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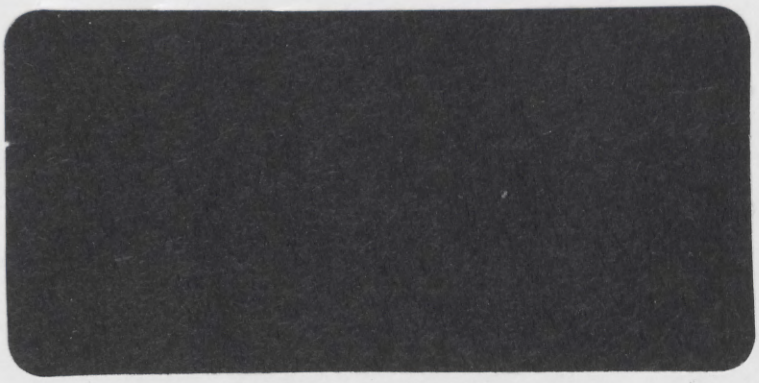

DISCUSSION PAPER

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PSEs, Producer Benefits and Transfer Efficiency of the CAP and Alternatives

by
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by

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ABSTRACT

This paper deals with: a) the background to and definition of transfer efficiency; b) the principles involved in identifying various aspects of transfer efficiency, which extend the concept of PSE to the more traditional notion of producer surplus; c) some results for the current CAP by commodity/country; d) the implications of adopting a quasi non-distorting and more transfer-efficient policy in place of the current CAP.

I INTRODUCTION AND BACKGROUND

Josling (1969,1974) formally identified the now traditional textbook analysis of policy intervention in agricultural markets. He pointed out the importance of the transfers between different sections of society (measured in terms of producer and consumer surpluses and taxpayer costs) as opposed to the net economic welfare or resource costs of policy intervention. Josling also identified marginal costs and benefits of policy changes in these components as being more relevant to policy decisions than the associated average measures, since the alternative policy was seldom (if ever, *pace* the New Zealand experience) the complete elimination of the policy under consideration. Thus, the definition of the alternative or numeraire policy against which the current policy is to be measured becomes crucial. Josling and Hamway (1972) extended this analysis by considering the distributional consequences of the change in farm policy for the UK consequent on accession to the European Community. This work formally identified the regressive features of the policy change among consumers and taxpayers and between farmers. The general conclusions are:

i) most policies are less than 100 per cent efficient, that is, costs exceed benefits, measured in terms of progress towards stated objectives;

ii) some policies are more inefficient than others, but that efficiencies vary with respect to the policy objectives considered;

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iii) there is a tendency for policies to become progressively more inefficient the more interventionist they become (approximated by the difference between the policy support price and the free market price) so that marginal efficiencies tend to be smaller than average efficiencies, while marginal effects are conditional on the current policy position;

iv) the distributional consequences of different instruments are likely to be different even if the levels of protection (distortion) implied by the policy settings are the same.

In a related but independent piece of work, Gardner (1983) reached similar conclusions to Josling. This has led to further examinations of the efficiency of present policies (for example, Thomson and Harvey, 1981), which demonstrated the first three conclusions in the case of the major CAP mechanisms in place in the early 1980s.

In a parallel but unrelated development, the measurement and consequent analysis of the effects of agricultural protection was again fostered by Josling (1973) in the definition and measurement of Producer Subsidy Equivalents (PSE). These have now been 'popularised' through the work of the OECD (1987) and have been separately estimated by the USDA and the European Commission. The PSE is receiving considerable attention within the current Uruguay GATT round as a possible 'aggregate measure' of agricultural protection or distortion. One major intent of the GATT round is to reach agreement on the definition of such a measure and to freeze and 'roll back' support according to such a measure, by proportional or other reductions in the aggregate measure. (see, for example, Peters, 1989)

The GATT discussions have raised an important question which has not yet been resolved to the satisfaction of all negotiating parties, but which directly relates these two strands of agricultural policy analysis. The question is: to what extent are 'farm support' and 'market distortion' the same thing? It is already widely recognised that some agricultural support instruments, such as public R&D and extension expenditure, are less distorting, i.e. of less concern to the GATT negotiators, than others, such as export subsidies. Within the context of 'aggregate measures', the potentially all-encompassing PSE needs to be adjusted to reflect these differences so that the adjusted PSE can be used as a measure of market distortion rather than as a measure of support. Alternative measures, such as the 'price gap' or the Trade Distortion Equivalent (TDE) are also being suggested, partly to avoid some of the more contentious issues associated with trying to tailor the PSE to suit GATT requirements. The extent to which it is an objective of the GATT negotiations to reduce support or reduce distortion is thus a question which is being fragmented in discussions on the applicability and definition of the aggregate measure.

Associated with the more technical issues in the GATT negotiations are questions about the extent to which farm policies can to be changed so as to continue to achieve domestic policy objectives while also meeting GATT commitments. These questions relate not only to future changes in policies but also to the credit to be given to member countries for policy changes which have been achieved since the opening of the current round. These questions are confounded by the multiplicity of objectives usually accorded to the variety of domestic policy instruments which affect agriculture. Most of these are regarded as more or less sacrosanct by the negotiating parties, and thus GATT agreement requires the development and acceptance of alternative policy instruments to achieve these objectives without causing market distortions or otherwise contravening GATT objectives. These

questions may be expected to generate internal domestic discussion and consideration of the efficiency and effectiveness of current policies in meeting policy goals. However, as far as the EC is concerned, there is little sign of such discussion to date, in spite of a recent spate of European Commission papers on the necessity of reform, culminating in EC (1988).

In an attempt to develop a practical and less trade-distorting alternative to the current instruments of market intervention, a working party associated with the International Agricultural Trade Research Consortium (IATRC) developed the Producers' Entitlement Guarantee (PEG)[2]. This is an alternative policy instrument which limits the support paid to farmers to a pre-determined and fixed quantity of production. Associated with the arguments in favour of this proposal are considerations of the efficiency and effectiveness of transferring income support from consumers and taxpayers to farmers. Thus, in the restricted context of the single (and arguably over-riding) objective of farm policy - to support and stabilise farm income - and the single measure of cost - consumer plus taxpayer burdens - the notion of transfer efficiency of farm policies becomes important. This line of argument brings the twin strands of policy analysis into direct contact. The notion of efficiency (the extent to which an objective is achieved per unit of cost incurred, as developed in Josling, 1969) is brought into direct comparison with calculations of PSEs which are close to the consumer and taxpayer costs of the policy instruments.

Transfer efficiency is defined as the improvement in agricultural producers surplus per unit consumer and taxpayer cost. As such, transfer efficiency may be defined either on average or at the margin. It is argued that the average concept is more useful than the marginal, because the latter depends on the level at which any given instrument is applied. If international agreement seeks to eliminate a sub-set of agricultural policies regarded as trade-distorting, whatever their level, then the average transfer efficiency of these instruments relative to alternatives is of more interest than the marginal efficiencies related to their existing settings.

