and the objective of the papers should be to guide us into our topic. However, neither of the papers operates at this broad level and each addresses a narrower sub-set of concerns. Superficially, there appears to be no relationship between the papers, though there is nevertheless a link between the two in that they are concerned with the externalities generated by agriculture.

The first paper, presented by Maurizio Merlo on behalf of his co-authors, focuses on the decline in output of positive externalities from agriculture and addresses the question of how to increase their supply, or, what is essentially the same thing, how to reverse or slow down the reduction in their output. This is, in essence, no different from the issue of how to reduce the production of negative externalities which is highlighted in the paper by Raimundas Duzinskas. While this is interesting and timely, I have not detected any specific elements from the exposition on Lithuania which provide new policy insights into promoting environmentally sustainable agriculture. There are clearly immense problems, which might be alleviated by changes in technology and investment resulting from agricultural prosperity, but we are offered little guidance on how policy might efficiently assist in this, or on how changes in the system of land-use rights (through private ownership) will influence environmental degradation.

I will therefore focus on the paper on 'stewardship'. This, in itself, seems a rather narrow topic and there are matters which require questioning. In my own work, stewardship has been defined as an activity undertaken without monetary reward (and even at net cost) which generates external benefits. These benefits may be through the amenity and conservation effects of maintaining traditional farming practice and decisions not to pursue more profitable intensive culture. Merlo and his colleagues, however, choose to define stewardship as farming activities which generate amenity, conservation or landscape output, even where the costs are fully covered by market returns or policy subsidies. This does not square with the traditional concepts of stewardship which they themselves identify, such as 'good husbandry' and so on, where an element of social responsibility or constraint applies. Moreover, it does not seem appropriate to state that commercial production of amenity outputs is of higher social importance than the voluntary unpaid production of such outputs as by-products of agricultural production. Quite the opposite is

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true from an ethical point of view. There are various conceptual challenges of this type in the paper which have forced me to re-evaluate my own ideas about stewardship, and which are therefore of considerable interest to me personally.

In order to steer discussion towards sustainable agriculture, it is worth emphasising the content of Table 9 of the paper which addresses mechanisms to increase supply of countryside stewardship in order to ensure that agricultural systems practised are sustainable. The table introduces the issue of property rights, and the paper discusses some of the ways society might act to control private owners and users of land to ensure sustainable supply of certain externalities. Among these might be the preservation of a state of fertility for future generations, or the avoidance of pollution or damage to water and firewood supplies.

The paper also refers to state purchase and ownership of land to ensure various societal objectives in land use. While this is discussed in relation to European concerns about production of countryside amenities and outputs, the question can equally be asked as to how public ownership and management influences sustainable agriculture. In further discussion, I would like to see us focus on the relationships of the policy tools referred to in ensuring sustainable agricultural practice in developing countries and consider the influence of different systems of land-use rights upon environmentally sustainable agriculture. In earlier papers it was suggested that democratic regimes are poor at managing land reform to produce appropriate patterns of land use. It has also been suggested in another paper that communal tenure is efficient. These are issues we might explore.

In conclusion, I must thank the speakers for their two papers, but regret that they have not directed their attention more closely to the plenary theme. This, I may add, has been a feature of other sessions at this conference.

Csaba Forgacs²

As already mentioned in different contexts during this conference, the environmental issue in different countries and regions has not been considered by economic and agricultural policy makers to the extent that it should have been. As a consequence, serious damage to the environment has been done, with the former socialist countries being no exception. Policies applied to increase production as much as possible push the ecological consequences into the background.

Reading the Duzinskas paper, I was eager to learn what message the Lithuanian case would bring for the countries facing similar problems in the region. Furthermore, as the influence of harmful activities occurring in one country cannot be stopped at borders, ecological issues quite often have a strong international character. So far as the approach to the problem and the main points of the analysis are concerned I almost fully agree with Duzinskas. My job today, however, is to raise questions for discussion and in this way assist in shedding more light on the problems which have to be solved.

