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The So-Called "Non-Economic" Objectives of Agricultural Policy

L. Alan Winters

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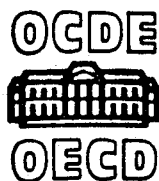
WORKING PAPERS

No. 52: THE SO-CALLED "NON-ECONOMIC" OBJECTIVES
OF AGRICULTURAL POLICY

by

L. Alan Winters

April 1988



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Agricultural support costs OECD countries billions of dollars per year in lost income. It is frequently argued, however, that this is not waste, but is rather a fair price to pay for a number of "non-economic" objectives such as thriving rural communities and increased national security. This paper analyses these objectives and their relationship with agricultural policy. It draws three conclusions: first, the so-called non-economic objectives (SNOs) are, in fact, economic; second, being economic they are amenable to quantification and economic analysis; and, third, present forms of agricultural support may be inefficient means to achieve these objectives.

* * *

Le soutien à l'agriculture coûte chaque année aux pays de l'OCDE des milliards de dollars. Toutefois, on soutient fréquemment que cela n'est pas un gaspillage mais plutôt le juste prix à payer pour un certain nombre d'objectifs "non économiques", notamment la prospérité des communautés rurales et le renforcement de la sécurité nationale. Le présent document analyse ces objectifs et leurs liens avec la politique agricole. Il en ressort trois conclusions : premièrement, les objectifs dits "non économiques" sont, en réalité, économiques ; deuxièmement, étant économiques, ils peuvent faire l'objet d'une évaluation quantitative et d'une analyse économique ; troisièmement, les formes actuelles de soutien à l'agriculture sont peut-être des moyens inefficaces de réaliser ces objectifs.

THE SO-CALLED "NON-ECONOMIC" OBJECTIVES
OF AGRICULTURAL POLICY

by

L. Alan Winters

April 1988

The author is Professor and Head of the Department of Economics at the University College of North Wales. He wrote this paper as Consultant to the Economics and Statistics Department. He is grateful to S.P. Chakravarty, C. Cahill, P.D. Henderson, B. Huff, J.P. Martin, S.J. Potter, J. Shafer, K. Shigehara, J. Sheehy, T.H. Thomas and K.J. Thomson for comments and assistance on an earlier draft of this paper. Naturally none of them is to be held responsible for any of its remaining shortcomings.

THE SO-CALLED "NON-ECONOMIC" OBJECTIVES OF AGRICULTURAL SUPPORT**TABLE OF CONTENTS**

	<u>Page</u>
Introduction	1
I. So-Called "Non-Economic" Objectives	2
II. Farm Incomes	6
III. Stability	9
IV. Regional, Community and Family Aspects of Agricultural Policy	11
V. The Environment	14
1. Amenity	16
2. Soil conservation	17
3. Pollution	18
VI. Self-Sufficiency, Security and Stability of Food Supplies	20
VII. Conclusion	21
Notes	23
References	25

THE SO-CALLED "NON-ECONOMIC" OBJECTIVES OF AGRICULTURAL SUPPORT

INTRODUCTION

Agricultural support costs OECD countries billions of dollars per year in lost income. It is frequently argued, however, that this is not waste, but is rather a fair price to pay for a number of "non-economic" objectives such as thriving rural communities and increased national security. This paper analyses these objectives and their relationship with agricultural policy. It draws three conclusions: first, the so-called non-economic objectives (SNOs) are, in fact, economic; second, being economic they are amenable to quantification and economic analysis; and, third, present forms of agricultural support may be inefficient means to achieve these objectives.

A number of commentators have sought to explain why OECD countries pursue agricultural policy if it is so expensive; see, for example, Petit (1985) or Honma and Hayami (1986). Although this paper may cast some light on that issue, it does not address it explicitly. Rather it analyses the economics of the officially stated case for agricultural support.

The paper starts by summarising the objectives of agricultural policy as stated in official national documents. These objectives range from income distribution through income stability, the preservation of rural communities, family farms and the environment, and national security, to the efficiency of agriculture. With the possible exception of the last, all of these goals are popularly held to be at least partly "non-economic", but on closer examination this turns out to be untrue -- hence our use of the term "so-called non-economic objective" (SNO). The critical dimension of each objective is economic, because its achievement requires the absorption of resources that could otherwise be used for other purposes and because the degree of achievement of each may be monitored, at least crudely, in money terms. Thus, agricultural policy and its objectives should be subjected to economic scrutiny in exactly the same way as any other sectoral policies. This entails asking whether the policy achieves its stated objectives, whether alternative policies would work better, and whether the objectives of agricultural policy are consistent with those of other policies. The next section of this paper elucidates this argument, while Sections II-VI pose the questions with respect to some of the various objectives of agricultural policy.

While the paper examines the objectives and consequences of agricultural policy, the instruments of policy are not described in any detail, because full accounts are available from various national sources, including the country studies published as part of the OECD work on the Ministerial Trade Mandate. However, one might broadly characterise agricultural policy in a representative OECD country as comprising: a) price support policies designed to pay farmers higher prices than they would otherwise get; b) factor market interventions, such as capital grants, input subsidies, direct tax concessions, and subsidised R & D, almost all of which favour non-labour inputs; and c) other direct interventions such as disaster relief, subsidised insurance, and environmental payments.

The effectiveness of agricultural policy in achieving SNOs varies from case to case, but a number of broad conclusions may be drawn. First, while price support occasionally helps to achieve a SNO (e.g. rural population) it is virtually never the most efficient means of doing so. Second, while capital- and material-biased factor market policies may boost incomes for certain farmers, they probably hinder many other SNOs. Third, it is difficult to detect major benefits for small farmers from most existing policy packages. Fourth, while interventions in some agricultural markets might be justifiable for public good or externality reasons, they should always be targeted precisely at the areas of identifiable market failure, as, for instance, with insurance subsidies or direct income supplements.

Agricultural support is expensive -- World Bank (1986) suggests that it causes losses of real income of up to \$50 billion per year for industrial countries. The overall conclusion of this paper is that the return on these costs is low in terms of SNOs. If governments are serious about maintaining present levels of their SNOs, they could do so at very much lower cost in terms of the other objectives that have been sacrificed to them.

I. SO-CALLED "NON-ECONOMIC" OBJECTIVES (1)

This section analyses the links between economic policy and the various social, political and other goals sometimes associated with it. While the illustrations all concern agriculture, the basic analysis is perfectly general.

The most recent statements of the objectives of OECD countries' agricultural policy are given in Marcks von Wurtemberg (1987) and OECD (1987a). At the loss of some subtlety of expression, these objectives are summarised in Table 1. The table distinguishes between those objectives which are explicitly recorded in the objectives sections of the national reports (marked X), those which are mentioned elsewhere in the text (marked 0), and those which may be obviously and unambiguously imputed from legislation described in the reports (marked I). Additional goals are occasionally noted in the reports, but never with the regularity of those listed in Table 1. Thus, there appears to be a high degree of unanimity among OECD countries about the purposes of agricultural policy.

Economists frequently criticise agricultural intervention for being inefficient and wasteful of income. A common response from policy-makers is that, while this may be so in the narrowly defined terms of GNP, agricultural policy is in fact oriented towards a wider set of objectives including non-economic ones such as those mentioned in Table 1. The existence of objectives other than maximizing aggregate income is indisputable, but it is wrong to characterise them as "non-economic", hence our use of the term "so-called non-economic objectives" (SNOs). It is true that most of these objectives pose analytical difficulties for economists. For example, some concern social costs and benefits rather than individual ones, e.g. the environment, while others concern the distribution of economic welfare rather than its total level, e.g. the level and variability of farm incomes. Moreover there are usually no markets in which the demands for such objectives may be satisfied directly. Nevertheless, for so long as the objectives are amenable to measurement and analysis in money terms, even if only crudely,

Table 1

THE DECLARED OBJECTIVES OF AGRICULTURAL POLICY IN SELECTED OECD COUNTRIES

	EEC	Japan	Canada	Australia	Austria	New-Zealand	USA	Switzerland	Finland	Iceland	Norway	Sweden
1. Satisfactory and equitable standard of living for farmers	X	X	X	X	X	X	X	X			X	X
2. Income stabilisation			X	O		X	X		X			
3. Stabilise domestic agricultural prices	X	O	X	X	X	X	X	X				
4. Ease adjustment to exogenous shocks	I	O	X	X		I	I					
5. Maintain healthy rural communities	O	X	O	X	X	I	X	X	X			
6. Regional development	O	O	O		X						X	X
7. Preservation and encouragement of family farming	X		X	I	O	O						
8. Environmental protection	O		I	I	X		O	X			X	X
9. Safe, secure, stable and sufficient food supplies	X	X	X		X		X	X	X	X	X	X
10. Fair prices for consumers	X	O	X				X		X			X
11. Agricultural efficiency and competitiveness	X	X	X	X	X	X	X	X	X	X	X	X

X denotes that the objective is explicitly referred to in the objectives section of the relevant national report.

