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International Agricultural Trade
Research Consortium

**FACILITATING FARM-LEVEL ADJUSTMENT TO THE
REFORM OF TRADE AND AGRICULTURAL POLICIES**

by
**David Blandford and
Berkeley Hill**

Trade Policy Issues Paper #4 - 2005

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Facilitating Farm-Level Adjustment to the Reform of Trade and Agricultural Policies



**The International Agricultural Trade
Research Consortium**

October 2005

Preface

This document was prepared by David Blandford, Penn State University and Berkeley Hill, London University. It is based on results from a research project funded by the Economic Research Service of the U.S. Department of Agriculture entitled "Policy Reform and Agricultural Adjustment" under a Cooperative Agreement with the Pennsylvania State University (No. 43-3AEK-3-80047). Additional funding was provided by the International Agricultural Trade Research Consortium (IATRC). Under the project, there was an international workshop at Imperial College, London in October 2003 and an IATRC symposium in Philadelphia in June 2004. The studies that are used as the basis of this paper are contained in an edited volume to be published by CABI Publishing (Blandford and Hill, 2005).

Trade Policy Issues Papers (formerly known as IATRC Commissioned Papers) are prepared at the request of the executive committee of the IATRC. They are designed to address key public policy issues associated with international trade in food and agricultural products.

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FACILITATING FARM-LEVEL ADJUSTMENT TO THE REFORM OF TRADE AND AGRICULTURAL POLICIES

Executive Summary

Further reforms in international trade policies will have implications for domestic agricultural policies in many developed countries. The ongoing Doha round of negotiations through the World Trade Organization (WTO) is seeking to strengthen disciplines on the provision of domestic support to agriculture, increase market access and eliminate export subsidies. Such changes could have important effects on future agricultural policies in many countries, particularly those oriented towards price support. The legality of some existing forms of domestic support under existing international agreements is also being questioned through litigation at the WTO. In addition to international pressures, the efficiency and effectiveness of traditional agricultural policies are increasingly questioned in many countries. Domestic concerns, including budget constraints, may contribute to the momentum for policy change.

Significant reform in trade and domestic policies would add to ongoing pressures for adjustment in the agricultural sector, created by changes in technology and the demand for agricultural products. Farm households adapt in various way to changing economic conditions. In the short and medium term, they can reallocate resources used on the farm and between farm and off-farm activities. In the longer term, the drive for increased efficiency tends to reduce the amount of labor employed in agriculture and restructuring leads to a smaller number and larger size of commercial farms.

The process of adjustment can impose economic costs on society if stickiness in the reallocation of agricultural resources results in output and consumption foregone. Policy measures that reduce these social costs can be justified on *efficiency* grounds. If society feels that the private costs incurred by farm households need to be mitigated, policy measures can also be justified on *equity* grounds. Finally, *political economy* arguments may apply when the provision of adjustment assistance is needed to secure support for policy reform.

An examination of case studies of previous agricultural policy reforms leads to a number of conclusions. First, agriculture's capacity to adapt to policy reform is generally underestimated. Second, adaptation is easier when land markets function efficiently. Third, the quality of human capital is critical in the adjustment process. Fourth, aid for business restructuring and the provision of compensation for income or asset value losses can play an important role in facilitating adjustment to policy reform by addressing efficiency, equity and political economy issues.

An analysis of past experience demonstrates that measures taken to assist the process of adjustment to policy reform must have clear objectives. Key policy directions are:

- removal of barriers to the efficient functioning of land markets, particularly constraints on the sale or rental of farmland;
- development of human capital, particularly transferable skills for farm households, in such areas as business management and entrepreneurship;
- provision of compensation based on income reductions or reductions in asset values, free of any requirements to remain in farming or to occupy land, and limited in duration.

Such policies are in line with the Green Box provisions of the WTO Agreement on Agriculture, since they are not linked to future production or prices of agricultural products. They are also compatible with minimally-distorting policies for the provision of environmental goods by agriculture and with rural development policies.

FACILITATING FARM-LEVEL ADJUSTMENT TO THE REFORM OF TRADE AND AGRICULTURAL POLICIES

“Capitalism.. .is by nature a form or method of economic change and not only never is but never can be stationary... (the) process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in.” Joseph A. Schumpeter, Capitalism, Socialism and Democracy.

I. INTRODUCTION

The 1994 Agreement on Agriculture (AoA) negotiated under the General Agreement on Tariffs and Trade (GATT) imposed international disciplines on agriculture for the first time. If successful, the current Doha round of WTO negotiations will require further changes in trade and domestic agricultural policies. Required reductions in tariffs, export subsidies, and domestic support may mean that agricultural policies will have to change. In particular, less reliance may have to be placed on price and other forms of support that are linked to production.

Regardless of the shape of a final WTO agreement, domestic pressures in some countries may stimulate changes in agricultural policies. The European Union and the United States both face budgetary pressures that could lead to policy reform. The European Union may experience additional pressures on its agricultural policies as a result of the enlargement of its membership. In some countries there are concerns about the effectiveness and efficiency of current policies, for example, in supporting the incomes of small low-income farmers or preserving the family farm. Policy objectives are also changing, shifting away from traditional objectives, such as supporting the incomes of farmers, towards broader concerns, such as enhancing agriculture's contribution to the environment.

Changes in trade and domestic agricultural policies would create additional pressure for economic adaptation and adjustment in farming and, more generally, for farm households. As a result, questions are raised as to whether governments should use specific measures to help facilitate the process of adjustment at the farm level. If so, what type of measures would be effective and efficient, and be consistent with WTO obligations?

This paper has four major aims:

1. To examine the rationale for adjustment policies for agriculture.
2. To use previous examples of policy reform to throw light on the constraints to adjustment at the farm level and to draw lessons on “good practice” in policies to facilitate change.

3. To determine how policies to facilitate adjustment at the farm level relate to the achievement of other objectives for agriculture, particularly those relating to the environment and rural development.
4. To assess the compatibility of proposed adjustment policies for agriculture with WTO obligations.

II. THE RATIONALE FOR ADJUSTMENT POLICIES

A. What is meant by adjustment?

Agriculture operates in a dynamic economic, technical, institutional and political environment. Farm households face pressures to adapt their economic activities as a result of changes in this environment. Some of the pressures are the product of well-established long-term trends. The cost-price squeeze, created by technological advance and low price and income elasticities of demand for agricultural products, has long been a major part of the explanation for the decline in farm numbers, increase in farm size, and out-migration of labor from agriculture (Cochrane 1965). Superimposed on these trends are the effects of short-term shocks, such as animal disease outbreaks, weather, human health scares, and political events, such as wars and regime change. In addition to these external factors, there are internal life-cycle pressures for change in farm households, such as those that often accompany the aging of farm operators and the desire to pass the business to successors. Thus agriculture is in more-or-less constant state of flux. In such an environment, the reform of agricultural policies is just one more source of pressure to change and adapt.

Adjustment is a process undertaken by individual farm household-firms. Their responses may take a variety of forms over various time horizons. Among the most common adaptations are changes in the following:

- The balance between enterprises on the farm and the intensity of production (use of variable inputs)
- Production methods (particularly through innovation and the adoption of new technology)
- Contracting for some or all of the production and marketing functions
- Business structure or institutional form
- The allocation of farm household factors (particularly labor) between on-farm and off-farm activities
- The area of land farmed, through enlargement or contraction and through purchase/sale or leasing
- The operator(s) of the farm through inter-generational transfers of assets and entry/exit decisions.

What happens at the farm household level is reflected by changes at the sector level – in the numbers and sizes of farms, in factor quantities and quality

(especially the number of people working in agriculture and their socio-economic characteristics, such as age and education), in the degree of specialization among farms, and in productivity patterns. However, sector-level statistics are only snapshots based on censuses and surveys. Apparent stability in structure can conceal numerous individual adjustments, many of which cancel each other out.¹ It is easy to underestimate the degree of adjustment that occurs at the farm household level in agriculture on a continuing basis.