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The paper is a good one which focuses on the key points of the theme. Special attention is paid to the relationship between environmental policy and agricultural policy. The effects of agriculture on environment were deeply analysed and different forms of ecological damage were discussed in detail. The paper also provides a list of future tasks and calls for joint action at international level where it is necessary.

To stop further damage we really have to understand our job first and to work on it. The transition changes are affecting farm and ownership structures and the whole performance in agriculture, hence we have to think of how the ecological aspects of agricultural production should be taken into consideration to promote a sustainable agriculture under the new circumstances. What makes the task more complicated is that, as emphasized in the paper, the previous system of farming was not satisfactory either from the economic, social or ecological points of view. I agree with this statement, though it also means that we have a difficult task to direct policy in the future. The first need here lies in estimating the extent to which environment has been damaged by agricultural production or by industrial and other activities. Although much has been done so far, further substantial research work is needed to have a more or less clear picture of what the job really is and where effort should be directed.

If it is the case that agricultural production has affected the environment to a great extent, it means that technologies, in the broadest sense, will have to be re-evaluated and modified to make them more environmentally 'friendly'. In the short term, the decreasing use of fertilizers and chemicals may well have been having less harmful effects over the last few years, but that does not mean that technological adjustment has been carried out. It is due simply to the lack of financial resources generating a temporary situation which may develop in unfavourable directions if new policies on natural resource use are not put into practice. Farmers will spend more on fertilizers, if they can afford it, to increase yields, no matter how harmful it is for the environment, unless new obligations are placed upon them. The danger is that, by having more and more new farmers, with little knowledge about chemical use, we can expect increasing environmental danger. Am I wrong in guessing that, in the short run, new family farm performance may cause more ecological problems than large-scale farmers have done? There is also little chance that environmentally friendly organic farming will develop, especially in the first few years, since it is likely to be less efficient from an income viewpoint than more intensive methods. There is little demand for health food in countries with low or decreasing consumer purchasing power, and farmers will not be forced by consumers to introduce organic farming because it is more expensive. We also know that the state budgets for protecting the environment in East and Central European countries are limited. At the same time, farms face serious financial problems and their main goal is to survive. Under such conditions it is rather difficult to expect any remarkable achievements in protecting environment in the short run.

The paper does reflect the fact that environmental problems are very serious, indicating that there is an urgent need for improving and implementing new and efficient environmental policies as part of agricultural policies in the

region. Given the constraints, however, it seems unlikely that environmental policy, environmental economics and environmental management will be a major preoccupation.

A. Gyekye (Botswana³)

The paper by Simeon Ehui, Timothy Williams and Brent Swallow begins by identifying the five agroecological zones of sub-Saharan Africa: humid, sub-humid, arid, semi-arid and highland zones. The authors then outline the various demographic, socioeconomic and policy issues that have caused crises in pastoral and bush fallow systems.

Crises of bush fallow systems, they argue, revolve around the shortening or elimination of fallow periods, which results in increased degradation of farm land, more weed infestation, declining crop yields and reduced production of food crops. Crises of pastoralism emanate from the reduction of livestock herds through periodic drought, and loss of land through encroachment of crop farming. Mixed crop farming, it is argued, has evolved as a solution to the problems of pastoralism and bush fallow systems. The solution lies in the fact that livestock contribute directly to the sustainability of farming systems by providing manure which is the principal fertilizer available to SSA. The paper cautions, however, that while mixed crop/livestock systems offer potential solutions to environmentally detrimental land-use practices, there is mounting evidence of natural degradation in these systems as well.