This paper is a preliminary exploration of transfer efficiency and its implications. Section II deals with some elementary theoretical aspects of the definition. Section III offers some estimates of transfer efficiency based on the conceptualisation of the CAP as contained in the Newcastle CAP model (Thomson, 1988, 1987, Buckwell *et. al.*,1982). Section IV provides some implications for a quasi non-distorting policy alternative (PEG) while section V draws some conclusions.

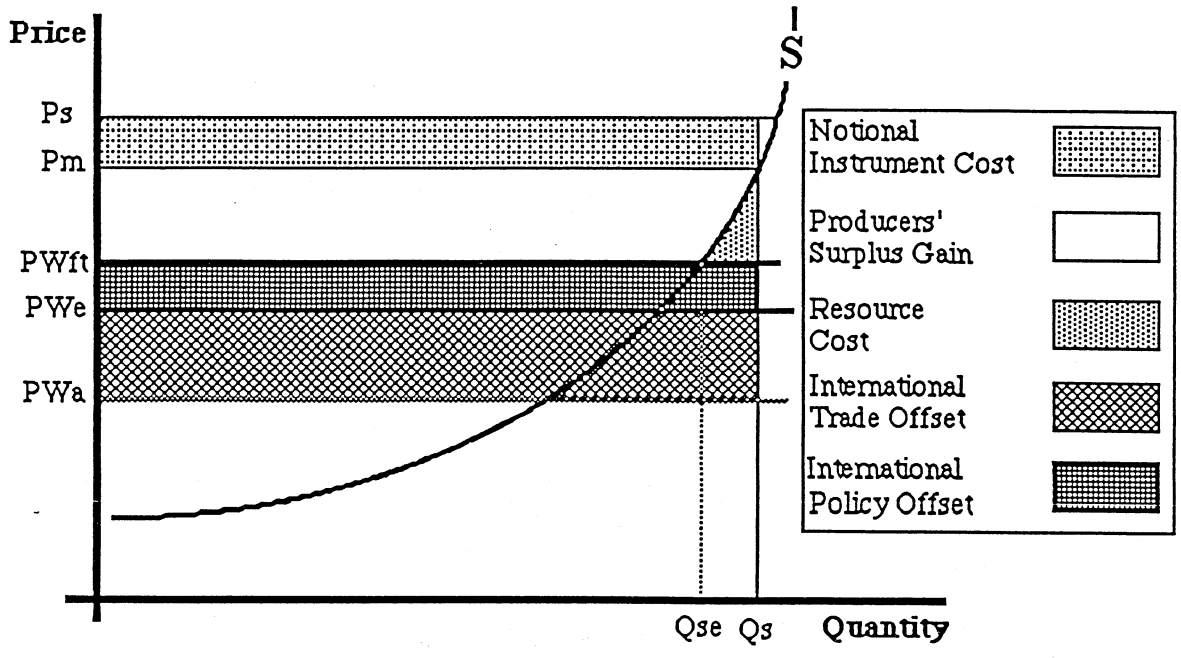
II Theoretical Considerations

Figure 1 identifies the major components of the link between the efficiency of an intervention policy and the representation of that policy as a Producer Subsidy Equivalent (PSE). In this Figure, Ps represents the support price determined by the political process, for example, the intervention price for cereals in the European Community. Pm represents the associated market price, measured at the farm gate. For a variety of reasons, Pm may be below Ps. In the case of the EC cereals regime, Ps is not the price at which cereals are purchased into intervention. Rather the 'buying-in price' for intervention purposes is set at 94 per cent of the intervention price. Furthermore, the buying-in price relates only to specific qualities of grain and applies only for certain periods of the year. As a result, the market price is supported but not underpinned by the buying-in price, the relationship

2 See IATRC, 1988 and Harvey,1989

between the two depending on the quality mix of the harvest and the internal supply/demand balance within the Community in relation to the decisions of the Cereals Management Committee on export refunds and export quantities[3]. In addition, most cereal production within the Community is subject to co-responsibility levies (3 per cent plus a further 3 per cent if last year's harvest exceeds the Maximum Guaranteed Quantity) which act as an effective tax on the farm gate price. For these reasons, the effective market price lies below the policy-set intervention price, and may be taken as the price which determines supply quantity, Qs.

Figure 1



PWa is the actual world market price, against which the EC imports and exports. PWe is an equilibrium world price in the absence of any market intervention by the European Community, and reflects the EC as a large country facing less than perfectly elastic excess demand conditions in the rest of the world. PWft is the world market price which would rule under complete free trade, that is with all other countries' intervention policies removed as well as those of the European Community. Under these conditions, the free trade equilibrium supply quantity in the EC would be Qse. According to textbook conventions, it is this benchmark against which current policies should be measured. As Figure 1 illustrates, only a fraction of the total PSE, measured as (Ps - PWa)*Qs, contributes to the producers' surplus gain, the rest being accounted for in various offsets and costs. The fraction of the PSE accounted for by producers' surplus gain is here defined as the measure of transfer efficiency.[4]

The precise measurement of the PSE under these conditions depends on the assumptions and conventions adopted for the commodity in question. In particular, the OECD uses

3 See Surry, 1988

4 It is recognised that producers' surplus is itself a contentious measure, and it is certainly the case that only a portion of this measure can be expected to arrive in any measure of net farm income. However, for the purposes of this paper, producers' surplus is taken as the appropriate measure for transfer efficiency.

(Pm - PWa)*Qs as the general definition of PSE. However, for the sake of argument, take the PSE measurement as the difference between the domestic support price (Ps) and the current world price (PWa) applied to the current production level (Qs). The question which this paper addresses is how much of this measure of producer benefit is actually received by the farm sector.