B. Is there anything special about adjustment in agriculture?

Firms in all industries are subject to economic pressures for change. Are there factors specific to agriculture that make adjustment by farm households particularly problematic or worthy of special attention? There are some aspects that merit consideration:

- *Factor immobility.* In many countries the age structure of farmers, their specific skills, lack of experience in other occupations and relatively low levels of formal education are often cited as reasons why farmers find it difficult to transfer to other activities. Many of these characteristics are highly correlated. Remoteness from alternative economic opportunities and the costs of relocation add to immobility. Constraints can be overstated, as there are often younger and more adaptable individuals within farm households, improved communications erode remoteness, and a substantial proportion of farmers (or their spouses) in most industrialized countries are now pluriactive (engaged in multiple economic activities), implying that there is some non-agricultural work experience in many farm households.
- *Dominance of the household-firm.* In terms of numbers, most farms in OECD countries are run as unincorporated businesses in which the farmer and other members of the household supply the dominant share of the labor used. In such a situation, responsiveness to the price and cost signals that put pressure on income from farming may be muted. The reaction of the farm household may be “belt tightening”, i.e., to continue to operate the farm business at a lower income level. By contrast, a firm that is mainly dependent on hired labor and owned by non-operator shareholders is likely to be more responsive to economic adjustment pressures.
- *Stickiness of economic change.* While adjustments are made by the existing cohort of farmers, major shifts tend to occur when there is a change in the principal operator. In an industry in which, in many countries, there is a history of passing the business down the

¹ This is illustrated in a recent study for the United States. Ahearn *et al.* (2005) show that over two-thirds of US farms that continued to exist over the period 1992-97 changed their size. Furthermore, there was a substantial turnover of operators, with annual rates of entry (10 percent) slightly exceeding the rate of exit (9 percent); figures that exceed historical labor turnover in US manufacturing industry.

generations within families, substantial changes often accompany intergenerational transfers of farm property. These include changes in size, major enterprise and, perhaps most important, the decision to operate the farm as a full-time or part-time activity. Such responses may be delayed for a considerable time if the principal operator is not elderly. On larger farms, with more complex management structures involving several generations, stickiness may be less of an issue.

None of these factors is exclusively confined to agriculture. Some are characteristics of other sectors in which small family-run businesses are common (such as sectors of the retail trade, especially those in rural areas). What makes agriculture unique is the combination of these factors with the political weight that is often given to the sector. Farmers' representatives and commodity interests are likely to highlight the fate of those who may have the greatest difficulty in adjusting to change, particularly small farms, in order to pressure politicians and government policy-makers not to reform agricultural policies. Possible environmental consequences of adjustment may also be cited or the assumed implications for rural communities. It is this political element that often raises adjustment in agriculture to an issue of public concern.

C. Adjustment and policy

Many government policies affect the agricultural industry and its ability to adjust. Some policies are directed specifically at agriculture, using farming to achieve security, economic, environmental and social objectives (such as food safety, low-cost food, bio-diversity and rural development) while others attempt to address intrinsic problems of the sector (e.g., secular decline and instability in income from farming). The extent to which agricultural policies impede or assist change is an important issue, but there are many other policies that have implications for adjustment in agriculture. These include policies relating to the taxation of property (annual and on disposal or inheritance), those governing land use (including the use of land for non-agricultural purposes), and social security arrangements.

It can be argued that the traditional mechanism of agricultural policies in industrial countries – intervention in the market to support the prices received by producers for their products – has impeded economic adjustment in agriculture. By keeping product prices higher than market forces would dictate, farmers have been shielded from the economic pressures that would otherwise force them to adjust. This seems to be the predominant view. But a case can also be made that high prices may have stimulated certain forms of adjustment, for example by promoting investment in capital-intensive farming systems and inducing technological change. A shift towards direct payments in many countries has tried to weaken the link between the support provided to farmers and resource allocation decisions, thereby enabling market prices to take a greater role.

However, this decoupling is relative and not complete; in particular, an important link remains between support and land values which play a role in the adjustment process and the international competitiveness of a country's agricultural sector.²

At the same time as governments have used measures to try to prevent farm prices from falling, some have tried explicitly to accelerate adjustment in agriculture, though usually with a more modest allocation of financial resources. The European Union has a catalogue of interventions aimed at promoting the exit of elderly farmers and the entry of new ones, the modernization or diversification of agricultural holdings through the provision of capital grants or low-interest loans, increases in scale through the amalgamation of land parcels, improvements in the processing and marketing of farm products, and improvements in the skills of farmers through the provision of advice and training. While special schemes have been less prevalent in the United States, some of the same objectives have been pursued at the federal level through the farm credit system and through extension programs at the state level.

If there is to be a shift away from more traditional forms of agricultural support to more pro-active policies designed to facilitate adjustment, we must first examine the underlying rationale for adjustment policies in agriculture.

Efficiency

In the neo-classical model of a perfectly competitive economy without any form of market failure, there is little justification for government action to facilitate adjustment to economic change. The role of government is limited to setting the rules of the economic game and ensuring that these are followed by all agents so that market forces can achieve a welfare-maximizing allocation of resources. In such an economy, resources (land, labor and capital) will be reallocated rapidly in response to exogenous or endogenous changes in the scarcity or productivity of resources, or in the underlying determinants of final demand. Prices will adjust to maintain equilibrium in both factor and product markets. The impact of economic change on the well-being of individuals will be determined by their endowments of productive assets, changes in wages and rental rates, and the effect of changes in the price of outputs on consumption. Some individuals may be losers as a result of economic change, but this is an inevitable outcome of the search for increased efficiency in the use of resources that yields an overall increase in economic welfare. There is no social cost, defined as output and consumption forgone, resulting from adjustment in the perfectly functioning markets of the neo-classical model.

² There is a continuing debate about the degree to which direct payments are decoupled; a case can be made that complete decoupling is unattainable (OECD 2001).

If we relax the key neo-classical assumptions of perfect information and the frictionless reallocation of resources, adjustment costs may be created for society as a whole, again measured in terms of output and consumption foregone, as the economy moves from an initial equilibrium to another. It may be possible to avoid such costs through government intervention and for that intervention to represent an economically efficient use of resources. This is essentially the case set out by Bhagwati (1982) with respect to trade liberalization that produces a decline in the relative price of importables to exportables. In that case, rather than a frictionless movement from an initial point on the production possibility frontier, denoted by A, to the new equilibrium, denoted by C, an adjustment path exists that passes through an interior point, denoted by B (Figure 1). The shape of the adjustment path is determined by inflexibilities in resource reallocation. The more severe these inflexibilities, the farther to the left the path of adjustment will extend, and the greater will be the output foregone in the transition from A to C.