In the view of the authors, creating an appropriate economic and policy environment including exchange rate and market reforms, rural infrastructure development and policies affecting property rights would induce sustainable land-use practices. I will add that, among the factors that cause resource degradation in SSA, are poverty and population growth, and it is on these that I wish to concentrate. A most striking coincidence of the last decade and a half has been that of deepening poverty and accelerating environmental degradation in most of the region. In a period in which poverty has fallen in many parts of the world, SSA has witnessed both declining per capita consumption and an increase in the absolute number of people in poverty. In the same period, it has seen the progressive degradation of the environment. Given that most countries in SSA are predominantly rural economies with agriculture accounting for over 70 per cent of the labour force, this means that it is in the rural sector that poverty is most highly concentrated.

Part of the explanation for the failure of producers to change the technology under which they have exploited the land resource base is to be found in their risk-management strategies. It has long been found that risk aversion decreases with income and that agricultural producers close to the poverty line tend to adopt highly risk-averse strategies. Producer strategies for minimizing risk in the rural economy involve two decisions. One concerns the optimal level of activity and the other concerns the balance between production for direct consumption and production for the market.

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Producers who are near the minimum subsistence level and are unable to take a loss below subsistence tend to adopt environmentally conservative practices characterized by the selection of low value but robust crops or livestock suitable for both market production and direct consumption. They avoid high market-value but uncertain crops or livestock that are not directly consumable. Risk-minimizing strategies of this sort have biased production and consumption decisions in sub-Saharan Africa in favour of tried practices and traditional products, and against technological innovation.

With the labour force in SSA estimated to grow at 2.7 per cent per annum between 1985 and 2000, and over 3 per cent for many of the countries in the Sahel, one of the most effective means of ensuring the ecological sustainability of resource use, not only in SSA but globally, is the international mobility of resource user. For the present, however, mobility between national labour markets remains highly restricted, with entry and exit remaining strictly controlled. This implies that, in the absence of further structural change, the majority of new entrants to the labour force may be expected to be absorbed by the informal sector or to be locked into the agricultural sector of the economy. Yet, on all available evidence, the agricultural sector will not be able to absorb the projected increase in the labour force in the SSA without massively diminishing returns. The question therefore arises as to whether there exists a set of incentives that will both stimulate the diversification of the rural economy and yet protect the resource base from being 'mined' in the process. These incentives will include the removal of institutional impediments to reallocation of agricultural resources into non-farm activities, as well as the creation of an environment conducive to investment in non-traditional resource base activities such as tourism, wildlife and fisheries.

In conclusion, I would like to emphasize the role poverty alleviation can play in encouraging appropriate land-use practices. By minimizing risk aversion, producers who are better off are able to adopt ecologically sustainable technologies. Again, economic policy must create incentives that will stimulate the diversification of the rural economy and at the same time allow for sustainable use of the resource base. Incentives must include creation of an environment favourable to investment in non-traditional resource base activities such as tourism and wildlife. Finally, the need to control population growth cannot be overemphasized. High levels of population growth are associated with increasing levels of pressure on the natural resource base. Population growth in the more densely populated areas of the sub-Saharan African region has often pushed cultivation into marginal areas, accelerating the degradation of land, as noted in the paper, but population pressure also increases the demand for fuel wood, leading to further soil degradation and desertification.

Herbert H. Stoevener (USA)⁴

The relationship between trade policy and the environment is an interesting subject ably presented for us by David Abler and his co-authors. They investi-

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gate three scenarios of increasingly liberal trade policies in Costa Rica. To them the conclusion is somewhat surprising: that the impacts of the trade policy reforms on the country's natural resources and environment do not appear to be very important. The paper consists of two parts. The first is a review of some of the arguments about the impacts of trade on the environment. In the second (and major) part, the authors model the impacts of trade policy changes on sectoral output levels and land use and draw conclusions about environmental impacts.