O denotes that the objective is mentioned elsewhere in the text of the relevant national report.

I denotes that the objective has been imputed from the enactment of legislation directly impinging upon it, as reported in the relevant national report.

No entry indicates that no direct reference is made to the objective.

Source: Marcks von Wurtemberg (1987) and OECD (1987a).

they are economic in the sense defined by Pigou (2). They are also economic in the sense that their achievement requires the absorption of real resources which could otherwise have been used for other objectives. The economic dimension lies in the scarcity of resources, which means that choices have to be made between conflicting desires.

Once scarcity is recognised, economic efficiency moves to centre stage, because societies wish to achieve, in some sense, the greatest proportion possible of their various objectives. No single objective takes complete precedence over any other, however, so the economic problem is to mix the objectives (agricultural and otherwise) in the socially preferred combination, subject, of course, to the overall resource constraint.

Although the objectives in Table 1 are not immediately comparable with each other, one may still make statements about the efficiency with which they are achieved. The economist's concept of the "efficient set" defines a weak but uncontroversial notion of efficiency. This notional set comprises all possible states of the economy in which more of one objective (say, a SNO or a level of steel output) necessarily entails less of another. For outcomes outside the efficient set but still within the set of attainable outcomes, one can always find a way of improving upon one objective without causing losses to any other. Thus, provided only that more of each objective is desirable, making that improvement is worthwhile regardless of the relative weighting of different objectives. That is, the requirement that society should operate in its efficient set is independent of values or preferences once "goods" are distinguished from "bads".

Provided that interventions in the rest of the economy are not large relative to those in agriculture, agricultural policy reduces the supply of non-agricultural goods by diverting factors of production into agriculture. The concept of the efficient set requires us to ask whether the SNOs that it is designed to achieve could not be met at lower cost in terms of those other goods, i.e. to ask how well agricultural policy achieves its goals and whether cheaper alternatives exist. In this one must consider the way that agricultural policy as a whole impinges on the entire set of objectives, for a piecemeal approach will miss important interactions between policies and goals. For example, price support may stabilise prices at the expense of harming the environment (3).

The tendency for sectoral policies, including those in agriculture, to have effects other than those intended is well known, and economists have long understood how to allow for such spill-over effects in policy-making. For example, suppose a country wishes to stimulate agricultural production: either a production subsidy or a tariff will achieve this, but the latter, which raises consumer prices as well as producer prices, will be more costly because it distorts consumers' decisions (Corden, 1957). Similarly, if one wishes to promote employment, an employment subsidy will be less costly than an output subsidy because the latter encourages the use of capital and material inputs as well as labour (Bhagwati and Ramaswami, 1963). Finally, if one wishes to maintain particular workers' incomes, income supplements dominate employment subsidies because they do not distort decisions about input proportions or the level of output. All of these examples illustrate the general proposition that, to cure a market imperfection or to achieve a SNO, policy should be aimed directly at the phenomenon to be changed. Unless there are overwhelming practical difficulties in implementing direct policy,

raising output prices will never be the most efficient means of maintaining rural communities, stabilising farm incomes and so on (4).

The efficient set comprises all outcomes for which more of one SNO must entail less of something else. Since there are likely to be very many such outcomes, one must find a way of choosing among them. A natural, and apparently attractive, solution is to leave it to the market, so that each individual can express his preferences by buying the consumption bundle that suits him best. Unfortunately, however, some SNOs are public goods in the sense that everyone must consume the same amount or quality of them (e.g. we all look at the same countryside), while others involve externalities such that one person's consumption or production directly affects another's welfare (e.g. pollution). These characteristics can render private decisions socially sub-optimal, so there may be legitimate reasons for intervening in agricultural markets. Such intervention should ideally be thought of as society as a whole choosing between outcomes, a choice that depends on the relative weighting of the various SNOs and private goods in social welfare. While the economist is not particularly qualified to define these weights, he is able to elucidate some of the parameters of the social choice.

First, government behaviour over the broad range of policy may illustrate some of their trade-offs -- i.e. relative weights -- between the various SNOs and between SNOs and other goods (5). It is necessary to examine the broad range because any particular area of policy may face political or informational constraints such that it is no longer consistent with broader social objectives. For example, a government concerned about poverty per se might be expected to treat urban and rural poverty even-handedly. Similarly it would be difficult to accept that agricultural support was motivated primarily by a desire to preserve rural communities if, at the same time, such communities were being undermined by large reductions in expenditure on education and public services. It must be stressed that in conducting such an exercise the economist seeks not to judge the trade-offs made by governments, but merely to examine their mutual consistency.

Second, different policies will tend to deliver SNOs and other objectives in different proportions. If, at the margin, two policies trade-off a particular SNO against other goods at different rates, the government is essentially buying its SNO at two different prices; it should shift its custom towards the cheaper supplier -- i.e. pursue the more efficient policy and reduce its reliance on the other. Moreover, although the ultimate aims of policy may all concern matters that are, in some sense, "above mere economic calculation", the business of trading one for another is inherently economic.

Third, governmental objectives are not the only valid ones -- Henderson's (1986) fallacy of "unreflecting centralism". In fact, the bulk of trade-offs are made by individuals, or small groups of people, and it would be inefficient to force on such agents more of a SNO than they wished to pay for. Markets do not exist for public goods such as the environment, so agents cannot signal their preferences directly. This does not make such preferences entirely inaccessible, however; for example, Walters (1974) or Brown and Pollakowski (1977) show how to measure people's demand for, or willingness to pay for, particular public goods. Thus, economic as well as political criteria exist for assessing the social demand for the public good SNOs of

agricultural policy, and rational decision-making requires that they be considered.

Information is available more directly for those SNOs which have strong private dimensions. For example, income stability is private to the farmer. If he values it, he would be prepared to smooth his income flows by borrowing and lending, by taking out disaster insurance or by growing more stable crops. If he chooses not to do so, this reveals something of his preferences, and it is difficult to argue that the government should itself sacrifice additional goods in order to force greater stability on him. Rather, governments should concentrate on curing market failures -- e.g. the absence of insurance or futures markets, or imperfections in the capital market -- in order that private incentives better reflect social costs and benefits. When this is done, one may presume that markets will generate outcomes for the SNOs that correspond reasonably well to the social optimum.

It might appear that the analysis of this section presupposes impossible precision in measuring the degree of achievement of each SNO. To be sure, precise measurement facilitates debate, but its absence does not invalidate careful economic analysis. A mere listing of the SNOs implicit in each outcome is useful for rational policy-making and it is often possible to go further than that. For example, one might be able to identify which SNO will suffer if one is to achieve more of another, or show whether a lot or a little of SNO(i) will be necessary to compensate for losses of SNO(j). The formulators of the various SNOs obviously believe that they can distinguish different degrees of achievement, for otherwise they could not justify agricultural policy in such terms; at the sole risk of being unable to split certain ties in the ranking of alternative outcomes, the economist can also work happily with the same measuring rod.

Agriculture exists to provide various desirable goods and services, and should do so in the most efficient way. This leads economists to pose three questions of agricultural policy:

- i) Does it achieve its stated objectives?
- ii) Could alternative policies achieve these objectives better, i.e. at less cost in other dimensions?
- iii) Are the objectives consistent with those pursued elsewhere in the economy?

