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THE "MULTIFUNCTIONALITY" OF AGRICULTURE AND ITS IMPLICATIONS FOR POLICY

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The Uruguay Round Agreement on Agriculture (URAA) in its built-in agenda for future negotiations, and the Doha Ministerial Declaration also explicitly confirms that nontrade concerns will be taken into account in the current round of negotiations. Such concerns relate to nonfood outputs including the environment, food security, rural amenities, and viable rural communities. The major issue concerning negotiators is the extent to which these benefits are jointly transparent. The additional transparency has provided an incentive for several highly protecting developed-country members to raise concerns about the multifunctional benefits of agriculture that may be lost if further erosion of coupled or trade-distorting agricultural support were to occur. Countries most active in espousing government support for the provision of these multifunctional benefits are Norway, Japan, the Republic of Korea, Switzerland, and the European Union (EU). These countries have, coincidently or not, highly protected agriculture.

Multifunctionality conceivably presents itself as a stumbling block to the World Trade Organization (WTO) agricultural negotiations. The various benefits, such as landscape values, are notoriously difficult to value. It is thus tempting for proponents to use inflated values to justify support to agriculture. One can imagine negotiations stalled on valuing cultural heritage, biodiversity, or animal welfare. Continued support to agriculture in developed countries distorts trade and may have detrimental effects on many developing countries.

The Plan of This Chapter

The aim of this chapter is to use some economic concepts to explore the issue of multifunctionality. In the next section the positions of some of the major players on each side of the debate are briefly described and analyzed. Legal dimensions are then described, followed by an economic perspective and some policy implications. Some implications and conclusions draw the chapter to a close.

Positions of the Parties

WTO members agreed in the Uruguay Round to cut domestic support to agriculture. Support was divided into three categories (so-called "boxes") depending on the degree of trade distortion.

Support measures that are nondistorting, in the sense that they have no or minimal effects on production and trade, are grouped in the green box (set out in Annex 2 of the URAA) and are not subject to reduction disciplines. These include measures such as general services (research, pest

and disease controls, infrastructure), food security stocks, domestic food aid, decoupled farm income support, income insurance, provision of safety nets, and environmental and regional assistance programs. This covers many of the nontrade concerns.

The blue box domestic covers support measures of direct government payments to farmers under production-limiting programs.

More relevant, the amber box contains the most production-distorting measures (such as government support for prices) which are subject to reductions. Some members argue that some production-stimulating measures should be permitted precisely because of the need to stimulate agricultural production to provide the multifunctional benefits and that some of the amber box measures need to be relocated in the green box, not subject to reduction commitments.

The countries that promote most heavily the concept of multifunctionality are Japan, the Republic of Korea, Norway, Switzerland, and the European Union. Perhaps coincidently, as the U.S. Department of Agriculture (USDA) has observed, it is also these countries (along with Slovenia) that have high levels of amber box support relative to what they are permitted under the URAA (Bohman and others 1999, p. 6). Although the data used in the USDA study are a little dated, with the European Union switching support from the amber to the blue box in recent years, the point is well-made that further negotiated reductions in permitted amber box support may act as a constraint on their support of agriculture.

The Norwegian government has produced perhaps the best-articulated position in favor of multifunctionality (see, for example, Norway Ministry of Agriculture 2001). Its argument progresses as follows: the reform process agreed to in the Uruguay Round should not necessarily be finalized in the current negotiations; countries are diverse with differing concerns and production conditions; production is required to supply the nontrade concerns; low-potential areas need government support to sustain production; and finally, green box measures may be insufficient. The key to this argument is the jointness of production. Elsewhere the government maintains, "The value of the agricultural landscape . . . [is] closely contingent upon the landscape's authenticity as a food producer" (Ministry of Agriculture, cited in Bohman and others [1999, p. 7]). The crucial word here is "authenticity." Would agriculture become less authentic if the intensity of production were to fall following reductions in support? Assessing values is also difficult. Many taxpayers may prefer wilderness to an agricultural landscape.