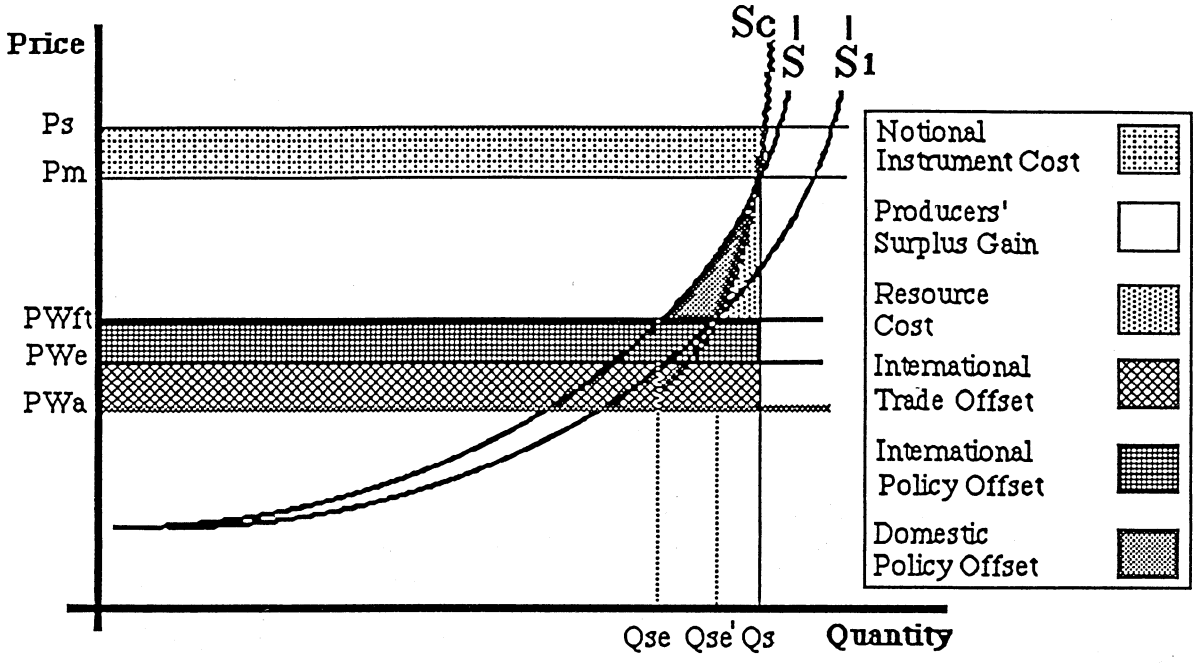
In practice, as already noted in the case of the EC cereals regime, the support price is not the effective market price for producers. Thus, on the above definition of the PSE, the gap between the support price and the effective market price is lost as the 'Instrument Cost' of the policy. This is well recognised by many of those who calculate PSEs, such as the OECD, who calculate the PSE using the difference between the domestic market price and the world price. However, in the case of the EC cereals regime, this measure excludes any excess of the buying-in price over the market price on intervention purchases, which is a cost to taxpayers not transferred to the farm sector. Because of this and similar problems in other commodities, the difference between the support price and the market price at the farm gate is identified here as the notional instrument cost, the term 'notional' being used to recognise that not all of this cost is necessarily incurred. The actual instrument cost will generally be smaller than the notional cost, as in the case of the cereals regime. The real instrument cost would in this case include the cost of intervention purchases over and above the market price. As far as the producer is concerned, the coresponsibility levy is also a cost, though it amounts to a transfer from consumer (user) to taxpayer and thus should not be included in the PSE. This levy is, however, identified as part of the notional instrument cost in Figure 1.

The remaining elements of PSE as related to the gain in producers' surplus are more straightforward. The PSE includes the traditional resource cost associated with producing at Qs rather than Qse - the free trade equilibrium supply - as identified in Figure 1. This depends on the elasticity of supply between the market price and the free trade equilibrium world price. It also includes an "International Trade Offset", and an "International Policy Offset" as separate components of the effect of domestic support policies on the world market. Although the final effect of these policies is the same, generally depressing world market prices, the causes, through either home or foreign policy, are worth separate identification. The International Trade Offset is defined as the amount by which world prices are depressed by the trade distortion of domestic policy. The "International Policy Offset" is defined as the amount by which world prices are depressed by other countries' distorting policies. Thus the trade offset depends on the elasticity of excess demand in the rest of the world given other countries support policies, while the policy offset depends on the extent to which the removal of these foreign policies affects the world price level.

Figure 1 deals with a single commodity only. The introduction of additional commodities complicates the analysis somewhat, though is clearly necessary as a more realistic representation, in which farm policies are framed for a comprehensive collection of products. However, the consequences of removing support policies for other commodities than the one represented in Figure 1 can be handled through the concept of a 'compensated' supply curve, in which the supply curve S is redrawn given that the prices of other complementary and competing products are also adjusted. This is shown in Figure 2. In this diagram the removal of support for other commodities is assumed to shift the supply curve for cereals in the EC to the right, from S to S1, since opportunity costs associated with cereal production are reduced. The resulting equilibrium supply quantity of

cereals is now greater than in the single-commodity case (Figure 1) and is identified in Figure 2 as Qse'. The line segment between the current supply quantity and the free trade equilibrium quantity provides a (price) compensated supply curve Sc, against which the effects of policy removal in other sectors can be assessed compared with the single commodity case[5]. Given that removal of support for livestock products would shift the supply of cereals to the right, then the producers' surplus for cereals will be larger than identified in Figure 1 and the "Domestic Policy Offset" would be negative (ie an addition to producers' surplus). Alternatively, continued support for other sectors in the face of elimination of support in the cereals sector results in a loss of surplus associated with cereal production by the amount labelled domestic policy offset.

Figure 2



As Figure 2 illustrates, multi-commodity policy changes are likely to result in different traded quantities with different effects on world prices both as a result of domestic policy reform and through multilateral policy reform. Hence the associated measures of the international trade and policy offsets are likely to be different. It might be possible, given assumptions about the nature of supply schedules and demand conditions around the world, to derive analytical results for the expected sizes of these various offsets and costs. However, preliminary attempts to develop this analysis have not so far proved tractable (Meir, 1989). In this paper, an existing model of the EC agricultural sector (the Newcastle CAP model) is used to provide estimates of these elements and of the total transfer efficiency of the current CAP.

5 See Just *et.al.*,1982

III TRANSFER EFFICIENCY METHODOLOGY

The Newcastle CAP Model is a simulation model covering 16 commodities for each of the member states. The estimates presented here refer to the EC 10. The model was constructed to examine the distribution of and possible changes in the costs and benefits of the CAP according to conventional welfare arithmetic. The model includes the consequences of the principles of the CAP (common financing, community preference and common pricing) and also considerable commodity detail (such as preferential trading agreements, co-responsibility levies, producer subsidies and storage payments). Changes in policy are reflected through a matrix of supply and demand elasticities to provide estimates of changes in production and consumption quantities, from which the variables of interest are calculated. The model treats the existing situation as the base and computes the consequences of changes from this base situation, comparing financial flows, trade balances, producer and consumer surpluses between the current situation and the new policy. The consequences of changes in production and consumption levels within the EC on the world market are accounted for through a set of excess demand elasticities representing the rest of the world.

Since the model was not explicitly constructed to examine transfer efficiency, some of the components have to be inferred from the model results rather than be directly calculated. This is particularly true of the International Trade Offset, which is excluded from the measure of producer surplus change resulting from a comparison between the existing policy and Community (unilateral) free trade with the rest of the world. In this case it is necessary to impose the estimates of the free trade world price exogenously to obtain the 'true' change in producers' surplus as measured against the benchmark of the competitive market solution.