The remainder of this paper poses these questions with respect to the first nine objectives identified in Table 1. The last two are precluded by a space constraint, but are tackled, at least partially, in Winters (1987b).

II. FARM INCOMES

"...farmers shall have a standard [of living] which is equal to that of other comparable groups." (Sweden)

"...to ensure a fair standard of living for the agricultural community." (EEC)

" ... to enable farmers through increased farm income to enjoy equal standards of living with workers in other industries." (Japan)

The maintenance of farm incomes is probably the major objective of agricultural policy. The important policy issue is not the validity of the objective, but whether or not current forms of agricultural intervention offer an efficient means of achieving it. This question has been extensively debated, see for example, OECD (1987a) and Winters (1987b), and so this section will be very brief.

Measuring farm incomes is very difficult, even conceptually, but OECD (1987a, Table 6) quotes data on one approximation -- value added per person employed in agriculture relative to GDP per person employed. These data suggest that despite rapidly increasing support, both budgetary and otherwise, farm incomes have continued to decline and fluctuate relative to non-farm incomes since 1960. Of course, without support farm incomes might have declined more and/or exhibited greater fluctuations, but these data suggest there is a prima facie criticism to be answered.

For nearly two hundred years it has been known that increases in the price of agricultural produce are largely capitalised into the price and rent of land. Extra labour, capital and material inputs are available to agriculture at a roughly constant cost which is determined outside the agricultural sector; only land presents a constraint on expanding output, and hence only land can command higher rewards in the long run. Farmers' incomes, net of rent, are not much affected by price support, most of whose benefits accrue to people lucky enough to own land when the policy was introduced or extended.

Huffaker and Gardner (1986) offer recent confirmation of the effects of farm support on rents in a study of subsidised water provision in California. They show that in the long run rent increases absorbed 90 per cent of the increased net revenue accruing to tenant farmers, and they could not reject the hypothesis that 100 per cent was absorbed. Earlier and broader evidence comes from Traill (1980) and Phipps (1985) who show that, while land prices in the United Kingdom and the United States are related to net revenues, the rates of return to farming are largely independent of them. Phipps suggests an average rise in land prices of \$16 per acre for every \$1 billion increase in government payments. Of course, some of the land-owners are also farmers, so that some of the benefit of farm support finds its way to the "right" group, but only incidentally and only, strictly speaking, as a return to capital rather than to farming. Moreover, although in Britain about 70 per cent of farms are owner-occupied, it is not known how many owner-occupiers earn only normal returns on their capital because they bought their land after the advent of high support prices.

Even putting aside the questions of whether it is farming or land-owning that should be rewarded, and whether average incomes have been maintained by farm policy, serious distributional issues arise within agriculture. Price support confers its benefits proportionally to output, thus large farmers gain absolutely more than small ones. Worse, many direct supports accrue more than proportionately to larger-scale farmers, for the smaller operators are often explicitly excluded from them or do not have the means to claim the various grants; see, for example, Johnson and Short

(1983). It is true that many small farms are only part-time enterprises, which one may not wish to support, and also that in the United States the benefits to the largest farmers are limited by maximum pay-out restrictions. Nevertheless, if the objective is to raise low farm incomes, the present targeting is far from perfect.

The Australian Bureau of Agricultural Economics (1985) estimates that in 1984 price support transferred ECU 9 700 per farm to the largest quarter of EC farms compared with ECU 1 100 per farm to the remainder. Similarly, the Council of Economic Advisors (1986) suggests that the largest 5 per cent (30 per cent) of U.S. farms received 31 per cent (89 per cent) of U.S. direct disbursements in 1985. Finally, simulation studies of both the United States and the EC suggest that higher product prices significantly worsen farm income inequalities, see OECD (1987b).

The analysis of the distribution of farm incomes is complicated by the existence of part-time farmers, or indeed, of any off-farm sources of income. For social objectives it is total income not income from agriculture that matters. Farming may affect total income by opening up various tax-breaks, and land may account for a large share of part-timers' total wealth, but in most cases where farming accounts for only a small proportion of total household income -- e.g. in much of Germany and Japan -- farm support is largely an irrelevance in the determination of overall standards of living. Nonetheless, it may still have significant incentive effects on total output.

At the risk of caricature it is useful to think of three stylised groups of farms: large; small, full-time; and small, part-time. On income distribution grounds the first and third groups probably warrant little support, because they mostly have incomes above minimum levels already; for example, in Japan, farm families earn roughly 75 per cent of their income from non-farm activities and have higher average incomes than other families. Small full-time farms, on the other hand, may require some income support. However, price support is a most inappropriate means of providing it, for the prices necessary to ensure small farmers a reasonable income, even assuming that they own their own land, offer huge incentives to the other two groups. Thus, the benefits of output-related support are reaped mainly by large or part-time farmers, rather than the small full-timers with the lowest standards of living.

A more appropriate means for alleviating poverty among small farmers may be direct income supplements. These avoid most of the output effects of price support and may be targeted much more precisely. One approach would be to offer non-transferable pensions to existing farm families to allow them to live reasonably, even with lower produce prices. Since, unlike price support, these would not pass down from generation to generation, the commitment would be finite and one would expect to see rapid rationalisation of farm holdings (6). An alternative, more in consonance with other economic policy, would be to offer social security if farmers' incomes fell below some unacceptable minimum. This would involve smaller transfers, and, possibly more importantly, allow comparability between the agricultural poor and other low-income groups.

Farming groups commonly raise two objections to direct income support. First, it is charity -- but the present system is no more than covert and inefficient charity. Second, it is too expensive. Direct income supports may

be expensive in budgetary terms but in economic terms they are much cheaper because they have only minor output effects. Furthermore, since the principal beneficiaries of farm policy are the large farmers with incomes well above average, the impact of cutting price supports on the lowest incomes would be relatively small. Thus, large budgetary costs are not inevitable. A third objection is held, but rarely articulated. Direct income supplements are transparent and thus bring farm support into the open. Farmers, and their representatives, fear that such transparency would be the first step towards the more equal treatment of the agricultural and industrial sectors (7).

From the policy-makers' perspective, direct income payments also pose dangers, despite their attractiveness in theory. First, because they must be allocated by some criterion, they may distort incentives. Second, their transparency will make it more difficult to resist pressure to support other groups suffering from adjustment problems. Third, it is not clear that granting income support will preclude subsequent political pressure in favour of price support as well. While these are real problems, they do not seem sufficiently serious to rule direct income support out of the set of acceptable policies.

III. STABILITY

"...reasonable stability in farm incomes." (New Zealand)

"To moderate destabilizing swings in commodity prices and farm incomes." (United States)

"...protection from production uncertainties." (Canada)

Agricultural policy has generally reduced the degree of short-term commodity price fluctuation in OECD countries. Domestic price-fixing guarantees prices to farmers, while many border measures insulate consumers from foreign fluctuations. The effects of production and consumption shocks are absorbed by official stocks and their costs are borne by society at large. Official stocks are generally far larger than is required for such stabilisation purposes and have periodically to be reduced by denaturing, dumping or destruction. This arises for essentially two reasons: (i) by breaking the information transmission mechanism of the market, price-stabilisation discourages quantity adjustments in response to shocks; and (ii) average prices are typically set too high.

Income and consumption stabilisation for farmers are much more important goals than mere price stabilisation, but are less amenable to the policies generally pursued in OECD countries. OECD (1987b) argues that agricultural incomes still fluctuate considerably, not least because of unavoidable fluctuations in output. Indeed, price stabilisation could worsen income stability in a closed market where untreated supply shocks would otherwise induce a negative correlation between prices and quantities. Moreover, if agricultural policy induces a greater dependence on material inputs, especially imported ones, it can increase farmers' exposure to non-agricultural shocks (Hazell, 1984). If it also encourages riskier

techniques, including greater crop specialisation (Gardner and Kramer, 1986), it can increase sensitivity to agricultural shocks.