The Japanese government has offered flood mitigation as a justification for subsidies to paddy rice production. The water-buffering effect prevents erosion and the potential destruction of valuable urban areas (ABARE 1999, p. 3). Opponents argue that this hardly justifies raising to six times world levels rice prices provided to all farmers regardless of their impact on flood mitigation. Furthermore, alternative methods (dams, forestry) may be equally as effective without stimulating agricultural production.

Japan's government also stresses food security as an important component of multifunctionality. It maintains that short-term food insecurity may increase in the future, owing to El Niño and other climate changes. Furthermore, increasing global demand for food, coupled with feed and supply constraints, may push up world prices (Japan Ministry of Foreign Affairs 2000). The Japanese government emphasizes self-sufficiency as a means of enhancing food security.

The EU proposal to the WTO negotiations gives multifunctionality a central role in addressing societal concerns related to agriculture (WTO 2002b). The proposal claims that this is necessary to gain public support to further trade liberalization. The European Union's claim is based on the notion that the European public fears the effects of trade liberalization on rural communities. Nonetheless, according to the proposal, policies to achieve the multifunctional benefits of agriculture represent a much more targeted approach than the others discussed so far. For example, the EU proposal states that environmental policies should be used to tackle environmental problems. Moreover, these should be written into the URAA. The EU proposal also emphasizes animal welfare and food safety issues, claiming that compensation for additional costs of meeting animal welfare standards should be exempt from reduction commitments. Recent developments, including Bovine Spongiform Encephalopathy and foot-and-mouth disease in livestock and genetically modified organisms in crops, have made food safety issues a concern in the

European Union. The EU proposal favors clarification of the precautionary principle as a guide to food safety issues.[2]

The Republic of Korea and Switzerland are the other two countries best known for espousing the concept of multifunctionality as a means of obtaining flexibility in providing support to agriculture. The Republic of Korea puts forward the additional view that agricultural productive capacity should be maintained to allow for the possible reunification of the two Koreas. (The Democratic People's Republic of Korea's agricultural capacity is currently depleted.)

Although all countries have some multifunctional aspects associated with their agriculture, most oppose the use of the concept to justify production-distorting government support. The U.S. position on multifunctionality is articulated in a USDA publication, "The Use and Abuse of Multifunctionality" (Bohman and others 1999). The title signals the flavor of the discussion, which emphasizes that the nonfood outputs from agriculture can be provided without additional production-linked subsidies. Targeted measures to provide these multifunctional outputs are already included in the green box. This study makes the point, mentioned earlier, that a country's support for the multifunctional agenda is related to its level of protection for agriculture. Where the amber box policies are a constraint, countries transfer their production-linked support to the blue box or preferably to the unregulated green box. According to the authors, the concept has been misused by countries claiming that the nonfood outputs are "jointly produced"—and therefore production-linked, rather than targeted, policies are necessary to increase production of these outputs. As leader of the Cairns Group of agricultural exporters, Australia holds a position that is rather similar to that of the United States (see Roberts, Podbury, and Hinchy [2001, p. 35] for a detailed discussion). A note by the Australian Bureau of Agricultural and Resource Economics (ABARE 1999) claims that multifunctionality is "a pretext for protection." These studies point to the need for targeted support, raise the question of whether separate markets can be established to determine the real values of environmental and cultural products, and emphasize the role of diversifying supply to ensure food security. They also emphasize the importance of considering negative as well as positive externalities. Finally, the dangers of overvaluing hard-to-value multifunctional externalities are stressed. The valuation problems allow proponents to justify any expenditure and make "wild and exaggerated claims as to the magnitude of the valuation of non-market rural goods" according to an Australian government representative (OECD 2000, p. 171). The Australian government is concerned that the concept of multifunctionality may be used to stifle reform of domestic support for agriculture. In contrast to the United States and the European Union, Australia believes the production-stimulating effects of support, even blue and green box support, are significant (Roberts, Podbury, and Hinchy 2001, p. 5). The Cairns Group proposes a review of green box criteria to ensure that they are indeed minimally distorting.