To start our discussion, I would like to focus on two questions. The first deals with some of the logical connections between trade and the environment. The second concerns the model itself. I shall conclude with an additional comment on the trade-environmental policy relationship. Since the days of the classical economists, there has been a consensus about the overall social benefits that can be derived from specialization in production and trade. The principle of comparative advantage has been in the tool kit of every economist. Admittedly, there have been more sophisticated analyses questioning such benefits in exceptional times and locations, but the overall validity of this principle has not been questioned. Underlying the economic theory of trade is, of course, the assumption that the prices of economic inputs and products reflect their social values. Much of the rationale for our environmental policies stems from the fact that this basic assumption is not met, either on the input or the product side, or both. This reasoning also provides the rationale for the topic of the paper.

Environmental economists have long recognized, however, that in order to minimize distortions in the economic system the focus of economic policies ought to be as close as possible to the incidence of the economic externality. If a chemical in the production of paper causes water quality problems, a tax on the chemical discharged into the receiving water is preferable to a tax on the chemical as an input into the production process. This, in turn, is preferable to a tax on paper products. Attacking this water quality problem by means of general trade policy appears to be less desirable by several orders of magnitude. If we were to agree that trade policy is not an effective tool for pursuing environmental quality goals, this would not mean that it would be useless to know more about the environmental consequences of trade policy changes. I would argue, however, that much more information is required to deal effectively with environmental quality issues, whether they be caused by specific trade policy changes or by any number of other causes. When research resources are scarce, one may want to evaluate the need to address the latter informational requirements head-on.

Turning directly to the model, one cannot fail to be impressed by the apparent competence with which the authors combined the CGE and SAM models to derive the estimates for changes in sectoral outputs and land use. I know that it would be difficult, but it is nevertheless important, to push the analysis of environmental impacts further. I was disappointed that there was no greater detail presented in the paper, even on the physical/biological aspects of the environmental consequences. Does it suffice to say that a trade policy change which stimulates coffee production is harmful to the environment simply because wastes from the peeling of coffee cherries are usually dumped into rivers? Or that the same change which reduces non-food manufacturing will be

environmentally beneficial because that sector has been associated with air and water pollution problems in the past? Even if one accepted the direction of these changes, it would be very helpful to know something about their magnitudes. Expressing such effects in economic terms would be very useful to policy makers.

My final comment relates to one issue which I think is of considerable importance to the trade/environmental quality debate. It is of greater concern for the future that it is for the past. We are looking to the further opening of national and regional economies as one of the major engines of economic growth, especially in the developing world. One observation that has been verified historically is the high income elasticity of demand for environmental goods. While the evidence is less clear than on the demand side, it appears that the supply of environmental goods is much more inelastic. It follows, then, that the economic value of environmental goods is likely to increase substantially with rising incomes. The prediction of these future values is no easy task for the analyst. And the policy maker is presented with even greater difficulties to take such values into account. Hence I would like to add to our possible list of topics for discussion the question, how economic research might generate information on the future scarcity and economic value of environmental goods, information which would be useful in the designing of economic institutions to reflect such increasing scarcity and lay the groundwork for more rational natural resource management.

Manfred Wiewelt (Germany)⁵

Antônio de Santana and his colleagues set out to answer two questions concerning Brazilian reforestation policies. First, what are the driving forces behind reforestation expansion, and second, what are the employment, distributional and welfare consequences of the reforestation programme? Ecological implications of reforestation policies are not discussed although such discussion might have been expected from the title of the paper.

On the first question, it should not be a surprise that governmental incentives are a major source of reforestation growth in Brazil. Tax exemptions, subsidized credits and input subsidies, by affecting returns to reforestation activities, have a pervasive effect on the sector. I do not find the regressions very illuminating in this respect. It is heartening, however, from an ecological point of view to see that, if it is satisfactorily estimated, the elasticity of reforestation with regard to the price of logs from native forests is quite high. This implies that, if the prices of logs from Amazonia reflected their 'total economic value', this alone should provide an incentive to increase reforestation and to protect native forests. In this context, however, it would be interesting to know more about substitution possibilities of logs from plantations and native forests in domestic consumption, since limited substitution possibilities have implications for both the ecological effectiveness of the reforestation programme and the extent of government support needed. From the regression

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and the later welfare analysis, I guess that the prices of logs from different origins are closely correlated and the regression results could be affected for that reason.