Any estimates of transfer efficiency and its component parts will depend on a number of factors, including: the levels of internal market prices (Ps); external reference prices (PWa); the assumptions about the domestic and foreign supply and demand schedules, as represented by the elasticities. Estimates of equilibrium world prices (PWft and PWe), in particular, are expected to be sensitive to these assumptions. Tables 1 and 2 present the price assumptions and the initial or base PSEs made for the purposes of this paper. Elasticities used in the model are reported in Thomson (1987) or are available from the authors on request.

There is clearly room for experimentation with these base parameters, and this is being carried out at the present time. In particular, the sensitivity of estimates to changes in elasticity values is being examined through the substitution of a consistent set of supply elasticities derived for the European Community by Munk (1988) while the elasticities of excess demands in the rest of the world can be replaced by, for example, those used in the Canadian Trade Analysis Simulation System (TASS, Cahill, 1988). It is expected that the results may be quite sensitive to these changes. Of more immediate importance are the assumptions made about the level of free trade world prices. As can be seen from Table 1, and emphasised in Figure 3, there are considerable differences between the SWOPSIM (USDA)[6] estimates of these prices and those used in this estimation. The estimates used here are derived form the Canadian TASS model results (*op. cit*) and are generally

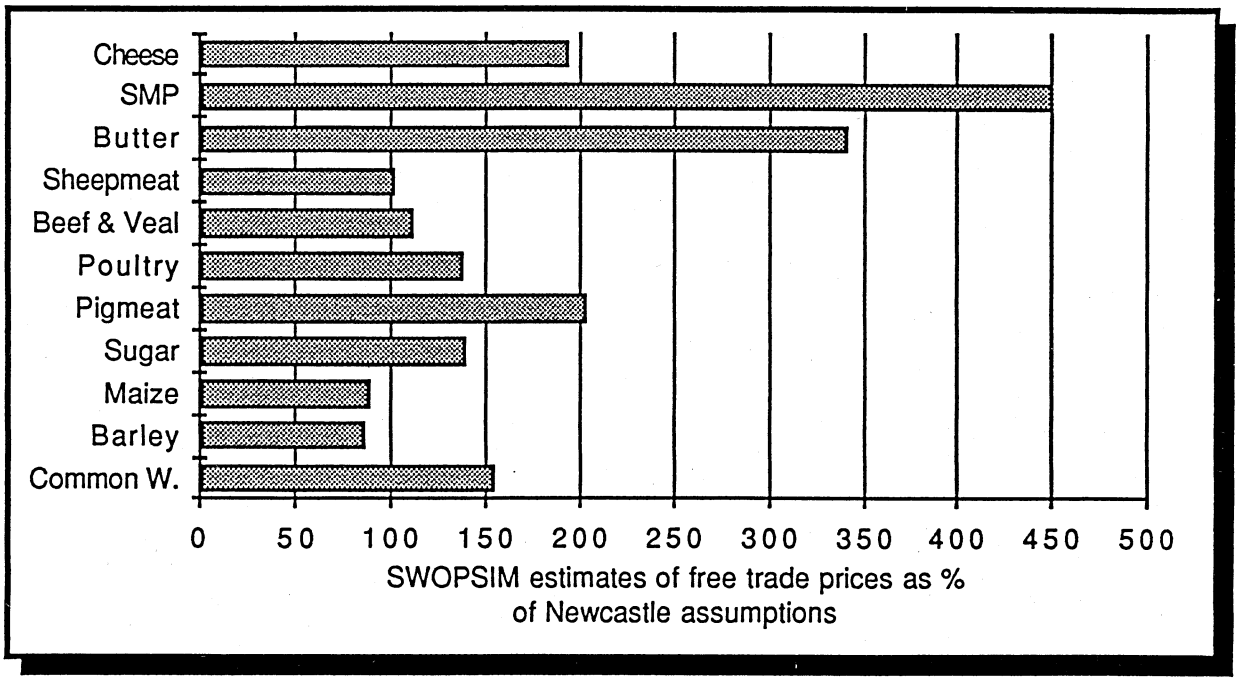
6 Static World Policy Simulation Modelling Framework, Roningen, 1986. See also, Roningen and Dixit, 1989.

considerably lower. As a result, estimates of transfer efficiency derived on the basis of these world prices will be larger than those based on SWOPSIM prices.

Table 1 - Price Assumptions and Comparisons (ecu/tonne)

	Newcastle Assumptions:				OECD		USDA	
Commodity	Ps	PWa	PWe	PWft	Ps	PWa	PWa	PWft
Common Wheat	182	89	91	136	179	79	155	212
Durum Wheat	333	139	149	224	338	149	n.a.	n.a.
Barley	169	76	80	138	170	83	99	120
Maize	195	62	68	160	179	73	111	143
Other Cereals	169	95	96	139	170	102	n.a.	n.a.
Sugar	325	190	199	218	542	210	200	305
Pigmeat	1516	1335	1225	1452	2033	1192	2614	2966
Poultry	1364	875	900	1079	1148	965	1262	1495
Eggs	992	680	685	890	1187	773	2235	2365
Beef & Veal	3087	2183	2320	2622	4046	1893	2463	2947
Sheepmeat	3949	1692	2026	3396	3675	2001	2634	3474
Liquid Milk	284	77	184	223	258	170	271	n.a.
Butter	3178	1362	1960	2227	3132	1993	3913	7594
SMP	1694	916	1310	1479	1740	1363	3607	6664
Cheese	3742	1683	2563	2799	5047	2860	3831	5434
Olive Oil	2693	1337	1635	1635	2982	1703	n.a.	n.a.

Figure 3 - Price Assumptions and Comparisons



The estimates of transfer efficiency also depend on the size of the denominator (the base PSE). As Table 2 shows, there are some differences between the implicit PSE associated with the base data used in the CAP model from those estimated on a detailed commodity by commodity basis by OECD (OECD, 1988). In total these differences are not substantial, though there are substantial differences by commodity, and differences clearly will lead to some bias in estimates of transfer efficiency, depending on the accuracy of the different estimates of PSEs.

Table 2 - Estimates of PSEs (m/ecu, 1986)

	Model	OECD
Common Wheat	6972	8612
Coarse Grains	7141	8209
Sugar	1690	3222
Pigmeat	1977	1044
Poultry	2220	1174
Eggs	1270	-39
Beef & Veal	6789	13076
Sheepmeat	1693	2821
Milk	36638	24730
Crops:	16807	21847
Livestock Products	50586	42807
TOTAL:	**67393**	**62849**

Note: The commodity detail is different for this comparison than for the previous comparison of world prices since the model coverage is different in each case.