The Cairns Group contains several agricultural exporting developing countries that support the Group view with varying levels of enthusiasm. Some of these countries claim that domestic support outside the green box is a form of special and differential support for rich countries (WTO 2002c). Outside the Cairns Group, developing countries are a disparate grouping but in general oppose the use of the concept of multifunctionality to justify domestic support. Relatively few developing countries have submitted negotiating proposals to the WTO emphasizing nontrade concerns. Mauritius has proposed that developing countries, and in particular small island states, be given greater scope to provide production-distorting support to agriculture (WTO 2002a). Jordan has proposed domestic support for its olive and sheep producers. Croatia, Poland, and the Democratic Republic of Congo have also made proposals to the WTO concerning nontrade concerns. The various African, Caribbean, and Pacific countries that currently receive preferential access to the EU markets tend to be sympathetic to the European Union's negotiating position.

Many developing countries are concerned about food security, one aspect of multifunctionality. The problem they face is not so much inadequate flexibility to provide production-distorting domestic support to agriculture as it is the inability to finance it on a wide scale. For this reason border measures rather than domestic support are commonly used to encourage agricultural production. Thus the

European Union, Japan, and other European countries appear to have had little success as yet in building a substantial coalition of supporters of multifunctionality.

Legal Dimensions

Trade negotiations are concerned with changing the rules governing world trade. It is pertinent then to outline what the current rules say on multifunctionality and related issues. Article 20 of the URAA, which contains an agenda for further negotiations and uses the term "non-trade concerns," an alternative phrase for multifunctionality: "Commitments under the reform program should be made in an equitable way among all Members, having regard to non-trade concerns, including food security and the need to protect the environment . . ."

The WTO Secretariat elaborates on this list, specifying "non-trade concerns such as food security, the environment, structural adjustment, rural development, poverty alleviation and so on" (WTO 2002c, p. 24). In 1947, GATT Article XX (General Exceptions) gave the then–GATT members the right to implement measures to protect the life or health of humans, animals, or plants and to conserve natural resources. This applies particularly to multifunctional outputs of an environmental nature. However, recognizing the pitfalls, Article XX specifically mentions that these measures should not be applied in an arbitrary or discriminatory fashion or be applied to restrict trade (Raney and Tschirley 1999).

Some multifunctional outputs of agriculture have specific rules. Food security is one.[3] The WTO agreements include the "Decision on the Possible Negative Effects of the Reform Programme on Least-Developed and Net-Food Importing Developing Countries," which is aimed at enhancing agricultural productivity and infrastructure in these developing countries (WTO 2002c, p. 23). However, most of the countries espousing food security as a multifunctional benefit of agriculture are in fact developed countries, such as Norway, Japan, and Switzerland.

The issue of multifunctionality can be described as a "bandwagon" that has attracted numerous fellow travelers hoping to use trade negotiations on this issue to further their particular interests, legitimate or otherwise. Animal welfare issues are not covered under existing rules, but the WTO has received proposals allowing member countries to compensate farmers for the extra costs of meeting more stringent animal welfare standards (WTO 2002c, p. 24). Food safety[4] is another issue that sometimes finds a place on the multifunctionality bandwagon, the view being that domestic production ensures safe food (TAED 2000). The URAA does not cover this, but Article 5.7 of the WTO Agreement on the Application of Sanitary and Phytosanitary Measures refers to it, and sets out specific conditions under which such measures may be implemented.

In essence, negotiations concerning multifunctionality hinge on whether production-distorting support (including amber and blue box domestic support and border measures) should be maintained or perhaps increased to guarantee benefits indirectly provided by agricultural production. Opponents of that view claim that these external benefits from agriculture, if desired, can be provided without increasing production. The next section reviews some economic concepts to help the reader assess these conflicting claims.

Economic Perspectives

General Characteristics of Multifunctionality

There may be an economic justification for governments to provide key goods and services when market failure exists. Where the output of one good or service is directly related to the production of another, in certain circumstances it may be desirable to subsidize the second to obtain the benefits from the first. This is more likely to be the case if the two goods are jointly produced, and the production of the second involves externalities of such a nature that government intervention is desirable. For example, if a farmer's row of walnut trees provides some welcome shade along a dusty public road, it may be desirable to subsidize production of walnuts from those particular trees to encourage the farmer to maintain the shade-producing trees. These essential concepts relating to multifunctionality are explained in turn below.