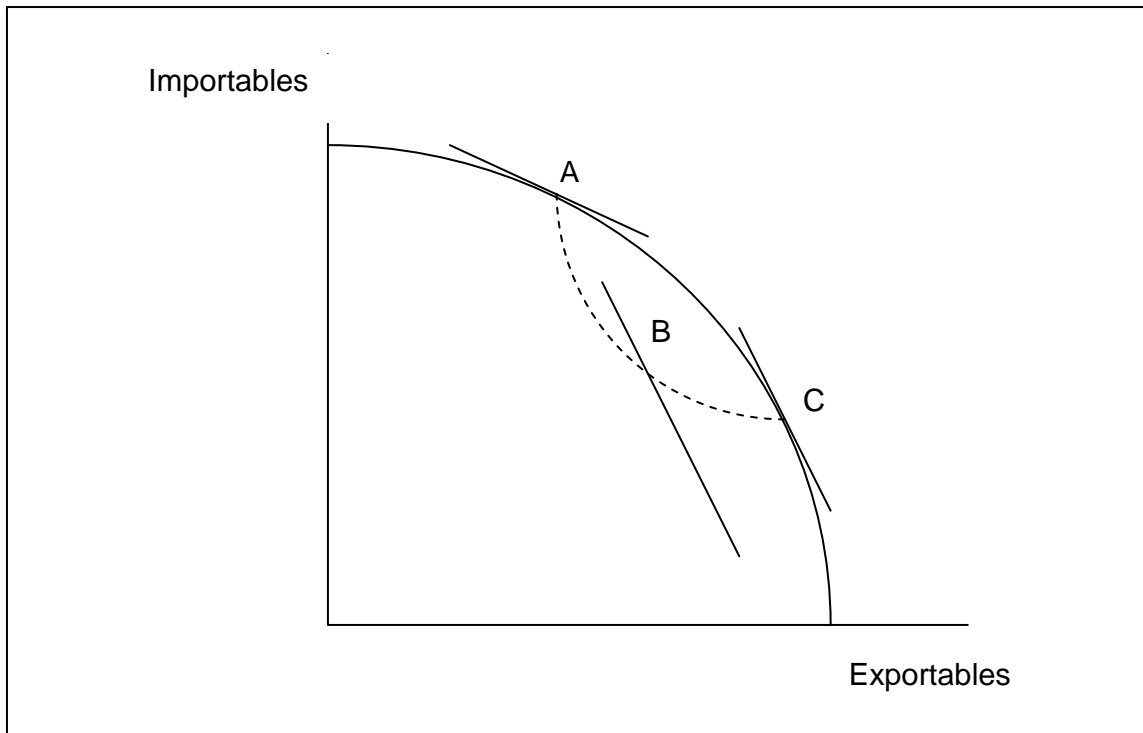


Figure 1 Adjustment When Resources are not Perfectly Mobile

The existence of economic adjustment costs for society is not, by itself, sufficient to justify a greater role for government and the use of resources to reduce these costs. Output foregone during the adjustment process may be an unavoidable consequence of change. If so, the path of adjustment can still be economically efficient, in that the resulting loss of output is minimized without public intervention (Mussa 1982). The efficient policy option is to do nothing.

To justify government action, it is necessary that:

- some or all of the adjustment costs are potentially avoidable – in terms of Figure 1, that there exists a feasible alternative path within the production possibility frontier that lies to the right of the one shown by the broken line
- feasible public intervention exists that is capable of moving the economy to this alternative path, and
- the costs of that intervention would be less than the resulting gain in economic welfare.

On a practical level, there may be a scarcity of adjustment programs that can be shown to satisfy these criteria.

A second efficiency justification for public intervention in the adjustment process relates to the existence of goods that are either not priced at all or are incorrectly priced in the market place. This is the classic argument relating to market failure, where there are public goods or technical externalities associated with an economic activity. In that case, a welfare-maximizing reallocation of resources may require public action to correct for the market failure. Again, public action can only be justified if intervention is both effective and efficient – i.e., there is a means of bringing about the desired correction, and the resulting increase in economic welfare exceeds the costs of intervention. If the market failure is not explicitly created by the adjustment process (i.e., is a pre-existing condition) it might be preferable to tackle the issue directly rather than through measures that are designed to facilitate economic adjustment.

A third situation applies when adjustment costs are created because of the existence of imperfect competition due to government action or inaction. As with public goods and externalities, one might argue that the appropriate “adjustment policy” in such a case would be to address the underlying distortion directly, rather than to use a secondary measure to try to offset its effects.

Equity

Economic change is likely to have distributional implications due to its effects on factor and product prices, given differences in factor endowments among individuals. The Pareto principle suggests that if change results in some individuals being made better off while no-one is made worse off, it is unequivocally welfare improving. In reality, economic change is likely to make some individuals better off and others worse off. In that case, economic theory suggests that if the winners could potentially compensate the losers and still be better off, the change is beneficial. Whether or not gainers should actually compensate losers is a separate issue relating to judgments about equity.

Societies differ in the degree to which they try to influence the distributional effects of economic change, and to compensate losers.

In most industrial societies there seems to be a general acceptance that individuals should not be left entirely alone to absorb the private losses that economic change can generate. In other words, social utility is greater if mechanisms are in place to cushion the private costs imposed by change, although there are major differences in the amount of “social insurance” that societies are willing to provide. Public support appears to be widespread for measures that help individuals absorb the short-run impact of changes that are outside their control (unanticipated or exogenous changes); particularly if these are rapid or their effects are pronounced. In many societies there is also public support for helping individuals adapt to the effects of changes in public policies. When such policies have been in place for a long time, with no obvious signals that change is contemplated, the allocation of resources and factor prices will reflect expectations of their continuation. Policy changes that result in significant and rapid adjustments in factor use and prices may generate public support for compensatory measures to address resulting private costs.

Political Economy

The final set of arguments that may underlie adjustment policies relate to political necessity or expediency. Those who stand to incur private costs from economic change may be a vocal minority able to wield influence on the political process. When the source of adjustment is clearly identifiable, for example a change in government policies, there may be general public sympathy to address resulting adjustment issues. Political pressure from firms and workers in declining industries may be so great that measures may be needed to help facilitate adjustment or to provide compensation. Without such measures it may not be politically feasible to implement a proposed change. Losers may seek to block change, thus preventing the realization of gains by others.

III. GENERAL ECONOMIC ADJUSTMENT POLICIES

In the 1950s, many developed countries began to implement policies to help facilitate adjustment in industries that had become uncompetitive internationally or were in decline due to the depletion of the raw materials upon which they were based (OECD 1975). Early schemes oriented towards textiles in Japan (1956) and the United Kingdom (1959), for example, focused on trying to restore industry competitiveness by providing compensation for scrapping existing equipment and subsidies for new investment. Many such schemes could be criticized on the grounds that they simply delayed necessary and more significant structural change.

Subsequent schemes have focused on dealing with firm closures and the relocation of workers. For example, the withdrawal of subsidies for the British coal industry in the 1980s led to a rapid contraction in capacity and industry restructuring (Thatcher 1993). The policy focus shifted to reshaping the local economy and fostering entrepreneurship to provide economic opportunities for members of the displaced work force that were capable of adaptation, early retirement being the option for many others. The mechanisms adopted were a mix of compensation payments to individuals who lost their jobs, investment in human capital to improve factor mobility, and the reduction of transactions costs (through, for example, investment in infrastructure) to enable markets in affected areas to work better.

The implementation of formal adjustment policies in several countries has been directly associated with trade liberalization. Thus, for example, trade adjustment assistance (TAA) provisions have been an enduring characteristic of U.S. legislation since the 1962 Trade Expansion Act that provided presidential authority for the Kennedy Round of GATT negotiations. The current Trade Adjustment Assistance Reform Act of 2002 provides supplemental unemployment compensation to workers displaced by international competition, and assistance for retraining and relocation. There is a modest program of assistance for firms. The Act also contains a TAA program for farmers run by the U.S. Department of Agriculture. In keeping with the focus of existing agricultural policies in the United States, the TAA program for farmers is a supplementary income support program. Unlike TAA for workers, which is linked to retraining and encourages relocation, there is a minimal active adjustment component. Adjustment consultation through the extension service is required, but no specific action (for example a change in existing activities, a switch to alternative activities or additional training) is mandated as a result of that consultation. The active adjustment component of the program for farmers is weak.

IV. LESSONS ON ADJUSTMENT FROM AGRICULTURAL CASE STUDIES

Previous examples of policy reforms resulting in significant adjustment pressures provide important insights into effective adjustment policies for agriculture. Box 1 provides a brief summary of some experiences in Australia, Canada, New Zealand, Sweden and the United States. A number of other examples of farm-level response to economic change and the role of policies are also used to draw important lessons on adjustment issues and the role of policy.³

³ These are studies of adjustment to change in the European Union; the transition economies of Central and Eastern Europe; and the United States (see Blandford and Hill 2005).

BOX 1 Policy reform and adjustment case studies

Australia

Support to dairy farmers, provided through a range of state and federal regulations, was removed in 2000. Estimates of the immediate impact on farm incomes ranged from 10 percent for producers of manufacturing milk and 25 percent for producers of fluid milk. The Federal Government introduced a \$1.8 billion restructuring package that included time-limited restructuring grants for individual farms, linked to reductions in returns and decoupled from production decisions. Grants were distributed as quarterly payments over an 8-year period. Several banks offered to convert restructuring grants to a single up-front payment. There was also a producer exit program and a regional adjustment scheme.