There are a number of technical details associated with running the Newcastle CAP model in order to estimate transfer efficiency which are not reported here. However, one important feature which needs mention is the estimate of Notional Instrument Cost. This is estimated as the producers' surplus accruing to storers and first round processors in the Newcastle CAP model, rather than accruing to farmers directly. In this sense, this item is more than notional. It represents actual gains from current policies which do not benefit farmers in their capacity as producers and yet is paid for by the consumers and taxpayers. The other elements of transfer efficiency (International Trade Offset; International Policy Offset, deadweight loss or resource cost; and producers' surplus gain) are estimated in accord with the principles presented in the previous section. Since the following estimates are made on the basis of a multi-commodity model, the estimates are net of any domestic policy offsets. While these can be estimated, there is little evidence that single commodity de-regulation is being seriously considered by any of the participants in the GATT negotiations, so the results are not reported here.

IV RESULTS

The overall estimates of the components of transfer efficiency for the European Community for the 16 commodities considered in this analysis are shown in Figure 4. For the European Community as a whole, the transfer efficiency of the CAP is 32 per cent. The bulk of the leakages of PSE spending by consumers and taxpayers results from the International trade and policy offsets which together account for nearly half the PSE. The trade offset is as large as the policy offset, which may come as a surprise. The reasoning is as follows. Under unilateral free trade, the EC faces rather inelastic excess demand curves in the rest of the world, because of protectionist policies elsewhere. As a consequence, the effects of changing trade volumes by the EC on world prices may be expected to be substantial, resulting in large trade effects. In the case of multilateral free trade, while the excess demand elasticities facing the Community are greater, the effect of the whole world eliminating distorting policies is to raise world prices, so that the policy offset is likely to be substantial.

Figures 5 and 6 show the same results for Germany, United Kingdom, France and the Netherlands respectively, while Figure 7 shows the results for commodity groups: cereals, milk and milk products, and other livestock products for the Community as a whole. Full results for countries and commodities are reported in Tables 4 and 5.