Joint Production The main feature of multifunctionality, in any industry, is that the secondary benefits are jointly produced and would not be

available without the primary output. Wool is a joint product of sheepmeat. Although quality may vary, it is not feasible to have one product without the other. If strong jointness exists the multifunctional benefits cannot be produced separately from the agricultural output. If strong jointness does not exist there may be a lower-cost means of producing the multifunctional benefit without subsidizing agricultural output.

A recent OECD study synthesized information from 17 countries on the question of degree of jointness between commodity and noncommodity outputs (Abler 2001, esp. p. 31). The report focused on physical rather than economic links and attempted to assess the scope for de-linking agricultural production and its multifunctional benefits, and concluded that among the positive multifunctional benefits only food security is strongly linked to commodity production.

Externalities Externalities refer to beneficial or harmful effects occurring in production, distribution, or consumption of a good or service that are not captured by the buyer or seller. This implies that no market exists or that markets function poorly and hence externalities are difficult to value. Jointly produced goods are not necessarily externalities. Wool is jointly produced but is not an externality because both buyers and sellers of sheep know the value of wool, and it can be capitalized into the value of a sheep. There is thus a market for the by-product. The market for external benefits may not exist because of an absence of property rights or high transaction costs. Agricultural pollution is a common externality that has come about because farmers, historically, have had the right to pollute. This has evolved from the days when farm pollution (for instance, water runoff containing pesticides) was minimal. A further example is landscape values. Farmers are aware that passersby may enjoy the scenery provided by their farm, but they find it difficult to charge them for this benefit.

It is not clear how much agricultural output is necessary to provide the desired secondary benefits. Does a decrease in agricultural output at the margin lead to a fall in these positive externalities? A review (Burrell 2001, esp. p. 16) for the OECD of reports from 17 countries has examined the issue of market failure, and concludes that almost no cases are reported in which the level of multifunctional benefits is directly related to agricultural output. The author notes that these benefits are more closely related to input use, that is if the land remains in farming most of the secondary benefits are retained.

Government Intervention Government intervention depends on the nature of the externalities and the possibility of market failure. This intervention is more likely to be appropriate in cases in which the jointly produced multifunctional benefits are a public good, having the characteristics of nonrivalry in consumption and nonexcludability. The earlier example used shade from walnut trees on a public road serves to illustrate this. The consumption by one person does not affect availability to others (until congestion occurs at least), nor can pedestrians be easily excluded and hence charged for the service. In the absence of a well-functioning market, public goods (for example, shade) tend to be undersupplied. A government may respond in several ways: (a) alter property rights to create a market (for instance, privatizing the road and allowing the farmer to charge a toll); (b) regulate (for instance, requiring farmers to grow trees along roads); (c) impose taxes or subsidies to alter the behavior of buyers or sellers (for instance, subsidizing tree planting along roads); or (d) provide the service itself (for instance, planting trees along roads). The appropriate response depends on the precise nature of the public good, the degree of jointness, the value of the benefits, transaction costs, the availability of alternatives, and perhaps various location-specific issues.

An Analytical Framework

The OECD has attempted to provide a comprehensive analytical framework to assist policy makers in deciding whether government intervention for the provision of positive multifunctional benefits is justified (OECD 2001).[5] This framework sets out a series of questions for decisionmakers:

1. Is there a strong degree of jointness between commodity and noncommodity outputs?
2. Is there some market failure associated with the noncommodity outputs?

BOX 8.1 Aspects of Valuation

Valuing multifunctional benefits is evidently likely to be difficult, yet policymakers must make decisions using explicit or implicit valuations. Apart from the absence of markets, there are several additional difficulties relating to nonuse valuations.

Existence values refer to the satisfaction gained from knowing that a good or resource exists. Many people who have never seen whales or tigers nonetheless benefit from their continued existence. An obvious example is agriculture's role in preserving biodiversity.

Bequest values are the benefits to one generation of knowing that a resource will be passed down to the next generation. Forests may have this characteristic. Rather than converting a forest for agricultural use, there is some value in preserving it for future generations.