Although there is micro-economic evidence for these phenomena, it is difficult to assess their overall effects because it is hard to find examples of entirely unrestricted agriculture. Moreover, even if one could, OECD countries' current policies increase world price fluctuations, and so exaggerate the need for stabilisation policy. World price variability will generally be increased by any policy which insulates particular transactions from world price signals -- for example, variable levies, export restitutions and import quotas. Particularly harmful are bilateral trade agreements and official dumping, for these fragment the market and undermine its processes as well as disturb prices. Tyers and Anderson (1986) suggest that for some temperate products current policies double the variance of world prices.

Insurance or disaster relief is another form of income stabilisation. It seeks to protect farmers from infrequent very large losses rather than from market fluctuations. Many OECD countries offer relief or subsidised insurance to farmers -- and there are sound economic arguments for doing so. However, it is important to distinguish insurance -- which smooths farmers' returns -- from income support -- which raises the average. Tsujii (1986), for example, shows that Japan's rice-paddy insurance has aggregate payments so far in excess of aggregate premia that, while it has little effect on rice output (its ostensible purpose), it represents a significant income transfer to farmers.

The policy issue surrounding stabilisation is whether governments should provide more stabilisation than farmers can obtain privately. Most people find risk unpleasant and are willing to pay a premium (usually through insurance) to avoid it. But at some point the benefits of reducing risk further are outweighed by the (certain) cost of the premium, and at that point the rational individual takes out no further insurance. In other words, there is a risk-return trade-off, and if farmers have the correct average income, perhaps there is no need for public concern over whether they devote it to reducing risk or to something else.

The only counter to this argument is that for some reason individual farmers cannot make the trade-off optimally. Two reasons are commonly advanced for this inability. First, capital market imperfections may prevent farmers from smoothing fluctuating incomes into stable consumption patterns, because, for example, they cannot borrow sufficiently against future earnings. It is not clear that farmers are worse-off than other small businessmen in this respect, but even if they were, agricultural price stabilisation would not be an appropriate policy response. Indeed, in one respect agricultural policy may contribute to borrowing difficulties because it replaces market risk with political uncertainty.

The second market failure canvassed to justify stabilisation policy is the effect of moral hazard on insurance markets. The difficulty of monitoring farmers' effort makes general crop insurance very unattractive to insurers and could result in the total absence of such insurance markets. In these cases government intervention may be desirable, although directly in the insurance market rather than in product markets. Moreover, Dixit (1987) shows that even if, as an n -th best policy, tariffs could partly offset insurance market failures, the optimal tariff could as well be negative as positive; i.e., it

may be that governments should discourage the production of the risky but uninsurable products. Thus, while subsidised insurance may be justified, price support is not an appropriate response to insurance difficulties.

Evidence that there is a risk-return trade-off, and that farmers exercise it, comes from studies showing that as public stabilisation is increased, private efforts decrease. For example, World Bank (1986) suggests that for every ton of wheat in public store, private stocks are reduced by three-quarters of a ton; Gabriel and Baker (1980) show that with greater financial security farmers take larger production risks. Gardner and Kramer (1986) show that as free disaster insurance was introduced in certain U.S. counties, the degree of crop specialisation, the cultivation of marginal land and land prices all rose. To the extent that private means of stabilisation exist, official risk-reduction is just an income subsidy: farmers convert official gifts of stability into higher average returns by undertaking higher-return, but riskier, projects.

This evidence suggests two policy conclusions. First, government policy may itself induce the absence of the very institutions whose absence it is established to counteract. With less government intervention, insurance and small-scale forward markets may grow up, which would not only compensate for the absence of policy but also allow each farmer to choose the degree of stabilisation he desired, given, of course, its cost (8). Second, if price stabilisation is the objective (rather than increased output via reduced variability), prices should be stabilised about lower averages. Since stable prices with a given mean are more attractive than variable prices with the same mean, stabilising about the existing mean will make agriculture more attractive and hence induce factors to flow into it. Since price stabilisation does nothing to remove the real shocks of which price fluctuations are a reflection, such a diversion of resources would only be justifiable as a contribution towards some other objective requiring the expansion of agriculture.

IV. REGIONAL, COMMUNITY AND FAMILY ASPECTS OF AGRICULTURAL POLICY

"...regional development," "...improving...rural infrastructure."
(Austria)

"...encourage the vitality of rural villages." (Japan)

"...maintain the rural structure of production and...employment."
(Switzerland)

"...maintenance of the family farm as the basic production unit."
(Canada)

Concern for rural communities is partly an issue of income distribution -- people in different regions are felt to deserve comparable incomes -- but mainly it focuses on population levels. This section concentrates on the latter. Rural population objectives pose a cruel dilemma for agricultural policy, especially in countries with large agricultural labour forces. With low income elasticities of demand for food, the number of people that agriculture can support at "reasonable" levels of income will remain static or decline. Thus, if one equates rural with agricultural, any move to increase

efficiency or rationalise farm sizes is almost bound to undermine population objectives, and vice versa.

Consider, first, the effects of agricultural price support on rural populations, holding all other influences constant. Higher prices should assist population goals. Indeed, price supports get capitalised into land prices precisely because extra labour and capital can be attracted into agriculture at roughly constant wages and interest rates. Thus, in equilibrium, a uniform increase in agricultural prices would almost certainly boost agricultural populations, or at least reduce their rates of decline.

Unfortunately, however, actual policy is not so straight-forward. First, the degree of support varies by commodity. Resources may therefore be attracted into less labour-intensive -- i.e. more land and/or capital - intensive products. Drudy (1978), for example, shows how the shift from mixed pastoral/arable farming to arable cereals/sugar-beet farming in North Norfolk has reduced labour demand because the latter are (a) less labour intensive, and (b) complementary in the timing of their labour requirements. The shift in patterns owes something to technological developments, but must mainly have been driven by high support prices.

Second, because of their low output and unfavourable range of crops, the poorest regions often do not benefit strongly from price support. Finally, particular features of the production structure may inhibit the employment effects of price support. For example, Traill (1982) suggests that in the long run higher farm earnings increase capital-intensity so much that the demand for labour eventually falls (9).

Most OECD countries have significant support programmes aimed explicitly at farming in poor regions. In some cases these programmes amount to supplementary price support -- e.g. the EEC's special livestock payments to hill and upland farmers -- but in many they distort relative factor prices even more than general support schemes. The favourable tax treatment of capital investment, subsidised research, improvement grants, structural policies to facilitate amalgamation all serve to increase other inputs at the expense of labour, and thus to undermine the rural population objective. Indeed, Kislev and Petersen (1982) argue that the whole of the increase in U.S. capital-labour ratios in farming can be explained by changes in effective factor prices. Thus, it is possible that the net effect of all agricultural policy has been to reduce the demand for labour in agricultural regions.

A strong trend in agriculture throughout OECD has been towards part-time farming -- both by owners and by labourers. Potentially this is favourable to rural objectives, for it increases populations and incomes above the levels sustainable by agriculture alone. It does not, however, necessarily increase the case for agricultural support for it is not proven that policy stimulates part-time farming. On the one hand price support increases part-timers' receipts, but on the other it raises rents and land prices, and at least in some countries grant schemes are biased against part-timers (10).

The equation of rural with agricultural has been a major fallacy in thinking about the long-term future of rural communities. For some areas agriculture is the principal source of income and is vital not only directly, but indirectly through its linkage to local sectors such as transport and food

processing. In these areas part-time farming is less common (Gasson, 1986) and a degree of agricultural success is essential to maintaining population levels.

For most regions in OECD countries, however, dependence on agriculture is much lower, and the existence of part-time farming is testimony to the alternative opportunities available. In the United Kingdom the rural areas are the most buoyant in terms of population and employment growth (Hodge and Whitby 1986). While the peripheral uplands (mainly Scotland and Wales) continued to experience population decline, most of the other rural areas -- even those classified as remote -- had stable or rising populations over the 1970s. Manufacturing accounts for substantially more jobs than agriculture in rural Britain, and manufacturing employment is shifting from larger to smaller centres, most strongly into areas far from the major conurbations. These shifts owe less to firm migration than to the differences in the growth of existing firms and the rate of new firm creation in different localities. The reasons for such buoyancy are not yet firmly established, but the strongest factors are probably the constraints on urban floorspace and the lower labour costs in rural areas.