Figure 4 Transfer Efficiency for the European Community, 1986

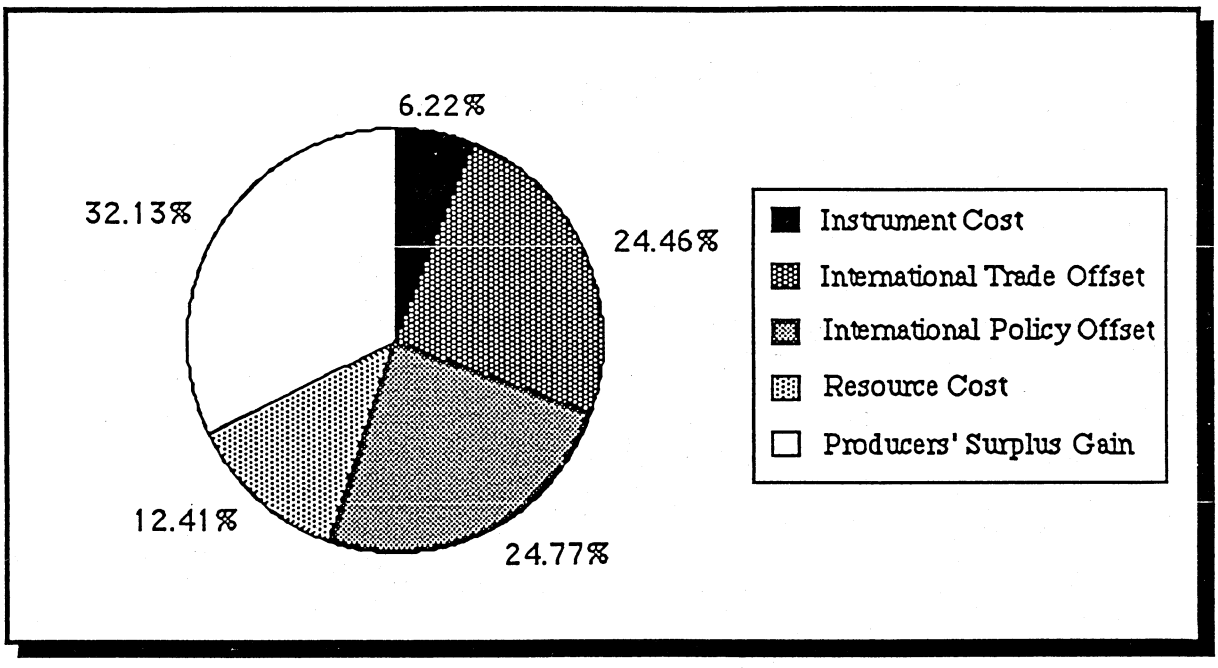


Figure 5 - Transfer Efficiency for the UK and Germany, 1986

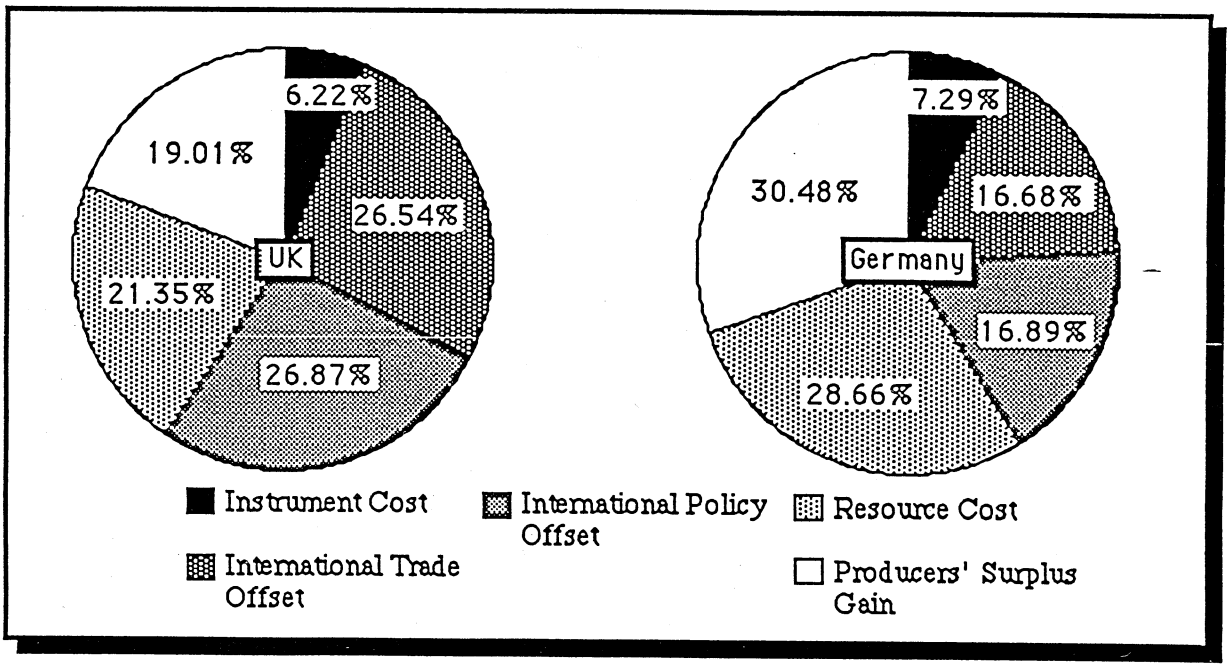
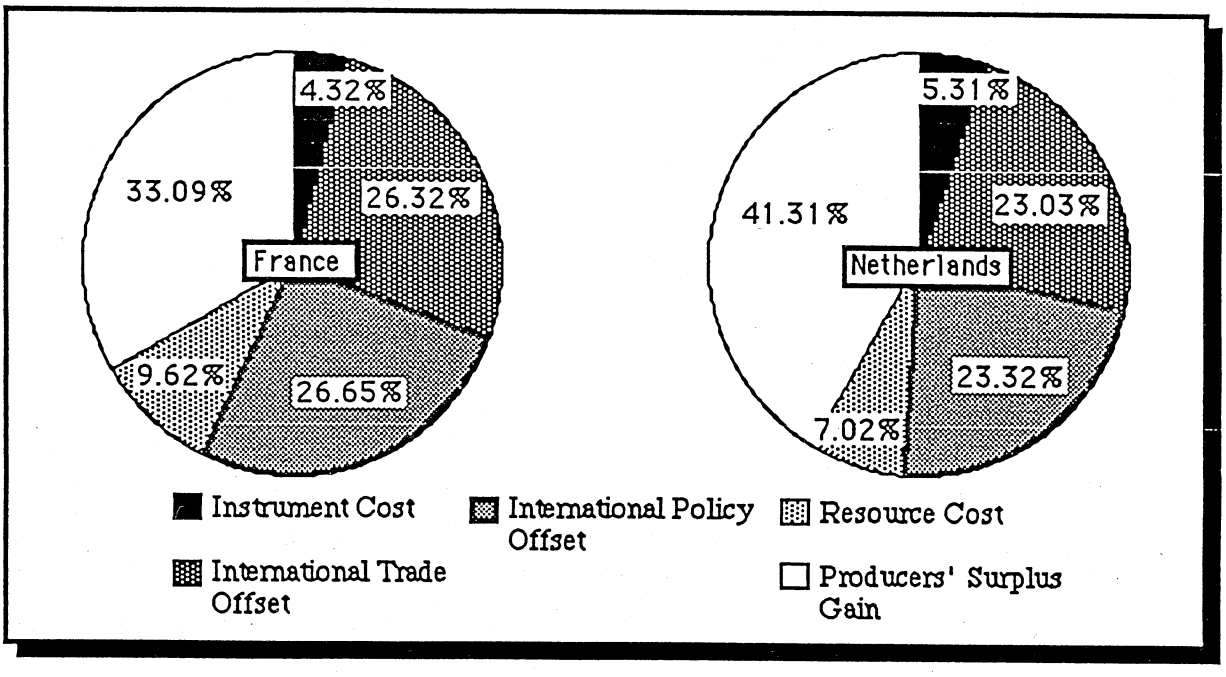


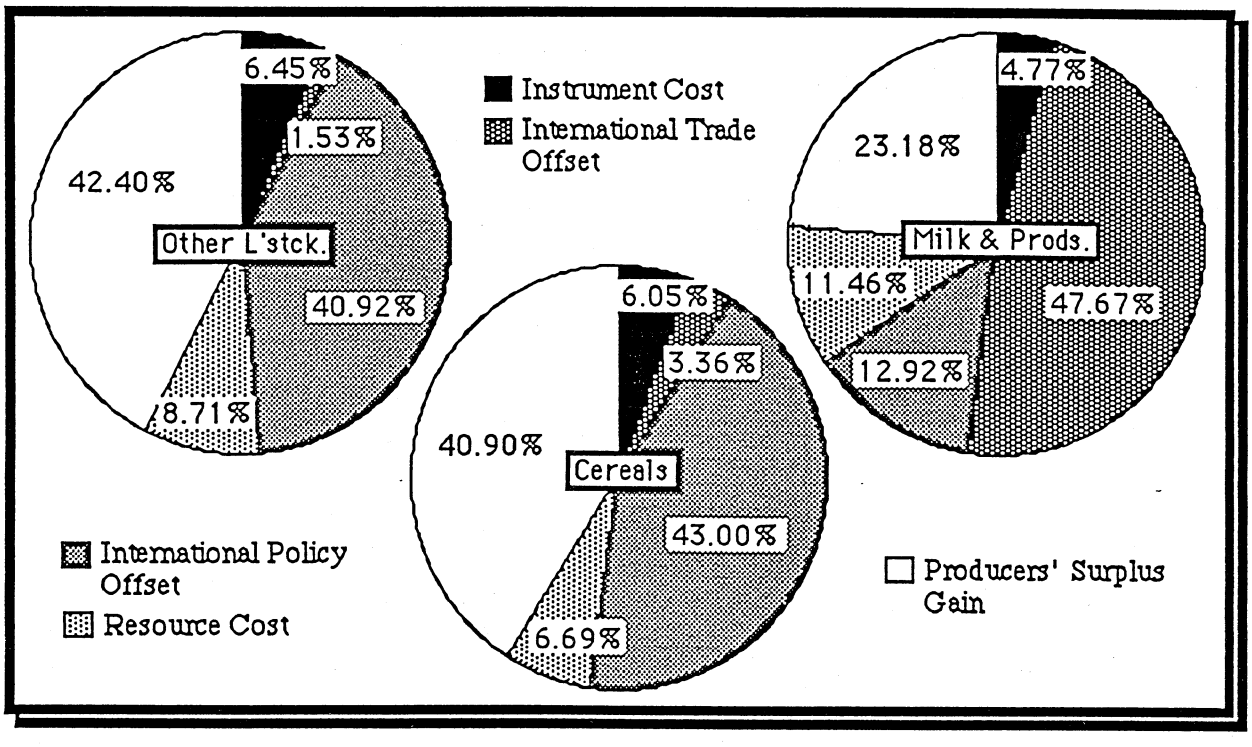
Figure 6 - Transfer Efficiency for France and the Netherlands, 1986



It can be seen that there are substantial differences between member states in the transfer efficiency of the CAP, ranging from 20 per cent in the case of the UK to 47 per cent in the case of Italy (see Table 5). In part these differences reflect different commodity mixes (and associated differences in transfer efficiencies associated with these different commodities), and differences in base prices as a result of the Green exchange rate/MCA system in the Community. However, the major reason for the divergence is the impact of the common

financing arrangements for the CAP, whereby taxpayer costs by country for the support of the CAP are not related to tax spending in each country. The UK and Germany bear proportionately more of the tax burden than they receive in FEOGA support, hence their transfer efficiencies are lower than other countries[7]. The low efficiency for Greece (Table 5, page 14) needs more analysis but is likely to reflect the relatively low support prices in 1986, before full accession, as well as the commodity mix. By the same token, the comparatively high efficiency shown for Germany in comparison with the UK is a reflection of the higher internal prices in Germany achieved through the positive MCA.