Option values are the benefits of preserving a resource so that it can be used for an alternative purpose later.

Various methods exist to obtain nonmarket valuations. Unfortunately, in most cases none are entirely satisfactory. Travel costs methods attempt to value an attraction by measuring how much people will pay to travel to the attraction. Hedonic pricing involves measuring a particular characteristic of a good. For example, housing situated near scenic agricultural land may have a different value from otherwise identical housing situated elsewhere. Finally, contingent valuation involves asking people hypothetical questions concerning their willingness to pay.

In the absence of reliable economic valuations, policymakers have other indicators to assess the desirability of a good or service. This may range from polling individuals to media coverage to visible protests (both in support or opposition). The danger here is that particular interest groups may claim to represent a larger section of society than is in fact the case. Farmers may claim that the bulk of society is in favor of preserving farmland, on the basis that taxpayers have supported farmers for a generation. In reality, many nonfarmers may prefer that the land be returned to its natural state.

Source:

3. Is government action required or are there better alternatives?

All three questions must be answered in the affirmative to justify government support. The OECD emphasizes the scope to de-link commodity and noncommodity outputs by changing farming practices and technologies, or by pursuing low-cost nonagricultural provision of noncommodity outputs. Even in the presence of strong jointness and market failure, the OECD questions whether options not linked to government (such as market creation or voluntary provision) may not be a more efficient strategy than government subsidies, given the transaction and administrative costs and risk of policy failure associated with government intervention.

The OECD also notes the importance of negative externalities associated with agriculture. Although it is obvious that they are significant, these negative effects are rarely introduced into discussions of multifunctionality. The point that further subsidization of agriculture may generate net negative rather than positive externalities is sometimes overlooked.

Valuation of Multifunctional Benefits

A final conceptual point in setting up an economic framework helpful in analyzing multifunctionality relates to valuation, the estimation of demand. Multifunctional benefits are commonly characterized by externalities. By their nature externalities are difficult to value (see box 8.1). How much of a service should a government provide, given there is no market to indicate its value to taxpayers who pay for the service?

This is an important point. When a valuation of a service is not available, groups in society that want the service are likely to claim that it is much more valuable to society as a whole than others who might favor alternative services. Governments have to assess competing claims before providing the service, and given the conflicting advice from stakeholders, bureaucrats, scientists, opinion polls, and various interest groups, it is not clear how such assessments can best be made.

The OECD (2000) recently examined the question of valuation and concluded that valuation studies can help policymakers. However, OECD warns

that in many cases the results from hypothetical contingent valuation studies should not be taken literally, and values should not be summed across locations or different types of amenities. Nor should comparisons be attempted across countries. While of use, such studies should be used with care and in conjunction with other approaches (OECD 2000, p. 176). With particular reference to the impact of further reductions in domestic support for agricultural production, the OECD claims that it is not clear whether these valuation techniques throw any light on the impact of changes at the margin, and whether changes affect several multifunctional outputs simultaneously. Finally, the techniques have yet to gain the credibility required for their use in international trade negotiations (OECD 2000, p. 172). So far, the major elements of the debate on multifunctionality would seem to center on the need for government intervention, given the absence of a market of multifunctional goods and the valuation of these goods. If governments are to intervene, it is desirable that their policies meet certain criteria.

Policy Implications

Policies applying to agriculture should be subject to the same criteria as other industries. Sound policies are effective, efficient, equitable, transparent, and administratively simple. This means that such policies actually work (effective), do so at least cost (efficient), are fair on providers and beneficiaries (equitable), easily understood (transparent), and can be implemented at a reasonable cost (administratively simple). There are obviously tradeoffs among these criteria, but policies meeting the first three criteria are usually well-targeted. Targeting implies limiting the number of people affected by the policy but may impose additional costs of transparency and administrative simplicity. If these criteria are not taken into consideration, it is likely that policy failure will occur, or at least that alternative policies would work better.