These results suggest that for many areas rural development depends less on agriculture than is often thought. Of course, agriculture will always be part of the rural scene, but with current improvements in technology and communications, agriculture need no longer be viewed as the single engine of rural economic growth. British experience is probably unusual, but the shift to rural regions is occurring in other OECD countries, and there is no reason to doubt that similar developments in manufacturing and services are possible elsewhere.

If manufacturing and services are as important to rural areas as is agriculture, it may be more efficient to tackle rural community issues via industrial policy. While most OECD countries have regional industrial policies (and some have rural policies), these are generally dwarfed by agricultural support. Even with industrial policy, however, care must be taken not to stimulate over-production or to distort labour-capital trade-offs in rural industry. The most efficient policy would be to address the difficulties of rural life directly, rather than via factor markets. Thus, improved communications, services and housing would all foster rural communities directly. It would make little sense to spend large sums supporting agricultural prices as a means of fostering rural communities while simultaneously cutting expenditure on rural transport and education. In some countries infrastructure subsidies are treated as part of agricultural policy, e.g. Japan (see the Japanese country report in OECD, 1987a), and all countries have general mechanisms for transferring funds between localities. These provide a less distortionary means of supporting rural areas and a far more transparent trade-off between rural and urban objectives.

An important detail of the community dimension of farm policy is support for family farming. While this may be a widely agreed objective, and while family farms are clearly affected by all the other instruments of agricultural policy, it is difficult to cast family farm support in a concrete and operational form. With the exception of general policies such as the direct tax and benefit systems and inheritance law, most governments are unwilling to make support conditional on the details of domestic organisation. Thus, the most potent discriminant for family farm policy is probably size,

and given the other objectives, policy which favours small and medium-sized farms may be taken operationally to be "pro-family".

Most current policies are oriented towards larger farms: price support offers benefits proportional to size, while many grants and structural reform programmes discriminate against small farms. The amalgamation of small farms is an explicit objective in a number of OECD countries, and even where it is not, the bias against small units is evident. MacEwan and Sinclair (1983) discuss the range of policy-induced problems faced by small farmers in one of the U.K.'s less favoured areas, while Table 2 reports the size distribution of farms in England and Wales receiving capital grants and the average grant in 1985. These data show a clear bias towards larger farms wherever one draws the boundary for family farms.

Direct tax systems are commonly designed to favour families over single persons, but many of them also have features that favour larger enterprises over smaller ones. For example, differential treatment of capital gains and income favours larger farmers, who are more likely to be able to leave capital tied up in land either because of high income or because borrowing is available. This effect is enhanced by any tax-deductibility of interest payments, which favours the highly-gearred farmer, and by investment tax credits and depreciation allowances which favour high-income tax-payers. Both phenomena are particularly important during times of inflation, for this increases the front-loading of debt service and so again favours those liberally endowed with credit. They are also important if, as is frequently true, capital grants require the farmer to contribute some equity, for again the cash-constrained small farmer may be prevented from benefiting from an ostensibly general programme (Eginton, 1980).

It is difficult to identify means of explicitly and directly supporting family farms. Existing policies are mostly biased towards increasing farm sizes and thus serve to reduce the absolute number of family farms, if not the proportion of land farmed by them. Thus, as with the broader community dimension discussed above, the basic conflict between farm efficiency and incomes on the one hand and the number of farmers and their families on the other, persists; and while the rate of decline of the latter may somewhat constrain policy stances, the bulk of policy has been directed towards the former. Only if direct support for favoured groups displaced the current output-enhancing interventions would the situation be likely to be reversed.

V. THE ENVIRONMENT

"...contribute to the preservation of the cultivated landscape and the natural environment." (Australia)

"...to protect and maintain cultivated land and to protect the environment." (Switzerland)

"One of eight primary missions of the USDA is to conserve soil" (United States)

This section addresses three components of the environmental consequences of agricultural policy.

Table 2
EXPENDITURE ON MAIN CAPITAL GRANTS, 1985, ENGLAND AND WALES

Size (ESU) (a)	Less-favoured regions			All other farms		
	Receiving grants	Average grant	Receiving grants	Average grant	Average grant paid	£'000
	%	paid £'000	%	£'000		
0-8	10	-	3		1.6	
8-24	34	2.0	12		1.9	
24-100	60	3.6	25		2.2	
100+	60	12.8	41		4.3	
Total	38	3.3	16		2.7	

a) European Size Units.

Source: U.K. Treasury (1987).

1. Amenity

The countryside offers amenity to a large proportion of the population; its value depends upon factors such as its appearance, its accessibility, its safety, and the contact it offers with traditional life-styles. The potential market failure in its provision occurs because these elements are at least partly public goods. Hence, there is a prima facie case for policy intervention. Moreover, that case is an economic one. Whatever the reasons for wanting a particular kind of countryside, the criterion for providing it is no different from that for providing any other amenity: does the benefit outweigh the cost? Two aspects of amenity are analysed below: the appearance of the countryside and access to it.

Visual amenity -- i.e. the appearance of the countryside -- is partly a dimension of the general notion of access -- it is, after all, what people have access to; but in part it also is independent, because no degree of restriction could prevent people from observing most rural scenery. It is sometimes argued that farm support enhances visual amenity because it encourages rural population stability (see Section IV) and the careful and tidy management of farm-land. On the other hand, high output and land prices encourage intensive cultivation and the use of marginal land, while capital grants and tax expenditures encourage building and land improvement. The result is a tendency towards monoculture, extensive building, the closure of footpaths, the destruction of hedgerows and woodlands, the draining of pastures and the use of chemicals. Even governmental commentators hold the outcome to be unsightly and possibly dangerous -- e.g. the Countryside Commission (1984) -- and decry the resulting reduction of access and the loss of wildlife -- e.g. The Nature Conservancy Council (1984). Overall, therefore, it is probable that current farm policies do more harm than good to visual amenity.

The second aspect of amenity is access. Current price policies discourage farmers from permitting access because they offer such high rewards for additional output. This is as true of casual access as it is of the more formal use of the country-side for rural sports and recreation. Moreover, at least in Britain, the latter are additionally hampered by planning law. This presumes that prime agricultural land should remain agricultural in perpetuity, and thus severely discourages changes in land use even for recreational purposes. There is no reference to value or the willingness to pay in this law.

Although the public good problem complicates the calculation of the correct amount of amenity to provide, it does not preclude it. For example, Krutilla and Fisher (1975), Brown and Pollakowski (1977) and Martin and Gunn (1977) have all estimated the demand for recreational sites or amenity, and have all found that access to open country is highly valued. Given the continuing surplus of agricultural output, such results suggest serious problems of consistency when, for example, the U.K. central government provides direct support of £73.4 million for the Royal Parks, countryside and nature preservation, and £2 342 million for agriculture, fishing and forestry (U.K. Treasury, 1987) (11).

A serious attitude towards amenity would entail the explicit recognition of and payment for its provision -- for example, the adoption of footpaths or woodlands by local authorities, or subsidies for the preservation

of wetlands or pastures. Above all, however, it would entail ceasing to pay such high prices for output (and consequently for land) that every corner of every field was intensively cultivated. Price reductions would allow the preservation of more traditional farming methods -- contact with tradition is a prime cultural attraction of rural recreation -- and also reduce the costs of direct payments for amenity by reducing the price of land. (Bowers and Cheshire, 1983).

2. Soil Conservation

The second environmental issue concerns the conservation of agricultural resources -- specifically the soil and its fertility. While the factors that determine this may also affect the amenity value of the countryside and the level of general pollution, it is useful to treat conservation as a logically separate issue.

Soil conservation is a particular issue in North America, see for example, Heady and Short (1981) or Van Vuuren (1986), but it also arises in other OECD countries. The concern is that farmers are using their land in such a way that its soil-depth or its fertility cannot be maintained, i.e. that they are sacrificing future productivity for current output. Implicit in this concern is that private and social objectives differ, for otherwise there would be no reason to challenge farmers' private decisions about the rate of soil depletion.