Figure 7 - Transfer Efficiency by Commodity Group, EC, 1986



The commodity results, Figure 7, show quite marked differences in the international effects as well as substantially less efficient milk policies compared with either cereals or livestock products. The international policy offset is particularly important for cereals and livestock products, while the international trade offset swamps the other leakages for milk products. These results accord with intuition. Less plausible is the relatively low instrument cost for milk and milk products, although the resource cost for this commodity group is, as expected, higher than for cereals or other livestock. The instrument cost result needs further examination and suggests that the estimation of producers' gain from the dairy processing sector may be underestimated in the present model.

Tables 4 and 5 show the detailed results by commodity and country. The instrument cost (NIC) is calculated on the basis of excess supply in the community rather than on total production and also includes separate storage payments. This explains the differences in instrument cost estimates between products. The milk and milk product estimates reflect the

7 This situation has led the UK to repeatedly seek compensation through the budget mechanism, which it now does through a rebate under the Luxembourg Compromise. The effects of this compromise are not included in these estimates, so that the UK estimate is lower than the actual situation taking the budgetary rebate into account

fact than the calculation is also on the basis of the processed products as opposed to the raw material, so that liquid milk does not attract any instrument cost. In this sense, the combined figure for milk and milk products is a more representative figure than for any of the separate items. The international trade offset, incorporating the effect of EC policy on world markets, is strongly negative for pigmeat. This results from the estimate of the world price change as the EC eliminates the CAP. In this case pigmeat exports increase from the base level as a consequence of the interaction of the own and cross-price elasticities, thus depressing world prices. In the terms of Figure 1, PWa is above PWe, which leads to a negative trade offset.

The resource cost estimates on a commodity basis are rather surprising and not individually reliable. The reason for this is that this component is estimated as a residual (the difference between the total PSE and the other elements), although the total for all commodities is constrained to equal the primary estimate of resource cost which is made on a country basis (see below). Thus the resource cost includes all inaccuracies in the other estimates, of which the instrument cost is currently the most suspect. Once again, the aggregate estimates for product groups are more reliable than the individual product estimates, especially for milk and milk products.

Table 4 - Estimates of Transfer Efficiency and Components by Commodity

	NIC%	ITO%	IPO%	RC%	PSG%
Common W.	9.57	1.92	37.21	2.62	48.67
Durum W	11.23	4.61	29.73	22.40	32.02
Barley	3.75	3.85	47.96	6.96	37.48
Maize	0.00	4.04	53.20	14.46	28.31
Other Cers.	4.46	1.21	44.69	-5.11	54.75
Sugar	34.67	5.97	10.82	-28.67	77.21
Pigmeat	1.82	-54.39	96.45	14.84	41.28
Poultry	0.00	4.58	28.15	13.13	54.14
Eggs	0.00	1.43	50.53	20.08	27.96
Beef & Veal	11.96	13.56	25.69	1.09	47.69
Sheepmeat	3.01	13.24	46.68	19.16	17.90
Liquid Milk	0.00	46.26	14.49	33.08	6.18
Butter	15.26	29.47	11.31	-3.41	47.37
SMP	59.24	45.32	16.70	-59.82	38.56
Cheese	0.65	38.25	8.81	-0.49	52.77
Olive Oil	10.76	19.67	0.00	52.53	17.04
Cereals	6.05	3.00	43.00	7.05	40.90
Milk & Products	4.77	42.51	12.92	16.61	23.18
Other Livestock	6.45	1.36	40.92	8.88	42.40
Total	6.22	24.46	24.77	12.41	32.13

By country, the results reflect differences in commodity mix. However, two other major factors influence the country estimates: first, common financial responsibility for the CAP, whereby the taxpayer cost of support is related to shares of total GNP in each country rather than the national incidence of CAP spending; second, the effects of the Green

currency arrangements, whereby domestic prices differ from the common price through the monetary compensatory amounts (MCAs). It is these two factors which explain why the resource cost is higher in Germany, the UK and Belgium/Luxembourg than elsewhere. Resource cost by country is estimated in the conventional fashion, as the difference between producers' gains and consumers' and taxpayers' costs of the policy.

Table 5 - Estimates of Transfer Efficiency and Components by Country

	NIC%	ITO%	IPO%	RC%	PSG%
F.R.Germany	7.29	16.68	16.89	28.66	30.48
France	4.32	26.32	26.65	9.62	33.09
Italy	6.42	30.99	31.38	-17.47	48.68
Netherlands	5.31	23.03	23.32	7.02	41.31
Belg./Lux	3.12	18.69	18.93	24.48	34.78
UK	6.22	26.54	26.87	21.35	19.01
Ireland	14.83	32.17	32.57	-5.86	26.29
Denmark	6.49	31.08	31.47	-2.63	33.60
Greece	24.30	73.00	73.92	-88.09	16.88
EC 10	6.22	24.46	24.77	12.41	32.13

V A NON-DISTORTING POLICY ALTERNATIVE - THE PRODUCERS' ENTITLEMENT GUARANTEE.[8]

These results strongly suggest that an alternative policy could be devised which would improve the transfer efficiency of the Community's farm policy. Such a policy alternative is the Producers' Entitlement Guarantee (PEG). Under the PEG, support payments are limited to supply quantities which are no greater than free trade supply quantities and all other market intervention is eliminated. Provided that these 'pegged' quantities are fixed at both the national and the farm level, then any support payment based on these quantities will not distort production. The incentive price on both the supply and demand sides of the market will be the free-trade market price.

The analysis reported above for the transfer efficiency of existing policies identifies these non-distorting PEG quantities, as the quantities which would be produced under multilateral free trade. In addition, the analysis identifies the necessary PEG payment per unit, either to maintain producer surplus gain in the face of trade liberalisation, or to limit taxpayer spending to current levels. Since the PEG implies a shift of support burden from the consumer to the taxpayer in Europe, the taxpayer implications of the alternative are clearly of considerable importance. Although there would be a capital cost associated with the establishment of the PEG licences to receive support at the farm level throughout the Community, the running costs of such a support system should not exceed the instrument costs estimated for the current policy. All the remaining leakages would be eliminated under the PEG system.

8 Further discussion of this alternative can be found in IATRC, 1988 and Harvey, 1989.

PEG quantities in relation to current production for the EC are shown in Table 6. In general, the reductions required from current (1986) production levels are modest, with the exceptions of sugar, milk and beef, while the PEG quantities for pigmeat and eggs are above current output.