Several policy implications can be drawn from economic analysis of the multifunctionality nature of agriculture:

- There are both positive and negative externalities associated with agriculture production. It is desirable to internalize their effects, so that the negative effects are minimized and the positive ones maximized. This does not, of course, mean that the negative effects should be removed altogether, as for example agricultural production will inevitably involve some pollution. Nor does it mean that there should be no upper limit to the external benefits, as these will become increasing costly to provide, and at some point additional benefits will be unappreciated.
- In circumstances involving more than one objective, multiple instruments are required. For example, rather than using domestic support to influence the level of output, additional instruments are required to control pollution and to encourage the provision of rural amenities.
- Sound policies imply targeting the problem as accurately as possible. Controlling agricultural output may be one way of controlling nitrate emissions, for instance, but a better way is to regulate or tax emissions directly. In that way, farmers change farming practices to sustain production and still meet the pollution objective.

In some countries input constraints have been used to control output. Farmers may be limited to a given area. For example, area controls have been used in the United States for this purpose. This policy is effective in limiting output only so long as there is a fixed relationship between output and the limiting input (land, in this case). The typical response is for farmers to increase the use of inputs that are not limited and thus raise the yields substantially, undermining the policy objective.

In general, negative externalities are related to input use rather than output, in particular the use of fertilizer and chemicals. These pollutants can be controlled most effectively by focusing directly on the emissions. This would not be the case where inputs and outputs are in direct proportions, but usually there is scope to vary the mix of inputs to meet environmental objectives at minimum cost.

Measures that influence output, such as tariffs and other trade measures and output-related domestic support measures, are not the most effective instrument for tackling output-related positive or negative externalities. Environmental policies are needed to achieve environmental outcomes. This implies that to generate the optimal level of environmental benefits, a specific instrument is likely to be required, unless the externality is

generated in fixed proportion to output. If apple blossoms are considered scenic, a subsidy should apply to the generation of blossoms and be related to their duration and beauty, and on the location of admirers. There is little value in having scenery with nobody to behold it (although some gain satisfaction for just knowing that it is there; see "existence values" in box 8.1).

Three Multifunctional Outputs from Agriculture

All industries have multifunctional benefits to some degree, but this does not imply they should all be subsidized. Some claim that agriculture is special or different in ways that justify government support. Three aspects of particular interest are environmental benefits, food security, and rural amenities. These are examined in more detail.

Agriculture and Environmental Benefits Agricultural production is inevitably associated with positive and negative environmental externalities or spillovers. The negative spillovers are familiar; they include nutrient and pesticide runoff, soil erosion, methane emissions, loss of biodiversity, noise, odor, and increased likelihood of flooding. Positive environmental externalities are less obvious but real nonetheless. These include scenic vistas, wildlife habitat, open spaces, recreational amenities, and opportunities for peace and solitude. One important attribute in countries with steep terrain is flood control (Japan Ministry of Foreign Affairs 2000). Some WTO members claim, for example, that rice paddies have an important function in preventing floods (Roberts, Podbury, and Hinchy 2001, p. 39).

A feature of these externalities is the absence of a market. One response of government may be to set up a market. This might involve, for example, licensing landowners to charge fees to those wishing to walk over their land. In this way land prices would more closely reflect their scenic value. Market-based solutions may not be the entire answer because nonuse values are hard to quantify (see box 8.1).

A second approach taken by governments may involve the payment of subsidies to encourage production of the externality. The problem here is that the government performs the function of the market, and there is some question as to how well it can provide the service where, when, and in appropriate quantity that consumers desire and are willing to pay for. Switzerland provides scenic alpine landscapes, of value to locals and tourists alike, and these are enhanced by the presence of livestock. There is little point in providing a scenic agricultural landscape in a valley where there are few people to see it, or at a time when most consumers (tourists) are elsewhere, or in quantities that are too few or too great. If this were the case then governments could do better by subsidizing extensive livestock operations alongside railways and motorways.

Agriculture and Food Security Food security is an issue normally associated with developing countries where food supplies are inadequate because of low production or inability to import and distribute adequate amounts.[6] Perhaps somewhat surprisingly, food security is also an issue in developed countries that can readily afford to import much of the food they consume. Japan, the Republic of Korea, and Norway, for example, claim to be concerned that their supplies of imports may be disrupted because of wars, embargoes, price shocks, and perhaps, natural disasters.