Canada

Grain transportation subsidies were eliminated in 1995 with the repeal of the Western Grains Transportation Act (WGTA). Freight costs for prairie grain farmers doubled or tripled in the 1995-1996 crop year. A one-time capital payment of \$1.6 billion was made to compensate for an anticipated drop in land values, allocated to each western province on the basis of historical shares of the subsidy while the WGTA was in force. A \$300 million, 3-year, Western Grain Transportation Adjustment Fund was created. Part went to assist producers who were adversely affected by changes in the freight cost pooling regime; part provided compensation to manufacturers; and part went to fund infrastructure, largely the improvement of rural roads.

New Zealand

Most of the financial assistance to New Zealand agriculture was withdrawn between 1984 and 1987. Assistance to sheep and beef producers, which had amounted to over 38 percent of the value of farm output in 1983, fell to around 4 percent by 1988. Grants for day-to-day living expense were provided for farmers in a critical financial position, and there were exit grants. The government-owned Rural Bank discounted existing loans by an average of 33 percent. A Rural Coordinator service, partially funded by government, worked with local support groups to provide financial counseling and advice on the development of non-farm activities. The Ministry of Agriculture monitored impacts on rural communities, coordinated strategic planning within the sector, funded a Rural Help Directory to advise on locally available sources of assistance, and funded risk management seminars for farmers.

Sweden

A major reform of Swedish agricultural policy was announced in 1990, although it was not fully implemented because of the country's subsequent membership of the European Union. Modest degressive compensatory payments per hectare were to extend over four years. Farmers facing bankruptcy who had bought properties after 1980 could sell them to the state if they could not sell on the open market. A payment was made for the removal of land from production for five years. Dairy farmers aged between 60 and 65 were offered a pension. Farmers were also eligible for general labor market policies such as retraining, relocation, start-up subsidies for new enterprises and various educational programs.

United States

The 2002 Farm Act eliminated marketing quotas for peanuts. The transition to the new policy was aided by new forms of government payments, compensation for the elimination of peanut marketing quotas and other sources of farm and off-farm income. The final cost of the buyout is expected to reach \$1.3 billion, spread among nearly 70 thousand eligible quota owners—most of whom took the entire payment in 2002 under the lump-sum option. The value of the peanut price support program was estimated to range between 303 and 350 million dollars annually between 1996 and 2001. By this measure, the quota buyout payments are equivalent to about 4 years of the estimated past annual value of quota.

A. Farm-Level Adjustment Capacity is Often Underestimated

Where policy reform has been undertaken it has been common to overestimate its anticipated impact at the farm level. For example, if price support is to be reduced one might simply take the price reduction, multiply by the current output of the commodity concerned, and assume that this will equal the reduction in net farm income. If the price reduction is substantial it might be concluded that the future net income of a large number of farmers will be negative; that a significant number of farmers will become insolvent; and that they will be forced to exit the industry.

This static scenario fails to take into account the substantial adaptation that is possible at the farm level. In New Zealand, for example, when a major reform of agricultural policy in the 1980s led to the removal of most of the assistance to farmers, there were predictions in the press that a substantial proportion of the 45,000 affected farms would go out of business. But only about 800 farms (less than 2 percent of the total) were actually forced out. In the short-run, farmers adapted to the reduction in support by economizing on the use of inputs, particularly fertilizer. Over the longer-run they reduced the output of previously subsidized commodities and shifted production to more profitable alternatives, including new farm enterprises such as deer production and wine grapes, and developed off-farm enterprises. Productivity rose rapidly after the reforms as farmers became more efficient in the use of resources.

The elimination of grain transportation subsidies in Canada led to the diversification of agriculture in the Prairies. There was a shift into higher value products, involving greater processing, particularly meat. The increase in livestock production led to more land being devoted to forage and pasture and to the production of feed rather than food varieties of grain. Farmers' adaptation to the elimination of the subsidies resulted in a significant increase in Canada's exports of high-value agricultural products.

The removal of assistance to dairy farmers in Australia stimulated improved competitiveness. Farmers who remained in the industry responded to economic pressures by increasing the size of their operations, acquiring some of the resources of those who left. About 45 percent of the producers expanded the size of their herds following deregulation. Some increased their land base to accommodate a larger herd. Others developed their existing pasture to enhance its productive capacity. There were also improvements in livestock productivity. Diversification into alternative agricultural activities and expansion of off-farm income were other responses to deregulation. Almost 30 percent of producers increased their earnings from off-farm sources. About 20 percent either expanded an existing non-farm enterprise or established a new one.

These case studies illustrate that the capacity of farmers to adjust to policy reform by changing their product mix should not be underestimated nor should their ability to achieve economies in production and to increase productivity. Many farm households are able to adapt to reform by switching the allocation of factors, particularly labor, to off-farm activities. The case studies suggest that because of efficiency gains, reform may not lead to a long-term decline in agricultural output or even in the production of a previously-supported commodity. Structural change can play a key role in increasing the efficiency of farm operations, leading to a recovery in output following policy reform.

B. Land Markets Need to Function Efficiently

Land is a major factor of production in agriculture. Its reallocation among alternative uses and between operators is a key aspect of the adjustment process. An active land market facilitated adaptation in the Australian dairy industry to the reform of dairy policies. Roughly one third of the dairy farmers surveyed in 2003 responded by purchasing land to expand farm size.

The importance of an active market in land is demonstrated strongly by the experience of the countries of Central and Eastern Europe and the former Soviet Union in their transition to a market economy. Agricultural production and food consumption were heavily subsidized under the Communist system. Following trade and domestic price liberalization and the removal of subsidies, all these countries experienced a dramatic decline in agricultural output (by some 20-50 percent) during the early 1990s. Countries that moved rapidly to re-establish the private ownership of land experienced a more rapid recovery in agricultural output than those that did not. The creation of property rights permitted farms to use land as collateral for loans and allowed the development of a rental market for land.

The importance of an active rental market in farm-level adjustment is also illustrated by Korea's experience. Korea's agriculture has been subject to strong pressures for structural change since the mid-1960s. In the fourteen years between 1977 and 1991, Korean agriculture declined from 40 percent to 16 percent of total employment; that same decline took 31 years in Japan and 53 years in the United States. As the agricultural labor force contracted, the average age of farm operators increased. Older farmers have been reluctant to sell land, but younger farmers have increased the scale of their operations by renting. As a result, roughly 45 percent of Korea's agricultural land is cultivated by tenant farmers. The renting of land is very important in the European Union and the United States. Roughly 38 percent of all land in farms in the United States (2002) and 43 per cent in the European Union (2000) is rented or leased from others.

C. The Quality of Human Capital is Critical

The quality of human capital in agriculture, particularly the general educational level of farm operators and their business and managerial skills, has been shown to be critical in adapting to economic change. This is illustrated strongly by the experience of the transition countries, where inadequate human capital has been identified as a very important constraint, not only for restructuring the agricultural sector, but more generally for business development and economic activity in rural areas. Empirical studies confirm that education is positively correlated with enterprise development, both in farming and non-farming (Rizov and Swinnen 2004). Better education increases the probability of a business start-up and the resulting efficiency of the enterprise. Evidence from other countries lends support to the importance of the level of educational attainment in affecting the ability to adapt, with the suggestion that this applies irrespective of the subjects studied (see, for example, Gasson 1998; Lobley *et al.* 2002). Higher levels of formal education among farmers are associated with a greater take up of training opportunities in skills that are directly relevant to their business.