Turning to the second question, the authors find that the Brazilian reforestation programme (1) has had only marginal employment effects; (2) has increased the concentration of land ownership and wealth; and (3) has benefited society as a whole, with consumers appropriating the benefits while producers were compensated for their losses. Apart from the dubious procedure used in measuring the change in the concentration of land ownership, the question arises here about whether the reforestation programme should be evaluated with regard to employment and distributional consequences. To me, ecological effectiveness and economic efficiency of government spending would seem to be the relevant criteria. From the authors' conclusions I learn that reforestation expanded rapidly in the past, although it could not compensate for the ever-increasing demand for wood. This implies that the reforestation programme was ecologically effective, but the question of economic efficiency remains.

Everyone who has attempted to calculate the welfare effects of government intervention is well aware of the extreme sensitivity of such results to the model's specification and reasonable parameter estimates. If the welfare calculations done in this paper included the marginal efficiency cost of raising government revenues, the reforestation programme could well result in an estimated economic loss. Rather than give only one result, the analysis would be much more useful to policy makers if a range of outcomes could be provided for likely parameter values. A single observation from dubious supply and demand equations is hardly a credible input into the policy-making process when these are large standard areas around both the parameter estimates and the model's specification.

*Monika Hartmann (Germany)*⁶

The GATT Uruguay Round has had at least two outcomes with direct relevance for agriculture. First was the compromise with respect to a modest reduction in agricultural protection. This outcome falls under the dictum 'getting prices right' and, in the course of this conference, we have heard a great deal about that issue. There has also been a second outcome from the GATT negotiations with relevance for agriculture which has received little attention. This is the establishment of global intellectual property rights (IPRs). We have to thank Mahadev G. Bhat for drawing our attention to this second important element. The dictum here is that of 'getting institutions right' – or, as the author seems to believe, 'getting institutions wrong'!

It is not, in fact, obvious whether the author is in general in opposition to the establishment of IPRs on a global basis or whether he just disagrees with the special mechanisms of the new TRIPS provision in the GATT. Let us first assume the latter and look at some of his criticisms with respect to TRIPS more closely.

⁶University of Frankfurt.

Bhat's first main objection to TRIPS is that it completely eliminates process patents, only allowing product patents. I agree with the author that such a rule would certainly introduce a bias in research, distracting resources from the development of better cost-efficient technology. However, reading carefully through the Agreement of TRIPS, I could not find any such rule. On the contrary, Article 27, paragraph 1 states: 'patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application'.

The author's second concern refers to the fact that living organisms are patentable. These would include seeds, biofertilizers and biopesticides. The author provides us with examples suggesting that these provisions might be detrimental for farmers in the developing countries, and there seems no doubt that introducing patents on new seeds, for example, could increase production costs for farmers. However, farmers will only adopt the new varieties if the net return due to switching to them outweighs the net costs. Thus it seems unreasonable to imply that a patent holder could charge unlimited royalties for his product.

Third, the concern that patent holders will often not commercialize their innovations to recover returns from current investments is to do with more an exception than a rule. Patents run over time and thus delay in applications makes for reduced profitability.

Since the author provides arguments which suggest that developing country agriculture might be better off without a global legal framework for IPRs, I would like to raise some counter arguments:

- (1) The existence of a global framework for IPRs might encourage foreign investment and technological transfer to LDCs, thus promoting growth.
- (2) To make real use of many innovations realized in industrialized countries, a transfer of 'know-how' and adoption of innovations to the special situation in developing countries are essential.
- (3) A lack of resources in many public research centres has increasingly shifted biotechnological research from the public to the private sector. At the same time, recent agricultural reforms in industrialized countries might dampen the demand for biotechnical innovations. Future efforts in this area will, however, remain crucial for agricultural development in LDCs. Thus it might be in their best interest that a legal global framework for IPR is established to promote the private research efforts in this area.
- (4) Absence of IPRs also discourages domestic innovation, especially in the threshold countries, with detrimental effects for them.
- (5) Most gene resources of the planet are hosted in domestic and international research centres in LDCs. The developing countries could capture some of the benefits of these genes by licensing them to private firms in developed regions.
- (6) Finally, the author does not point out that the TRIPS provision in the GATT gives the LDCs quite a different treatment, for example with respect to the time allowed for adjustment to this new provision. While

industrialized countries have to apply the provision in one year, developing and transforming countries are granted a five-year delay and the least developed countries are granted a ten-year adjustment period. This should reduce the danger that LDCs will be deprived of the fruits of their own research, a concern emphasized at different points in the paper. Given these arguments, even LDCs might be beneficiaries from a global framework for IPRs.

The second part of the paper deals with the resource preservation implications of TRIPS. Here some open questions and doubts remain, which I would like to raise. How can threshold levels of a resource differ between users of that resource? Are they not purely determined by biological reasons and the point from which stocks are decreasing or increasing? This has nothing to do with profitability. In addition, the optimal use of a resource is driven by the extraction cost, the market structure and the price. It is not at all clear how a change in the protection of intellectual property might influence these three variables for the different users of the resource. So it is somewhat surprising that the author arrives at such clear-cut results in his paper.

Let me conclude by coming back to the more general question of the arguments for and against implementing global IPRs, which is a question not really answered in the paper. Intellectual goods are public goods. They are characterized by jointness and non-rivalry in consumption. Protection of these goods by IPRs is thus needed to stimulate and motivate people to invest time, effort and money in the development of innovation and thus to secure economic efficiency. This holds for a single closed economy as well as for the world as a whole. In contrast, a single open economy might, under special circumstances, better capture the advantages of innovations in the absence of a patent system by pirating away the fruits of foreign innovations. However, the outcome seems to be less a question of absence or existence of patents than of their special features, such as the balance between the profit aspect for the innovator and the interests of society.

*Yoav Kislev (Israel)*⁷

Avisay Braverman and his colleagues have provided us with a survey of the water economy of the area comprising Israel, the West Bank and the Gaza Strip, adding projections relating to its future development. Implicitly, the paper deals with one of the major aspects of the peace process now in progress in the region. Essentially, all the available water is already utilized and additional supplies, which will be needed as the region's population expands, will have to come from outside or be produced by desalination. Projections are essential since the construction of new water sources may require ten or even 15 years, while shortages may ignite old conflicts.

There are three main points for discussion. First, contrary to expectations prevailing in Israel, we should, in the coming years, see Israel sharing its water

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with its neighbours in the West Bank and the Gaza Strip. The paper, since it views the region as one economic unit, does not deal with the difficult intraregional division of this vital and sensitive commodity. It is an analytic gap which should have been anticipated.

Second, water allocation in Israel (and probably in many other parts of the world) can be much improved by relying on the price system, to an even larger extent than is envisaged in the paper. This will be particularly so in the future when appropriate prices will reduce the consumption of water in agriculture and industry, and will enable safe postponement of costly desalination projects.

The third point is related to the former two. Pricing can also be used to allocate water between national and regional entities. The meaning of reliance on the price system is that if, for example, demand increases in one location prices will rise in all jurisdictions until aggregate demand is equal to the common supply. This is a matter of current debate (Eckstein *et al.*, 1994) and might well have appeared within the paper.

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Chairpersons: Ewa Rabinowicz (2), Secondo Tarditi.

Rapporteurs: C. Sukume, W. Cherm, W.N. Adger.

Floor discussion: W.N. Adger, D.G.R. Belshaw, S.J. Dima, S. Hussain, H. Popp, L. Venzi, R. Thiessen, N. Kazlauskienė, J. McInerney, P.K. Misra, A. Vergroesen, V. Zachariasse.