Food security can be defined as a situation in which "all households have both physical and economic access to adequate food for all members, and where households are not at risk of losing such access" (FAO 1996). At the global level, food security is obviously a distributional issue. In spite of some 800 million malnourished individuals, there is enough grain produced to feed all the people in the world, as well as livestock. Furthermore, policies such as production quotas, schemes to set aside productive land, and taxes are in place in many countries to limit production.

Food security fits rather uncomfortably with the other multifunctional benefits of agriculture, such as environmental goods, for several reasons:

- Food security is not a nonfood item, which is what multifunctional outputs of agriculture are generally considered to be.
- It is questionable whether food security is a public good, with the properties of nonrivalry and nonexcludability, given that a functioning market exists.
- Food security is not a joint product with production, as it can be attained through trade and storage (Bohman and others 1999, p. 18).

Arguments in favor of domestic support to increase food production, and hence food security, emphasize the insurance aspect of maintaining the capacity to produce food domestically (Norway Ministry of Agriculture 2001). Taken to the extreme, evidence of self-sufficiency is obtained only when all consumption is domestically produced.

A second argument in favor of food security relates to the instability of international prices. For example, the Japanese view is that international prices of staples are likely to become increasingly unstable with the El Niño effect on climate and increasing pressure on grain prices from population and income growth in developing countries (Japan Ministry of Foreign Affairs 2001).

The arguments against using domestic support to provide food security are along the lines that domestic production does not necessarily provide security, nor is it the best way to do so. Domestic production may be subject to disruption in the supply of imported inputs such as fuel, fertilizer, and chemicals that would limit the ability of countries to produce their own food in times of an embargo. Other means of achieving continuity in supplies include holding stocks and long-term contracts, and maintaining a diversity of suppliers. In the case of Japanese rice, in which the market for the favored Japonica rice grown in temperate climates is relatively thin, opening up the market would encourage suppliers to diversify into other production, thereby increasing market liquidity. A further strategy could be for wholesalers to have contracts directly with foreign producers, perhaps even jointly owning the production facilities.

Agriculture and Rural Amenities Some, perhaps most, countries place value on maintaining viable rural communities. This task is made more difficult by the exodus of labor from the agricultural sector, a secular decline that has been going on since the 1800s, when the industrial revolution made wages more attractive in industries located in urban areas. As farm consolidation occurs, rural populations fall and the demand for services is reduced. As services such as hospitals, schools, bus routes, and banks are reduced or removed, the local populations must find substitutes. At the extreme, rural areas may depopulate altogether and countries may be concerned about invasion from foreign powers. Populating the land is seen as a means of discouraging this (Norway Ministry of Agriculture 2001).

This natural decline in farm populations is viewed by some policymakers as detrimental and they wish to subsidize agricultural production to reverse this development . It is likely that subsidizing agricultural output is a very indirect means of supporting rural communities, as most of the support goes to the large farmers. Even domestic support directed to inputs such as livestock and land, such as that provided in the European Union, is relatively ineffective because 50 percent of it finds its way to only 17 percent of the European Union's farmers—those with the largest capacity (ABARE 2000). And in the United States, 9 percent of farms receive 41 percent of the government's support, according to ABARE.

If it is thought desirable to support rural communities, the most appropriate means is to directly provide missing services. This may mean governments subsidizing medical practitioners in remote rural areas, providing infrastructure for wireless telephony (mobile phones), facilitating Internet banking, and perhaps subsidizing or cross-subsidizing transport services. Such policies can be targeted to the specific areas that need assistance.

Another approach is to encourage rural employment. Agricultural support encourages agricultural output, but its impact on employment is lessened by capital-labor substitution and increasing productivity. In many heavily populated developed countries—for example, Japan and the EU countries—rural communities are not highly dependent on agricultural incomes, as off-farm incomes are a high proportion of total incomes. The share of agricultural employment in predominantly rural regions ranges from 2 percent in Germany to 8 percent in Norway, 11 percent in France, and 14 percent in Japan (Bohman and others 1999, p. 19).