Management skills and the supply of good quality information on which to make business decisions are also found to be critical in the performance of agricultural enterprises in transition countries. Studies of policy reform and adjustment were not able to explore differences in success in responding to change by individual farmers, though research on economic performance using farm-level data for Europe and the United States throws some light on this issue. For example, empirical research in the Netherlands conducted over the last 30 years shows a strong link between differences the quality of management and the economic and financial performance of farms. Poorly performing farmers have difficulty in balancing workload on the farm and in making long-term strategic decisions. Farmers with the best financial performance tend to be innovators and early adopters of new technology (but not necessarily risky technology). They are typically well-informed about changes affecting their business, are well-networked into sources of information, and plan ahead. In the United Kingdom there is evidence that higher levels of vocational training are associated with greater on-farm innovation and higher technology transfer (Gasson and Hill 1996).

A number of studies have examined the relationship between farm characteristics and farm business success in the United States. Research on the performance of farms that produce cash grains indicates that their success depends on the control of variable costs of production and machinery costs, and on farm tenure arrangements. Risk management strategies, such as forward contracting of inputs, spreading sales over the year, participating in government programs, and farm diversification also contributed to success. Using new technology, especially after someone in the same area has already adopted it, plays an important role. The use of extension services increases the likelihood of

a farm being successful. Finally, the use of rented/leased land and keeping books and records on income and expenditures increase operator efficiency. Studies also confirm the importance of human capital in the financial success of dairy farms. Returns to labor and management are higher for operators with higher educational attainment, those employing outside consulting services (such as extension services), and those who use forward contracting or other risk management strategies.

From the national perspective, the quality of human capital will change as the natural turnover of farm operators takes place. This applies particularly to general educational levels that, for historical reasons, are strongly age-related. Thus the process of exit of (mainly) elderly operators and their replacement by younger people might be expected to enhance this particular aspect of human capital. The European Union has attempted to accelerate and shape this process through a series of schemes that encourage early retirement and assist the installation of new (young) entrants. EU members have pursued these policies with different degrees of enthusiasm and performance has been mixed. A review of early retirement schemes across OECD countries noted that participation tends to be relatively weak (OECD 1995). One reason may be that retiring farmers are required to make a complete break with agriculture in order to be eligible for benefits, whereas many would prefer a more gradual transition to retirement.

D. Compensation for Losses Can Be Provided in Different Ways

Changes in agricultural policies have often been accompanied by the provision of compensation to farm operators or to the owners of agricultural assets. Reductions in subsidies are likely to affect the values of fixed assets, particularly land, in agriculture.

In some cases, reductions in price support have been accompanied by the introduction of continuous direct income transfers to farmers. An important example was the provision of so-called compensation payments to EU farmers in the wake of price cuts for grain in the early 1990s. The effectiveness of this approach to the process of adjustment is evaluated further below.

In other cases, time-limited payments have been made, linked to estimated reductions in income from the removal of support. This approach was adopted by Australia for the reform of dairy policy. No conditions were attached to the use of restructuring assistance, but producers had to complete a business assessment to determine how policy reform would affect their financial position. Survey results show that most (80 percent) of the farmers used the grants to improve the competitiveness and profitability of their farm or to restructure debts. Following changes in Sweden's agricultural policies in the early 1990s, farmers were provided with temporary, degressive payments per hectare and enhanced protection against bankruptcy.

In some cases, direct compensation has been made for the reduction in the value of specific assets. This was the case for the holders of marketing quotas under the 2002 reform of the peanut program in the United States. These quotas had a value under the previous program, as reflected in their rental price. The change in the program meant that quota holders would experience a reduction in the value of their assets. Compensation payments were made to quota holders. A similar approach was adopted for the elimination of US marketing quotas for tobacco in 2004. As part of New Zealand's policy reform, compensation was limited to debt restructuring by discounting loans provided by the government-owned Rural Bank. That approach also addressed the reduction in farm assets resulting from the change in policy.

The case studies show that income or asset value compensation can help farmers to restructure their operations when policies are reformed. Such payments can also play an important role in addressing equity issues and in helping to reduce opposition to reform.

V. ADJUSTMENT POLICY RECOMMENDATIONS

Case studies of previous policy reforms exhibit a range of situations where adjustments have been required on the part of agricultural producers. The lessons learned on what has worked (and what has not) enable broad recommendations to be made on policies to facilitate adjustment to policy change. It must be acknowledged that while agricultural policy-makers may be in a position to implement some of these recommendations, others are outside their immediate sphere of influence. Effective adjustment policies for agriculture may extend beyond the confines of the agricultural sector and its constituencies.

A. Institutional reform – the land market and related taxation issues

Given the importance of land in the mix of factors employed in agriculture, mobility of land use within the sector is vital to the process of adjustment – particularly transfers of land among operators. In order to deal with downward pressure on product prices, farmers need to be able to take advantage of economies of scale. In the short and medium term, there may be opportunities to exploit economies of scale without increasing farm size, but there are limits to the degree to which the efficiency can be increased on an existing land base. In order to exploit further scale efficiencies, farm operators need to increase the size of their operations. Farmers who are no longer able to operate profitably or do not wish to remain in the industry need an exit mechanism, passing their land on to other operators. For this to occur there needs to be an efficient market for the sale or rental of farmland.

The case studies indicate the key role played by land markets in the adjustment process. A clear recommendation is that impediments to efficiently functioning

land markets need to be removed. The way that this is done will depend on the existing institutional structure, in particular the legislation for the ownership, taxation and leasing of agricultural land. Transition economies of Central and Eastern Europe faced a particular challenge in establishing property rights, without which a market in land cannot operate. Elsewhere there are many examples of ownership legislation acting to constrain the reallocation of land. The purchase of land is not necessary for its use, and an effective land rental system can provide the required flexibility. Renting land is a proven method of adjustment in many countries, yet legislation often hinders it. The most efficient allocation is likely to result if there is both a freely working land market and a freely working rental market, so that there is the greatest degree of choice.

Some of the restrictions placed on land markets in the past may have laudable objectives (such as preventing excessive fragmentation or giving sufficient security to tenants to enable them to be efficient producers) but many have their roots in historical situations that are no longer relevant (Box 2 contains some examples). More recently the driving force may be environmental considerations or conflicts generated at the rural-urban interface. While these may be legitimate concerns, attempting to resolve them by placing legal constraints on the transfer of ownership or land rental will affect the ability of the agricultural sector to adjust to changing economic conditions and ultimately impose costs on those who remain in agriculture.

Landownership often interacts with capital taxation. Many countries provide special concessions on annual taxes to the owners of agricultural land. Some European countries have no annual property tax on agricultural land; in others nominal taxes are unrelated to market value or income generating potential. Many countries provide special treatment for taxes on transfers of agricultural real estate through sale or inheritance, especially to younger members of the farming family. Such special treatment can act as an incentive to retain ownership. Where the rental market does not operate efficiently, taxation policy can inhibit efficient adjustment in the use of land. And once in place, tax concessions usually prove highly difficult to remove.

B. Human capital

Another clear message from the case studies is the importance of human capital. A second policy recommendation is that initiatives be developed to improve the quality of human capital embodied in farm households to facilitate the adjustment process. Such capital takes a variety of forms – which we can summarize as skills specific to agriculture, transferable skills, and general educational level. Initiatives need to consider how each of these can be improved.

BOX 2 Examples of policy restrictions in the land market

Often policy restrictions on the ownership or rental of land have their roots in historical situations that are no longer relevant.

United Kingdom

The legal framework of agricultural tenancy developed after the Second World War reflected the view that renters had to be given great security if the increase in productivity necessary to improve food security were to be achieved. Landowners had limited opportunities to change rental rates. Providing that a rent was paid, tenants had *de facto* occupation for life. The situation made more extreme by a subsequent extension of the right to three generations, though this law was later reversed. This legislation led to a reduction in the amount of land made available to rent. A “gray” rental market developed, for the rental of land on a year-to-year basis. Legislation introduced in 1995 has allowed leases to operate for a series of years, negotiated between tenant and landlord. These provide a degree of security for the tenant (fixed term tenancies, or successive annual ones having a notice period of not less than a year), but enable the owner to recover the right to reallocate the land within a reasonable time period.