Setting aside issues of amenity and pollution, the socially optimal rate of soil depletion is the rate which maximizes the net present value of future output derived from the land in question. This value depends on the levels of input and output prices and on the productivity of the land, both currently and in the future. Productivity, in turn, depends on technical progress and soil-depth, which is a stock variable whose level is influenced by current output levels. Higher output entails greater soil-loss and degradation through, for example, greater exhaustion, deeper ploughing and hence worse erosion, the cultivation of fragile marginal land, the destruction of natural wind-breaks and so on. McConnell (1983) shows that the socially optimal rate of soil depletion depends positively on the rate of growth of input prices, the rate of time discount and the rate of technical progress, and negatively on the rate of increase of output prices. A rational society may wish either to run down or to build up its soil stocks, according to its expectations about future prices and technology.

The farmer interested in maximizing his wealth (including bequests) will also maximize net present value, but with private rather than social values for the determining variables. Conservationists argue that private decisions can cause excessive soil-depletion for several reasons: incorrect expectations, capital-market failures, ignorance about future technology, or higher rates of discount privately than socially. Current agricultural policies could enlarge the wedge between social and private valuations most directly by affecting expectations about the rate of growth of prices. Exploitation responds to the fear that output prices will fall in the future, for then a current unit of soil-exhaustion (which increases output) is worth more than a future one. If price support looks unsustainable in the long run, as it does at present, it will encourage current over-exploitation. Farmers

will, as it were, "make hay while the sun shines". Similarly, an apparently reversible input subsidy will stimulate current output and soil depletion.

Structural policy can also stimulate soil depletion, by encouraging soil-destructive methods of farming. Capital grants, subsidies and tax breaks, and energy subsidies, all tend to induce capital-intensive methods. These typically entail deep and straight ploughing, large fields and monoculture, all of which tend to increase soil loss or exhaustion (12).

Conservation policies exist in several countries -- e.g. the U.S. minimum tillage scheme -- but to date, they have had only modest success, see, for example, Wheeler (1985) or Heimlich (1986). By far the easiest way of reducing pressure on the soil would be to reduce the incentive for intensive, and especially capital-intensive, farming methods. Moreover, this should be done quickly for it is anticipated price falls that most encourage over-exploitation (13).

3. Pollution

In part pollution is an aspect of amenity and so is covered above, but a major additional consideration is "non-point pollution" -- pollution that has spread beyond the locality of the activity from which it derives. This is a classic negative externality; hence decisions balancing the private marginal costs and benefits of a polluting activity will over-expand that activity relative to the social optimum.

Pollution is an economic issue: it is measurable in money terms either by the expense of clearing it up (e.g. Leontief, 1970) or by the costs people will bear to avoid it (e.g. Walters, 1974); its amount is variable on the margin; and it is obviously traded-off against other goods and services, as, for example, in the use of motor vehicles or the generation of electricity. The policy problem is that markets fail to reflect all the costs and benefits of particular decisions, so breaking the identity between private incentives and social interests. Farm activities for which social costs exceed social benefits should be curtailed, and any policy that did the opposite would be harmful. Two questions arise in this context: first, does agricultural policy encourage more polluting techniques of production, and second, does it stimulate polluting activities even if it has no effect on the degree of pollution per unit of output.

On the former the answer is yes. Fertilizer is a substitute for land in many agricultural processes so the strong positive relationship between price support and land prices stimulates fertilizer use. Kawagoe, Otsuka and Hayami (1986) estimate that a 1 per cent increase in the price of land relative to fertilizer increases the relative use of the latter by 1.4 per cent in the United States and 0.4 per cent in Japan. It is also likely that the tendency towards crop specialisation stimulates pollution. Whereas mixed farming makes relatively balanced demands of the eco-system and is able to counter certain diseases by alternating crops and livestock in particular fields, specialised farms often require additional chemicals to maintain fertility and additional drugs to control disease (Bowers and Cheshire, 1983).

Turning to the second question, price support and most other policies are designed to boost agricultural output. Since agriculture is considerably

more chemical- and energy-intensive than most other activities, such a diversion of activity is almost bound to increase the use of chemicals and oil and hence to give rise to pollution. In 1979, the average direct input of chemicals (oil and petrol) per £1 000 of U.K. output was £56 (£25) for agriculture compared with £10 (£13) for the economy as a whole. In terms of direct plus indirect inputs only 5 out of 92 non-chemicals industries used more chemicals than agriculture (U.K. Business Statistics Office, 1983). Japanese agriculture is even more chemical-intensive (although less energy-intensive), while direct estimates of the clean-up costs for the United States suggest that a 12 per cent increase in factor inputs would be necessary to remove the livestock sector's net increment to pollution, an increase exceeded only in the chemical, energy and special machinery sectors (Ketkar, 1983).

The dominant theme of this section has been the link from price support to intensive farming and thence to environmental damage. The policy conclusion is obvious. It is sometimes argued, however, that price reductions would be greeted by greater intensification, as farmers strove to maintain their incomes. There is no evidence for this in anything other than the very short run, and to suggest otherwise would be to impugn farmers' current levels of efficiency. All experience of economic adjustment suggests that just as higher incentives increase intensification, lower ones will reduce it.

A number of other policy options have been canvassed recently to reconcile agriculture and the environment, but, while they may have important supporting roles, they do not challenge the basic prescription of commodity price reductions. For example, fertilizer taxes or quotas would curtail nitrate use, but they would be bureaucratic and would do nothing for amenity or soil preservation. Cross-compliance regulations may improve farming practices but would require massive administration to define and enforce good practice. Output quotas may curtail the growth of environmental damage, but they require administration and do nothing to address or roll back the fundamental problems.

Set-asides are currently attracting a good deal of attention. Their environmental effects depend very much on the details of their administration. Where pollution or amenity-loss are localised, there is a strong case for paying farmers to cease farming the areas concerned -- as, for example, with the U.S. "conservation reserves" and the U.K.'s "Environmentally Sensitive Areas". This, of course, amounts to purchasing environmental services explicitly, as was recommended above. Where the problems are more widespread, however, or where governments cannot identify or police the critical sites, set-asides could exacerbate environmental damage, because they encourage more intensive farming of the areas still under cultivation. Set-aside schemes which allow farmers to nominate their own "no-grow" areas could be environmentally beneficial only by chance. Set-asides without price reductions would be very expensive, for price supports increase dramatically the opportunity costs of idle land. Indeed it would seem perverse first to pay farmers large sums of money to grow crops and then to pay them even more not to!

Price reductions offer the simplest and most efficient means of curtailing the current environmental hazards of modern farming. It is true that they do not address the fundamental externality problem, and thus that they may need supplementing by certain explicit environmental policies, but they are a necessary first step to rationalising the rural environment.

VI. SELF-SUFFICIENCY, SECURITY AND STABILITY OF FOOD SUPPLIES

"...self-sufficiency in basic food commodities." (Finland)

"...ensure a stable supply of food,"

"...strengthening the capability of self-sufficiency of food." (Japan)

That many OECD countries have raised their levels of self-sufficiency in food is undeniable. Thus the issue here is not the achievement of this particular sub-goal, but its relevance. Self-sufficiency offers no direct benefits to a country in and of itself. It may arise incidentally out of the pursuit of rural development or the stimulation of farm incomes, but its main importance is usually held to lie in its contribution to the stability and security of food supplies and, through the latter, to national security.

As a means of stabilising prices and supplies in the ordinary course of economic events, self-sufficiency does not look convincing. The world market will almost always be more stable than any single country market could be because i) production shocks in different regions will be off-setting, and ii) the world market serves more consuming countries which could adjust consumption to accommodate world gluts or shortages. However, if many countries aim to induce near self-sufficiency artificially, the world market will become thinner and thus more volatile and unreliable, reducing the degree of stability it offers. While it would rarely, if ever, be rational for a country to isolate itself totally from even the most volatile world market, the analysis of the previous sentence does contain the seed of an unstable policy regime, in which policy-induced instability feeds back into yet more insular policies and so on. Such a cycle could most effectively be broken by collective action on the part of the OECD countries.