The relatively small share of agricultural employment may be due to the proximity of urban employment opportunities. Governments can encourage the location of nonagricultural industries in particular rural areas through regulation or the provision of infrastructure. As technology changes work habits in countries, the need for physical proximity in many occupations is lessening. As branch offices are replaced by technology call centers, the need to place employees in a specific location is reduced. In rural areas there

is a natural subsidy available to industry through low-cost rent on housing and office accommodation, but the need for high quality transport and communications is paramount. Governments have a role in facilitating the provision of this infrastructure. Social infrastructure, such as education, training, and health, will help agricultural workers to find employment in other industries in rural areas.

Thus far the main characteristics of multifunctionality—environmental benefits, food security, and rural viability—have been discussed. Some claim that there are additional benefits, including cultural and heritage values (TAED 2000). These will not be discussed here explicitly; suffice to say that the principles relating to their provision by governments are similar to those covered above in the context of the main benefits.

Implications and Conclusions

National sovereignty is a fundamental right of WTO members. This provides members with the right to choose the nature of their agricultural policy objectives, with the proviso, agreed among members, that the policies to achieve these objectives are non-trade-distorting. In the run-up to the current round of multilateral trade negotiations, several developed countries began emphasizing the need for output-supporting policies to ensure that the external benefits of agriculture were provided in sufficient quantities. These external benefits, by their nature difficult to measure, include environmental goods, food security, rural development, and other less concrete externalities such as cultural and heritage values. And as noted above, coincidentally or otherwise, members in favor of multifunctionality—Japan, the Republic of Korea, Norway, Switzerland, and countries of the European Union—are those with high levels of government support for agriculture.

Opponents of multifunctionality maintain that claims for the existence of the difficult-to-measure external benefits of agriculture are merely a pretext for additional support. Furthermore, they maintain: that these claims represent a substantial threat to further trade reform, that negative externalities should also be considered, and that there are better ways of providing the public goods that people want. Indeed, the WTO has provision for such policies (that is, the "green box") and many such polices are already being used (ABARE 1999, p. 5).

In analyzing the competing claims, perhaps the major issue is the degree of jointness: the extent to which output of agriculture and provision of the externality is jointly produced. If the requirement was solely to generate the benefit, would it be necessary to produce the same level of agricultural output as at present? If the degree of jointness is somewhat weak, a policy targeting the external benefit specifically will very likely be superior.

A second issue is the valuation of the benefits, as this determines the quantity to be provided. Although by their nature externalities are difficult to measure in the absence of market valuations, measures to encourage the provision of the benefits should be in proportion to the likely gains. For example, it may not be sound policy to subsidize all of agriculture forever to help prevent a flood once in a lifetime or a price spike in one commodity once every 50 years.

Developing countries have long been concerned about limited access to developed-country markets because subsidized agriculture reduces market opportunities. Support to agriculture on OECD countries amounted to US$327 billion in 2000, more than half the farm-gate value of production (OECD 2002). In many cases, the subsidies exceed the value added. Estimates by ABARE suggest that developing countries would enjoy static welfare gains of $14 billion from a 50 percent reduction in agricultural support levels and are likely to enjoy more stable world prices (Freeman and Roberts 1999, p. 38). While all modeling results should be used with caution, it can be said that developing countries as a group are likely to be disadvantaged if the concept of multifunctionality leads to much agricultural support in some developed countries being reassigned into the green box in a way that locks in existing distortions in their potential markets.

Multifunctional benefits apply to all industries and have done so for many years. Sound policy involves identifying those benefits, and seeing that they are supplied in the right quantities in the right places at the right time.

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Notes

1. Eco Landuse Systems, Canberra, Australia (www.elspl.com.au).

2. Food safety covered under the Sanitary and Phytosanitary Measures (known as the "SPS agreement") is not strictly a multifunctionality issue, although some commentators regard it as such. This issue is addressed later.

3. See also chapter 10.

4. See also the chapter on food safety.

5. The Abler (2001) and Burrell (2001) studies quoted above use this analytical framework to provide an empirical assessment.

6. See also chapter 10.