Norway

The Concession Act of 1974 aimed to protect the limited amount of land that is farmed in the country. In order to acquire farmland, other than through inheritance or other type of transfer within the family, requires a concession granted by the King. The acquirer of the land must have a professional agricultural qualification and must live on and manage the farm for five years. The Concession Act also aims to control the price of agricultural land in order to limit the capitalization of support into land values. The Land Act prevents the subdivision of farms without approval and also lays down conditions for how land should be farmed – in conformity with normal farm management practices. The state has pre-emptive rights over any real estate covered by the Concession Act, including on farms and farmland to be used for structural rationalization.

Germany

Germany maintains statutory controls over any change in ownership or lease of agricultural land. Authorization for any transfer of farmland rights may be withheld if:

- the transfer would lead to an undesirable distribution of farmland – transfer to non-farmers is generally considered to be undesirable
- the transfer would lead to undue fragmentation of land (a minimum of 1 hectare per operation or excessive aggregation (more than around 400-500 hectares, but only in the former Federal Republic).

Enhancements should extend beyond farm operators. Other household members often contribute to management decisions, formally or informally, and are likely to be particularly involved in structural adjustments (for example, changes in farm size, enterprise rebalancing, and the development of non-farm activities), many of which are associated with intergenerational transfers. New technical skills may have to be acquired to permit a shift among agricultural activities or to increase scale. Adjustment to economic change places great demands on

managerial ability, particularly financial and human resource management. The expansion of farm size frequently means that farmers who have been used to operating with family labor are now required to hire and manage non-family employees.

Key areas for improving the business management skills of farm households are:

- the maintenance of farm business records and their use in the day-to-day management of the farm business, particularly for monitoring costs and returns
- the preparation of farm business plans and associated strategic plans for the business activities of the farm household; this is particularly important for obtaining loans for the expansion of existing activities or for the creation of new activities
- entrepreneurship development, focusing on methods and techniques appropriate to new enterprises (e.g., agri-tourism); this is a natural extension to business planning
- human resource management for farms that are expanding the use of non-household labor.

The growing importance of pluriactivity for farm households means that the acquisition of skills that can be used off the farm and the ability to apply these can be extremely important to household income, and play a key role in the economic viability of farming. Some of the areas that can be targeted include the development of skills for other rural activities (e.g., tourism and recreation; rural crafts) and the use of information technology. If these skills are readily transferable, the trained agricultural worker may decide to seek better-paid opportunities elsewhere, resulting in gain to society and to that person.

Many of the benefits from training and education accrue to the individuals concerned. Equity and political economy considerations may provide the key drivers for the creation of programs in this area. However, society as a whole benefits through the increased productivity of human capital, and resulting efficiency benefits should be reflected in lower food prices. There is also a clear role for the public sector when there is market failure – such as in providing technical advice and training on ways to implement environmentally-friendly agricultural practices. Publicly funded adjustment programs that focus on the improvement of human capital need to be continuously monitored, so that their effectiveness in facilitating the adjustment of labor can be evaluated.

The enhancement of skills is not enough by itself to facilitate longer-term adjustment in agriculture. The general educational level of those engaged in the sector is also important. Skills enhancement has to be combined with measures

to encourage farm families to take a full part in the general education systems that are open to them.

Training in entrepreneurial skills and general educational enhancement fit well with another development in agriculture. Farmers increasingly use the private sector to obtain technical expertise and for the management of risk through the use of consultants (such as professional agronomists) or through participation in integrated production systems. Suppliers of feed or processors of animal products provide many of these services to farmers in order to guarantee a market for farm inputs or a supply of farm products for processing. In other cases, managerial services are provided to farmers by professional advisors.

For those who are reaching retirement age, there may be a role for the provision of advice on retirement planning. Whether there is justification for going further by providing financial incentives to retire will depend on specific circumstances. As noted above, past experience with early retirement schemes in agriculture shows only limited success in facilitating restructuring when economic conditions are relatively stable. Early retirement incentives may be more effective during times of financial crisis, when pressures to restructure are acute. If farmers have been relying on the sale of their farm to fund their retirement and the value of that farm falls because of adjustments created by changes in policy, there may be a role for compensation. Options in this respect are discussed below.⁴

C. Compensation for reductions in income and asset values

Several of the case studies provide examples of financial compensation to accompany policy reform. The basic rationale for this combines political economy reasons (securing *ex ante* agreement to reform) and equity arguments (the *ex post* coverage of private costs resulting from reform). Two approaches to the compensation issue are used. One is to address this through income foregone; the second provides compensation for reductions in asset values. Both involve the problem of determining the appropriate level of compensation, something that history shows governments do not always get right.

Many income support schemes for agriculture are conditional on a continuing link between the beneficiary and agriculture (see Box 3). Conditions may be attached that require farmers to continue to keep some or all their land in farming, to produce a particular crop, or limit shifts to alternative crops. Such requirements

⁴ As noted, some countries have used schemes to encourage new entrants to farming. Many of these have been put in place to try to offset the barriers to entry created by the effects of agricultural policies (high land prices and start-up costs that cannot be surmounted by newcomers), or to try to address problem of poorly functioning land markets (the lack of land to rent). If these distortions are eliminated and factor markets are functioning efficiently, the only argument that can be made is for the educational component of new entrant schemes, to the extent that this is considered to contribute to the public good.

can constrain adjustment in the amount of land used, how it is used, and who uses it. Some people who would otherwise exit farming are encouraged to remain. A policy that provides continuous income support linked to the activity of farming delays or impedes adjustment, compared to one that does not require such a link. Furthermore, as discussed below, the legality of linking payments to particular production conditions has recently been challenged in the WTO.

BOX 3. Compensation payments for adjustment – labels and reality

The principle of compensation for changes in agricultural policy through the use of direct payments to producers has been applied in the past. Some of the payments provided by the European Union are an example of this approach.

The MacSharry reforms of 1992 marked the start of the process of change in the form of support provided through the EU's Common Agricultural Policy. In exchange for reductions in support prices, farmers received various forms of "compensatory" direct payments based on the area of main crops (cereals and oilseeds) and livestock (beef and sheep) affected by the reforms. The anticipated change in the market prices of cereals did not materialize, and producers were over compensated for the change in policy.

The process of was carried further by the package of policy reforms agreed by Member States in *Agenda 2000*, with further cuts in institutional prices and increased direct payments. Following the 2003 mid-term review of *Agenda 2000* most of the direct payments have been changed into a Single Farm Payment (SFP). Payable from 2005, the magnitude of the payment is calculated using various formulae at the farm level but is essentially based on historical entitlements (i.e., what was paid at some reference period in the recent past). The link with current production decisions has been substantially loosened, though not broken, as to be eligible the beneficiaries have to remain in agriculture and keep their land in good condition by observing some minimal agricultural husbandry practices. The period over which payments are to be provided is open-ended.

The original compensatory payments undoubtedly performed a political economy function in making the MacSharry reforms possible. They were also a substitute for the previous system of market price support. Nevertheless, such payments are not linked to a defined reduction in income resulting from a change in policy, paid over a limited period of time. The provision of such payments in conjunction with the conditions imposed on recipients may actually impede adjustment at the farm household level.

A clear recommendation, therefore, is that where income compensation is used on equity grounds, it should be unconditional and time-limited, thereby enabling compensation to play an active role in assisting adjustment. This would mean that a payment would:

- be made to a farmer regardless of whether he/she chose to remain in farming
- would not be attached to the land, but to the person who operated the land at the time the payment was introduced, and
- be limited in duration (the number of years for which it would be paid).

These were the characteristics of the approach used to compensate dairy farmers for the reform of Australian dairy policies.

If the aim is to provide transitional compensation to those who are affected by a change in agricultural policy, this type of scheme can be quite effective providing that the target of compensation is the owner-operators of the land. Agricultural support tends to be capitalized into the value of fixed assets (particularly land) over the long term; income-reduction payments will provide implicit compensation for any resulting fall in the price of those assets. Financial institutions exist whereby the income stream can be exchanged for a lump sum if this is the wish of the beneficiary. Alternatively, the government could offer a bond scheme that provided the capital sum equivalent to the income stream, and the beneficiary would be free to sell this bond and invest the proceeds at will (which might include in the post-reform agricultural industry). (For a discussion of issues related to bonds see Swinbank and Tranter 2004).