Even if self-sufficiency did increase the stability and security of supplies, there is still the issue of the costs. Most OECD countries pay a substantial premium above world prices for domestic agricultural output, and, of course, they pay it every year. In return they may avoid having to pay very high prices on the world market only occasionally. Moreover, because world price peaks are not perfectly correlated across commodities, the possibilities of substitution among products reduce the economic costs of isolated price-hikes. Finally, for all but the most perishable commodities, stock-holding represents a more efficient means of stabilising supplies than does raising production costs.

The discussion above refers to stability and security in the face of the normal fluctuations of the world agricultural economy (i.e. risk). It is frequently suggested, however, that the more important issue is uncertainty, specifically the small probability of dramatic cuts in imports. Indeed, Ritson (1980), argues that this is the only plausible case for self-sufficiency. In part, the issues surrounding major shocks are the same as above. The sudden embargo of a particular food or feed-stuff may be inconvenient and lead to losses of output and disruption. However, it is unlikely to be catastrophic, because of the substitution possibilities that exist. Hence the costs that would be suffered if the event occurred must be tempered by the probability of its occurrence and balanced against the known and recurring costs of the alternative of self-sufficiency.

More serious would be the conceivable, although very unlikely, event of a total embargo of imports. Even here it is possible to over-estimate the damage done, for the substitutability between types of food is quite high and there is considerable flexibility in the total volume of food required to maintain a population. Well before any dietary shortfalls occur, significant economies may be made in the use of food by, for example, consuming a greater proportion of each animal slaughtered, preparing food differently, or substituting crops for meat. There is no reason to treat economies or substitutions in food consumption differently from those within other parts of consumers' budgets, and thus, short of actual malnutrition, there is no reason for special treatment for agriculture.

It is also important to ask whether current agricultural policies would contribute very strongly to the security of supplies in the event of a major embargo. For many OECD countries self-sufficiency in food is only skin deep, for it relies on plentiful supplies of energy and chemicals from abroad. The USSR's experience in 1980 showed that there are sufficient food producers in the world to make any food embargo largely ineffective, but with only a few world suppliers, embargoes of oil and fertilizers are far more likely to be successful. Moreover, given the over-exploitation of the land that current prices encourage, domestic yields would plummet if farms were starved of material inputs. Indeed, they would fall below the levels that would be obtainable from newly ploughed land in the absence of such inputs.

A more efficient means of preparation for a long-lived total embargo would be to ensure sufficient strategic stocks of food to tide the population over the first season, coupled with reserves of fallow land and farm machinery to raise output subsequently. It may even be desirable to support a few farmers in periods of normality in order to maintain skill levels, but the extent of such support would fall far short of present levels. The present policy of squeezing every ounce of production out of the land every year seems most unlikely to contribute to output levels during the crisis of a total embargo.

Finally, while national security in the face of external threat is of paramount importance, it cannot take total precedence over everything else. The extent to which a society is prepared to run the risk of critical food shortages depends on the cost of averting it, i.e. on what has to be given up in order to reduce the probability of its occurring. While these trade-offs are not easy to quantify, the fact that societies make only finite expenditures on health, defence and road safety is sufficient to suggest that even preserving life does not completely dominate the quality of life. Thus, even if the preceding analysis had not undermined the technical link from food self-sufficiency to national security, the latter objective would still require detailed economic analysis.

VII. CONCLUSION

Agricultural policy is an economic issue. Its objectives are amenable to measurement in money terms, and their achievement involves the economic operation of balancing costs against benefits. The costs of agricultural support in OECD countries have been quantified elsewhere; some estimates

suggest they amount to the waste of goods and services equivalent to the whole of Denmark's GDP. The benefits are frequently held to reside in the achievement of various social objectives -- the so-called "non-economic" objectives (SNOs) defined above. This paper has asked of agricultural policy:

- whether it has delivered any SNOs;
- whether it has done so efficiently -- i.e. at least cost in terms of other objectives; and
- whether it is consistent with other objectives and policy stances.

The answers are not encouraging. First, while certain justifications for agricultural intervention exist, they are very specific in the policies indicated: e.g. disaster insurance may need subsidisation, rural amenities may require support, and official inventories may contribute to national security. Second, several of the SNOs quoted above are more amenable to policies other than agricultural policy: income supplements could be paid directly to the rural poor, rural communities could be supported from central funds, and rural industry might be encouraged. Third, in some cases agricultural policy is actually harmful to its declared objectives, e.g. price support worsens income distribution within farming, and capital subsidies encourage soil exhaustion and pollution.

This analysis carries two possible interpretations. Either agricultural policy is not actually designed to achieve the SNOs discussed in section I above, or it is in need of drastic overhaul. If the latter is the case, reform is required independently of the outcome of any international negotiations. This is not to deny that multilateral reform would be less traumatic than unilateral action, but merely to observe that for most OECD countries, agricultural policy imposes significant losses of goods and services in return for very little by way of SNOs. In a word, given the stated objectives of governments, and the varieties of means to achieve them, agricultural policy is very inefficient.

NOTES

1. This section draws on two excellent sources: Hitch and McKean (1960), which applies economic analysis to military decisions, and Henderson (1986), which brings economic analysis to bear on a number of public policy issues.
2. "Nevertheless, though no precise boundary between economic and non-economic welfare exists, yet the test of accessibility to a money measure serves well enough to set up a rough distinction." Pigou (1929).
3. Of course identical questions must be posed of non-agricultural policy. However, given the practical difficulties of considering all policy simultaneously, and the relatively high levels of intervention in agriculture in most OECD countries, it is an acceptable first approximation to consider agriculture in isolation, with the rest of the economy represented only through the value of its output.
4. One caveat to the preference for subsidies is that they may require distortionary taxes to finance them. Unless the outlays are very high, however, this is unlikely to outweigh the direct advantages described in the text.
5. This is not to deny the importance of Arrow's Impossibility Theorem (Arrow, 1970) -- which states that there is no guarantee that social preferences derived from people with different individual preferences will be consistent -- but merely to observe that governments do take decisions somehow, and to assume that society will be served by their doing so consistently.
6. One justification for such pensions would be as a compensation for the loss of wealth entailed in lowering the trajectory of output prices. However, since the wealth was originally government-induced it is not beyond question that such compensation is warranted.
7. Petit (1985) offers a brief analysis of this "difficulty" in his discussion of the Brannan Plan in the United States in 1949.
8. It is possible that, even in the absence of government intervention, moral hazard would prevent the provision of insurance, in which case insurance subsidies would be necessary. All that is being argued here is that official stabilisation makes it more difficult for private insurance to prosper.
9. See Winters (1987b) for a discussion of this argument.

10. Gasson (1986) reports that in Britain, 38 per cent a large sample of part-timers reported that farming made no contribution to net income. This could indicate the need for greater support, or it could show that part-time farming is heavily influenced by non-pecuniary dimensions. Indeed, nearly 50 per cent of the part-time farmers interviewed by Gasson reported that they would not alter their farming activities in the face of a large fall in farm receipts.
11. It is true that private and local amenity expenditures are omitted from the former figure, and that since 1987 additional conservation expenditure has occurred on certain "Environmentally Sensitive Areas". On the other hand, the costs of amenity schemes, which pay farmers to adopt environmentally acceptable methods, are greatly inflated by the high crop and land prices engendered by agricultural support.
12. Capital subsidies stimulate monoculture because of the desire to spread capital costs over large volumes of output; price support reduces the rate of farm amalgamation, so individual farms have to specialise in order to generate the volumes required, Bowers and Cheshire (1983).
13. Set-asides as a conservation policy are considered on pp. 21-22.