If there is a separation between land ownership and operation, transitional income compensation paid to the renter will not compensate the owners of land for any loss they suffer because the value of their asset declines with the removal of support. Landowners may attempt to capture benefits by increasing rental rates. Making the payment to the renter as a pension entitlement might be a way to resolve this issue, if the aim is to compensate the operator rather than the landowner. An alternative and more direct approach would be to pay compensation to the owners of land, regardless of whether they are the operators of the land. If the primary effect of a change in policy (reduction in output prices) is reflected in a fall in the price of fixed assets in agriculture, particularly land, renters (tenants) will benefit through reduced rents. This approach will address the redistributive implications of policy reform. Asset compensation was adopted in reforming the peanut and tobacco programs in the United States. The approach is valid where there is an effectively functioning market through which rental rates adjust rapidly in line with returns to land. Where there is stickiness in land rental markets, the receipt of asset value compensation may need to be conditional on changes in the terms of existing rental contracts.

Not all the benefits of support may be passed through to land – the prices/values of other quasi-fixed assets (such as farm equipment) may be affected, although it is doubtful if this would apply over the long run. In order to address this issue, it might be possible to have a two-component approach which involves time-limited income reduction compensation to operators (set such that reductions in the value of quasi-fixed assets is covered) and an element of asset value reduction compensation to landowners (again with a linkage of the payment of compensation to changes in rental contracts).

D. Country-specific policies

Finally, the evidence from case studies suggests that it is important to evaluate particular constraints to adjustment in individual countries in designing adjustment policies. Some countries suffer from a broad range of constraints, while others have relatively few. The effectiveness of schemes to assist exit can vary, even among countries that have similar legal and administrative frameworks. Land markets operate freely in some countries but are strongly managed in others. The quality of human capital in agriculture may already be very high in some cases and attempts to enhance it further may not be cost effective. Compensating the operators of farmland may be politically acceptable in some countries, but this may not be so for non-operator landowners. Adjustment in agriculture may be constrained by overall economic policies that limit flexibility in labor markets or restrict the supply of capital in some countries but not in others. The lesson is that schemes to assist adjustment need to be tailored to specific circumstances by first identifying the constraints on adjustment and then selecting appropriate measure to overcome each constraint. In doing so, attention must be paid to the basic rationale for adjustment policy – efficiency, equity, and political economy – and to the likely cost-effectiveness of adjustment measures.

VI. ADJUSTMENT POLICY AND OTHER OBJECTIVES

The focus of this paper is on policy measures to assist adjustment, in particular that which results from the reform of existing agricultural policies. An important issue is how adjustment policies relate to other policy objectives for agriculture.

A. Environmental and related objectives

Increasing attention in industrial countries has been devoted to the supply of non-commodity outputs by agriculture – outputs other than food and agricultural commodities that have a value to society but which may not be traded and priced in organized markets. The existence of such goods underlies the concepts of “multifunctionality” and so-called “non-trade concerns” that have become increasingly prominent in the current trade negotiations in the WTO. If there are un-priced goods produced in association with agricultural activities, changes in these may not result in a socially optimal level of output. For example, if agriculture generates important environmental benefits, failure to take the supply of such benefits into account may not lead to maximum social welfare.

In the European Union there is major concern with the environmental impacts of adjustment in agriculture, both in terms of bio-diversity and the appearance of the landscape. Farming is seen to provide such services for the population in general, not just those that live in rural areas. Agriculture is viewed to have a particularly important role in upland areas. Substantial sums are spent on agri-environmental schemes (a mixture of income compensation for undertaking

certain environmentally-friendly practices and capital projects). Less articulated, though still significant, is the perceived role of farmers and their families in maintaining the viability and vitality of rural communities, again especially in remote and upland areas. The debate on the 'European model of agriculture' and its 'multifunctionality' is largely to do with these non-market outputs (Boel 2005; Cahill 2001). The evidence on some of the causal links between the present structure of agriculture and the desired social and environmental characteristics of the countryside is not strong (for example, whether countryside character is related primarily to farming systems rather than to the number and sizes of farms). A restructured agriculture might be capable of providing the present level of environmental and social services at lower resource costs. But to an extent, policy interventions that make adjustment easier may bring results that run counter to environmental and social aims.

In identifying efficient policies to address these concerns it is important to distinguish between technical externalities, public goods, and pecuniary externalities associated with agricultural activities (Blandford and Boisvert 2005). The provision of wildlife habitat is an example of a positive technical externality associated with agriculture; its contribution to water pollution is a negative technical externality. The landscape created by agriculture may be considered to be a public good, in that an individual's enjoyment of the landscape does not reduce its potential enjoyment by others. Since such attributes are not traded in organized markets and are un-priced, failure to take them into account may result in a misallocation of resources and a reduction in the welfare of society as a whole. In contrast, pecuniary externalities are generated when a change in the use of agricultural resources has distributional effects. For example, a change in the level of economic activity in agriculture may have implications for the overall level of economic activity in rural areas. This does not imply a reduction in economic welfare through a misallocation of resources, but a change in the distribution of welfare among the various groups in rural society. The implication is that additional policy instruments may be needed to address missing markets or the broader distributional issues associated with economic change in the agricultural sector.

The required approach is to internalize the effects of technical externalities or public good attributes, i.e., to ensure that they are taken into account in farmers' resource allocation decisions.⁵ The standard economic prescription is to "compensate" producers by an amount equal to the marginal social value of a positive externality and "charge a fee" equal to the marginal social cost of a negative externality. In so doing, we obtain the social welfare maximizing levels

⁵ The government may be able to address the internalization issue through the creation of property rights. For example, where there is unrestricted public access to land, laws that allow landowners to restrict public access may make it feasible to levy user charges for recreational services.

of non-commodity outputs. While these are the well-known Pigouvian subsidies and taxes, it is preferable to avoid terms that may have a pejorative connotation. Since the non-commodity outputs are of value to society, compensation is a payment to producers for services provided, rather than a means of redistributing income. In the case of a negative technical externality, producers are being charged a fee for the cost that their production activities impose on society, rather than simply as a means of generating government revenue. As we note in the section on WTO obligations below, there are issues associated with setting the appropriate compensation for non-commodity outputs in agriculture.

B. Rural development objectives

To the extent that agriculture is a dominant force in the rural economy, the income problems faced by the sector have been viewed to be problematic for rural areas. This is often cited as a reason for the provision of price and income support for agriculture. However, in most industrialized countries the proportion of the active population engaged in agriculture is small. This is true even in many predominantly rural regions; where farming may account for only a minor proportion of jobs and there are more self-employed people operating other types of businesses than there are farmers. The share of rural economic activity generated by farm household-firms is likely to be correspondingly small. Consequently the economic impact of reform-induced adjustment on the broader rural economy may be modest (OECD 1998).

In contrast, the non-agricultural part of the economy often holds the key to successful adjustment for the agricultural community. Resources, especially labor, will be shed from agriculture, and a ready demand in other uses will assist that process. The added impetus to adjustment provided by policy reform will be easier to absorb if a thriving local economy provides alternative economic opportunities for the members of farm households (and hired farm workers). Where commuting distances are sufficiently small that it is still possible to live on the farm, some of the social problems of migration and private costs to the individuals concerned can be avoided. Continuity of community can be maintained.

The EU's rural development "second pillar" has this sort of strategy in mind, though most of the funds are still directed to farmers. To address rural development issues it is necessary to move beyond an agri-centric approach and to identify the factors that lead to a lack of dynamism in the local economy as a whole, not just its agricultural component. Though conditions will vary geographically, requiring a regional or sub-regional approach to the design and implementation of policies, common factors are transport and communications infrastructure and the quality of human and social capital. Difficulties with these factors have to be addressed in shaping the performance of non-agricultural businesses, as well as farms in rural areas. In turn they affect the more

immediate problems often faced by people living in rural areas, such as lack of access to basic services and housing, and limited employment opportunities.

VII. ADJUSTMENT POLICY AND WTO OBLIGATIONS

As part of the WTO Agreement on Agriculture (AoA) disciplines were established on domestic support. These disciplines focus on the reduction of forms of support that are considered to be the most trade distorting, the so-called Amber Box measures. An example is price support, through which domestic market prices for agricultural commodities are kept above comparable prices in international markets. Subsidies provided through such mechanisms are limited by bindings and their maximum permitted total level was reduced as part of the AoA.

The AoA also created a category of support that is exempt from restriction – the so-called Green Box measures. The fundamental requirement is that “they have no, or at most minimal, trade-distorting effects or effects on production” (GATT 1994, p.59). To qualify for the Green Box, support must be provided by taxpayers rather than through consumers, and must not have the effect of supporting the prices of agricultural products. Specific criteria relating to individual types of policy measures are also specified in the AoA.

The AoA contains a range of provisions relating to adjustment policies. These are summarized in Box 4. With respect to the proposals in this paper, training and skills enhancement policies would fall under item G, as would the infrastructural development measures proposed under rural development programs. Payments designed to facilitate the exit of producers, either through re-employment in other activities or retirement, are covered by item A. Payments for the restructuring of current farm/household operations (such as those provided in several of the case studies) are included under C.

The payment of compensation, either linked to asset values or income foregone, seems to fall within the decoupled income support provision (F). Land value compensation may be viewed as a time-limited income transfer with no conditions on the subsequent use of that land. The time-limited income compensation proposed in this paper would be unconditional, i.e., not linked to any subsequent use of land, labor or other factors of production.⁶ Hence, it would seem to satisfy the general conditions for Green Box payments, and the specific conditions under item F. This is in contrast to some other forms of

⁶ None of the measures proposed here would fall under category B in Box 4, i.e., the temporary retirement of resources. The conditionality attached to such measures makes them inferior to the income or asset value reduction options discussed in this paper.

Box 4. Main provisions for structural adjustment and related programs in the AoA**A. Structural adjustment assistance provided through producer retirement programs**

Eligibility based on criteria designed to facilitate retirement or movement to non-agricultural activities. Payments are conditional on the permanent retirement of recipients from marketable agricultural production.

B. Structural adjustment assistance provided through resource retirement programs

Eligibility based on criteria designed to remove land or other resources (e.g., livestock) from marketable agricultural production. Land retirement must be for a minimum of three years and must not require use of land or other resources in the production of marketable agricultural commodities. Payments cannot relate to the type or quantity of production or to prices for production undertaken using land or other resources remaining in production.

C. Structural adjustment assistance provided through investment aids

Designed to assist the financial or physical restructuring of a producer's operations in response to objectively demonstrated structural disadvantages. Payments must not be related to production undertaken by the recipient after the base period, or to product prices after the base period. They must be given only for the period of time necessary for the realization of the investment for which they are provided.

D. Payments under regional assistance programs

Limited to producers in disadvantaged regions, determined on the basis of neutral and objective criteria and not due to temporary circumstances. Payments must not be related to production or prices of agricultural products after the base period. They should be generally available to all producers in such regions. If related to production factors, payments must be made at a degressive rate above a threshold level for the factor concerned. Payments are limited to the extra costs of loss of income involved in undertaking agricultural production in the prescribed area.

E. Environmental programs

Payments must be part of a clearly-defined environmental or conservation program and be dependent on the fulfillment of specific conditions, including conditions on production methods and inputs. Payments are limited to the extra costs or loss of income involved in complying with the program.

F. Decoupled income support

Eligibility determined through clearly-defined criteria such as income, status as a producer or landowner, factor use or production level in a defined and fixed base period. The amount of payments must not be related to or based on the type or volume of production, prices, or factors of production employed in any year after the base period. No production can be required in order to receive the payments.

G. Expenditures on services for agriculture or the rural community

Research, training services, extension and advisory services and the provision of infrastructural services are permitted. Infrastructural services are limited to capital works and do not include the subsidization of on-farm facilities, subsidies to inputs or operating costs, or preferential user charges.

income support, whose conformity with the Green Box rules is in question as a result of the Cotton Case ruling in the WTO (WTO 2004).

In that case, Brazil brought a complaint against certain aspects of the cotton policies of the United States. The panel established to review the complaint found that US direct payments and the legislative and regulatory provisions of the program do not fully conform to minimally-distorting conditions set out in Annex 2 of the AoA. Following an appeal by the United States, the Appellate Body upheld the original panel decision.

A major issue is whether the payments provided by the United States actually have an impact on production. Annex 2 of the AoA states that the amount of decoupled income support payments in a given year shall not be related to or be based on the type or volume of production undertaken in any year after the base year used in establishing the payments. As part of the US program, producers were subject to penalties if they reallocated land on which direct payments were made to fruit and vegetable production. The panel concluded that this restriction created a linkage between production decisions and the payments. This ruling may imply that the legality of other similar payment schemes, such as the single farm payment currently being implemented by the European Union, as well as a range of other policy measures that attempt to link the redistribution of income to agricultural production, may be challenged in the future. The ruling may increase the attractiveness of the types of policies proposed in this paper that focus on assisting agriculture to adjust to the removal of agricultural support, rather than on providing continuous income transfers.

The Green Box provisions would not seem to prevent the use of targeted rural development policies of the type discussed earlier. However, there are issues relating to environmental policies. The implication of current Green Box rules centers on the legitimacy of creating a linkage between government payments and production under environmental programs (item E). The rules acknowledge that producers may be required to meet certain conditions relating to production methods or inputs as part of such programs, but specify that the amount of any payment must be limited to either the extra costs or income foregone in complying with the conditions of the program.

The payment needed to generate the desired supply of environmental benefits will have to cover farmers' opportunity costs (their potential earnings in non-agricultural activities or use of the land for non-agricultural purposes), rather than simply the costs imposed by requirements for specific agricultural or land-use practices. The rules do not appear to condone an approach in which the government establishes an incentive payment to producers to provide environmental services, even if the payment can be shown to equal the social value of environmental services, i.e., what the general public would be prepared

to pay for these if there were actually a market for them. One way to deal with this issue is to determine the payment on the basis of a bidding system. Farmers would be required to bid for the payment that they would be prepared to accept for the provision of a given set of services. This is the approach currently used in the US Conservation Reserve Program. In addition to satisfying Green Box provisions, such an approach has added efficiency advantages. The supply of services can be matched to demand through the creation of a market for payments for those services.

VIII. CONCLUSIONS

The reform of domestic and agricultural trade policies is just one additional factor in the constant pressure for change faced by agriculture. Nevertheless measures to aid the adjustment associated with reform may be justified on the grounds of efficiency, equity and political economy.

There are relatively few examples of major reforms in agricultural policy in developed countries, and few opportunities to assess measures that can be used to facilitate adjustment. The examples that exist suggest that the capacity of farm households to adjust to economic change is generally underestimated. They also show that an effectively functioning land market and the quality of human capital are important factors. Measures taken to facilitate adjustment have largely focused on providing temporary compensation for reductions in income, or debt restructuring and compensation for reduction in asset values. These have performed essential political economy functions by promoting acceptance of policy reforms.

An active adjustment policy for agriculture would concentrate on removing impediments. In particular, this would mean better operation of land markets and improving the human capital of farmers and their households. These changes primarily affect institutions, such as land ownership and rental legislation, and improving the education and entrepreneurial skills of the agricultural community. There may be equity and political economy reasons for providing compensation for income and asset value reductions; if so, this should be time limited and correspond to the actual private costs incurred as a result of adjusting to policy reform.

Adjustment policies that have these characteristics are consistent with current WTO provisions. They are also compatible with minimally production and trade distorting policies designed to achieving other aims, such as ensuring the supply of environmental services and promoting rural development.

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