REFERENCES

- Agricultural Policy Council (1987), "Basic direction of agricultural policy toward the 21st century", Japan's Agricultural Review, Vol. 15, March.
- Arrow, K.J. (1970), Social and Individual Values, Oliver and Boyd, Edinburgh.
- Bhagwati, J.N. and V.K. Rawaswami (1963), "Domestic distortions, tariffs and the theory of optimum subsidy", Journal of Political Economy, Vol. 72, pp. 44-50.
- Body, R. (1984), Farming in the Clouds, Temple Smith, London.
- Bowers, J.K. and P. Cheshire (1983), Agriculture, the Countryside and Land Use, Methuen and Co. Ltd, London.
- Brown, G.M. and H.C. Pollakowski (1977), "Economic valuation of a shoreline", Review of Economics and Statistics, Vol. 59, pp. 272-278.
- Bureau of Agricultural Economics (1985), Agricultural Policies in the European Community, Australian Government Publishing Service, Canberra.
- Corden, W.M. (1957), "Tariffs, subsidies and the terms of trade", Economica, Vol. 24, pp. 235-242.
- Council of Economic Advisers (1986), Economic report of the President, U.S. Government Printing Office, Washington, D.C.
- Countryside Commission (1984), Agricultural Landscapes: A Second Look, CCP 168, Countryside Commission, Cheltenham.
- Departement Federal de l'Economie Publique (1984), Le Sixieme Rapport sur l'Agriculture, L'Office Central Federal des Imprimeries et du Materiel, Berne.
- Dixit, A. (1987), "Trade and insurance with moral hazard", Journal of International Economics, Vol. 23, pp. 201-220.
- Drudy, P.J. (1978), "Depopulation in a prosperous agricultural sub-region", Regional Studies, Vol. 12, pp. 49-60.
- Eginton, C.W. (1980), "Impacts of federal tax on the potential growth in size of typical farms", American Journal of Agricultural Economics, Vol. 62, pp. 929-939.
- Gabriel, S.C. and C.B. Baker (1980), "Concepts of business and financial risk", American Journal of Agricultural Economics, Vol. 62, pp. 560-564.
- Gardner, B.D. and D.M. Hoover (1975), U.S. Farm Community Programs and the Inequality of Farm Household Income : 1969, Dept. Econ. and Bus. ERR No. 35., North Carolina State University.

- Gardner B.L. and R.A. Kramer (1986), "Experience with crop insurance programs in the United States", in P. Hazell, C. Pomaredo, and A. Valdes (eds.), Crop Insurance for Agricultural Development, John Hopkins University Press, Baltimore.
- Hazell, P.B.R. (1984), "Sources of increased instability in Indian and U.S. cereal production", American Journal of Agricultural Economics, Vol. 66, pp. 302-311.
- Heady, E.O. and C. Short (1981), "Interrelationship among export markets, resources conservation and agricultural productivity", American Journal of Agricultural Economics, Vol. 63, pp. 840-847.
- Heimlich, R.E. (1986), "Agricultural programmes and cropland conversion: 1975-1981", Land Economics, Vol. 62, pp. 174-181.
- Henderson, P.D. (1986), Innocence and Design, Basil Blackwell, Oxford.
- Hitch, C.J. and R.N. McKean (1960), The economics of Defence in the Nuclear Age, Harvard University Press, Cambridge, Mass.
- Hodge, I.D. and M. Whitby (1986), "The U.K. : Rural development, issues and analysis", European Review of Agricultural Economics, Vol. 13, pp. 391-413.
- Honma, M. and Y. Hayami (1986), "Structure of agricultural protection in industrial countries", Journal of International Economics, Vol. 20, pp. 115-129.
- Huffaker, R.G. and B.D. Gardner (1986), "The distribution of economic rents arising from subsidised water when land is leased", American Journal of Agricultural Economics, Vol. 68, pp. 306-312.
- Johnson, J.D. and S.D. Short (1983), "Commodity programs: who has received the benefit?", American Journal of Agricultural Economics, Vol. 65, pp. 912-921.
- Kawagoe, T., K. Otsuka and Y. Hayami (1986), "Induced bias of technical change in agriculture: the US and Japan, 1880-1980", Journal of Political Economy, Vol. 94, pp. 523-544.
- Ketkar, K.W. (1983), "Pollution control and inputs to production", Journal of Environmental Economics and Management, Vol. 10, pp. 50-59.
- Kislev, Y. and W. Peterson (1982), "Prices, technology and farm size", Journal of Political Economy, Vol. 90, pp. 578-595.
- Krutilla, J.V. and A.C. Fisher (1975), The Economics of Natural Environments, John Hopkins Press, Baltimore.
- Leontieff, W. (1970), "Environmental repercussions and the economic structure: an input-output approach", Review of Economics and Statistics, Vol. 52, pp. 262-271.

- MacEwan, M. and G. Sinclair (1983), New Life for the Hills, Council for National Parks, London.
- Marcks von Wurtemberg, J. (1987), The Cost of Present Agricultural Policies in the EFTA Countries, Occasional Paper No. 18, EFTA, Geneva.
- Martin, W.E. and R.L. Gunn (1977), "Using economic demand functions for rural outdoor recreation", in J.M. Hughes and R.D. Lloyd (eds.), Outdoor Recreation: Advances in Application of Economics, U.S. Department of Agriculture, Forest Service, Washington, D.C.
- McConnell, K.E. (1983), "An economic model of soil erosion", American Journal of Agricultural Economics, Vol. 65, pp. 83-89.
- Nature Conservancy Council (1984), Nature Conservation in Great Britain, Nature Conservancy Council, Shrewsbury.
- Newby, H., C. Bell and D. Rose (1977), "Farmers' attitudes to conservation", Countryside Recreation Review, Vol. 2.
- OECD (1987a), National Policies and Agricultural Trade, (including National Studies), OECD, Paris.
- OECD (1987b), Structural Adjustment and Economic Performance, Paris.
- Petit, M. (1985), Determinants of Agricultural Policies in the U.S. and the European Community, Research Report No. 51, International Food Policy Research Institute, Washington, D.C.
- Phipps, T. (1985), Farm policies and the Rate of Return on Investment in Agriculture, Occasional Paper, American Enterprise Institute, Washington, D.C.
- Pigou, A.C. (1929), The Economics of Welfare, MacMillan, London.
- Ritson, C. (1980), Self-sufficiency and Food Security, Centre for Agricultural Strategy, Reading.
- Traill, W.B. (1980), Land Values and Rents: the Gains and Losses from Farm Price Support Programmes, Department of Agriculture Bulletin 175, University of Manchester, Manchester.
- Traill, W.B. (1982), "The effect of price support policies on agricultural investment, employment, farm incomes, and land values in the UK", Journal of Agricultural Economics, Vol. 33, pp. 369-385.
- Tsujii, H. (1986), "An economic analysis of rice insurance in Japan", in P. Hazell, C. Pomaredo, and A. Valdes (eds.), Crop Insurance for Agricultural Development, John Hopkins University Press, Baltimore.
- Tyers, R. and K. Anderson (1986), Distortions in World Food Markets: a Quantitative Assessment, World Bank Development Report Background Paper, The World Bank, Washington, D.C.

- U.K. Business Statistics Office (1983), Input-Output Tables for the United Kingdom, 1979, Business Monitor PA 1004, H.M.S.O., London.
- U.K. Treasury (1987), The Government's Expenditure Plans 1987-88 and 1989-90, Volume II, H.M.S.O., London.
- Van Vuuren, W. (1986), "Soil erosion: the case for market intervention", Canadian Journal of Agricultural Economics, Vol. 33, pp. 41-62.
- Walters, A.A. (1974), Noise and Prices, Clarendon Press, Oxford.
- Wheeler, D.P. (1985), "The conservation imperative for food and agriculture policy in the United States", in D. Baldock, and D. Conder, (eds.) Can the CAP Fit the Environment, Council for the Protection of Rural England, London.
- Winters, L.A. (1987a), "The political economy of the agricultural policy of industrial countries", European Review of Agricultural Economics, Vol. 14, pp. 285-304.
- Winters, L.A. (1987b), "The economic consequences of agricultural support: a survey", OECD Economic Studies, No. 9 (Autumn 1987), pp. 7-54.
- World Bank (1986), The World Development Report 1986, The World Bank, Washington, D.C.

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