Table 6 - Changes in production from 1986 levels to achieve PEG quantities (%)

by Commodity	% change	by Country	% change
Common Wheat	-11.0	West Germany	-5.2
Barley	-3.5	France	-6.9
Sugar	-28.7	Italy	-7.4
Pigmeat	+17.7	Netherlands	-1.5
Poultry	-6.6	Belgium/Luxembourg	-5.1
Eggs	+6.1	UK	-3.6
Beef & Veal	-23.3	Ireland	-9.1
Sheepmeat	-9.3	Denmark	-0.6
Milk	-23.4	Greece	-0.3

The country differences are largely explained by differences in commodity mixes, though are also influenced by the level of national prices versus the common free-trade world price. Table 7 shows the PEG premium as a percentage of the free trade world price which would be necessary to preserve the current (1986) level of producer surplus gain. These premia are rather larger, and raise the question of the financial cost to the EC Budget of a change to a PEG system of support.

Table 7 - PEG Premium as % of Free Trade world price to preserve current producers' gain

Commodity	% premium	Country	% premium
Common Wheat	37.4	West Germany	22.2
Barley	26.2	France	20.1
Sugar	67.0	Italy	22.3
Pigmeat	4.4	Netherlands	18.0
Poultry	26.3	Belgium/Luxembourg	22.8
Eggs	9.2	UK	12.5
Beef & Veal	21.4	Ireland	11.2
Sheepmeat	13.1	Denmark	13.6
Milk	38.8	Greece	4.5

The potential costs of a PEG system in the EC are shown in Table 8. Here the estimated producers' surplus gain (PSG) is compared with the current (1986) FEOGA spending in each country (as estimated in the model). The comparison is done in two ways: first, expressing the PSG as a percentage of current taxpayer spending gives the extent to which existing producer benefits can be maintained under current tax spending levels; second, as the change in tax spending in each country which would be necessary to exactly maintain existing producer benefits.

Table 8 - PEG Costs versus Current Spending

	PSG (m ecu)	Net FEOGA spending (m ecu)	% Cover @ existing spend (%)	%Δ in Tax to maintain PSG (%)
West Germany	5763	6102	105.88	-5.88
France	6449	4925	76.37	23.63
Italy	3269	3253	99.51	0.49
Netherlands	1930	1071	55.49	44.51
Belgium/Luxembourg	949	779	82.09	17.91
UK	1903	2990	157.12	-57.12
Ireland	381	194	50.92	49.08
Denmark	870	446	51.26	48.74
Greece	141	343	243.26	-143.26
EC 10	21655	20103	92.83	7.17

On the country by country basis, the results confirm the obvious feature of the current CAP versus a PEG system, namely that the current gainers from the policy would face the least coverage of existing producers' surplus gains at current tax spending levels. By the same token, these countries (France, Netherlands, Ireland and Denmark) would face the greatest increase in tax burdens to maintain current producers' gains. However, for the community as a whole, a very modest increase in tax spending would be required to preserve existing producers' gains. If it is accepted that the PEG limits on support could also be targeted, by for instance limiting support per farm to a predetermined level, then even this modest increase could be avoided while maintaining current CAP benefits at the farm level for the vast majority of farms. As Brown (1989) has shown, the current distribution of CAP benefits (albeit differently estimated) is heavily skewed towards the larger farms, which cannot accord with usual concepts of equity and is difficult to reconcile with any notions of efficiency.

Figure 8 - Proportion of farms which could be fully protected at existing tax spending levels

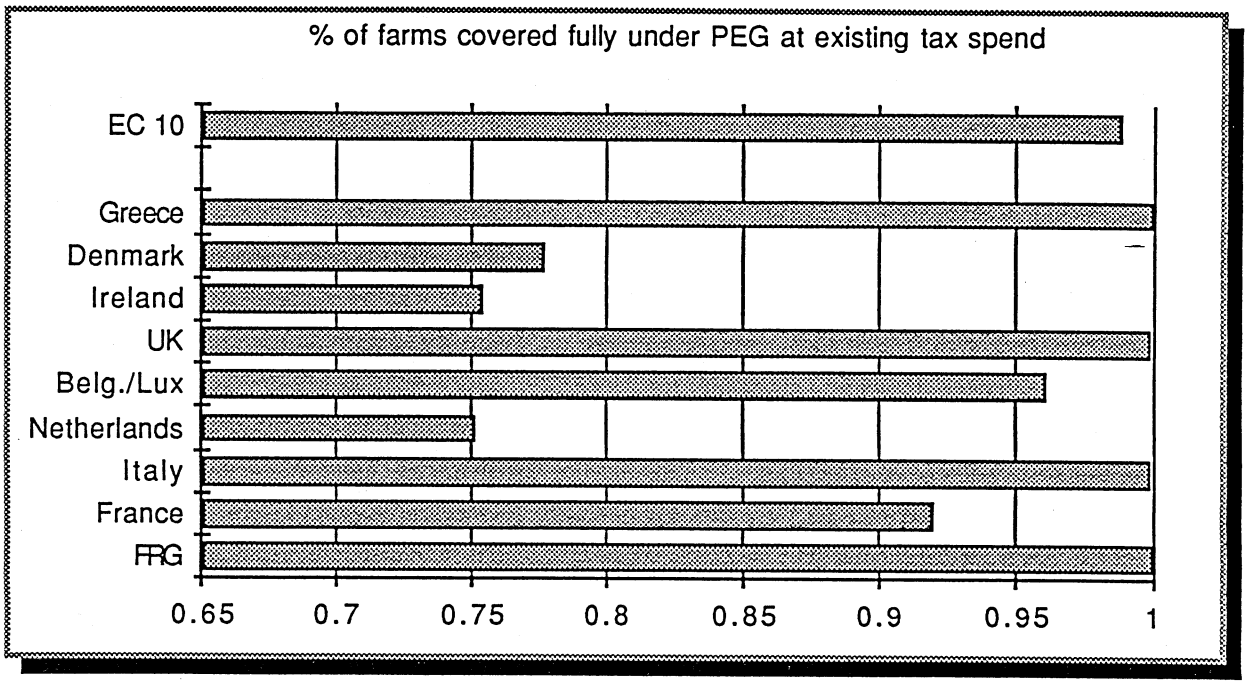


Figure 8 shows the proportion of farms (holdings) which could be fully 'protected' at current levels of tax spending on the CAP. Given a PEG system which limited support to free trade production quantities at the Community level, and given the distribution of these PEG limits over all farms, then current tax spending is sufficient to provide a premium (limited deficiency payment) over world market prices such that the current producers' gain per farm is maintained for 98 per cent of the Community farms. In only four countries is this percentage less than 95 per cent (France, 92 per cent; Denmark, 77 per cent, Ireland and Netherlands 75 per cent). It has to be admitted, however, that some administrative burden would slightly reduce the proportion of farms which could be fully protected. Farm organisations would no doubt be rather nervous of the future vulnerability of support which is clearly identified in national and Community budgets, and thus subject to annual if not continual political review. Nevertheless, the rest of society has the right to expect such regular review of support payments. In addition, it may not be seen as in the farm organisations' interests to re-distribute support in favour of the more numerous but smaller farmers.

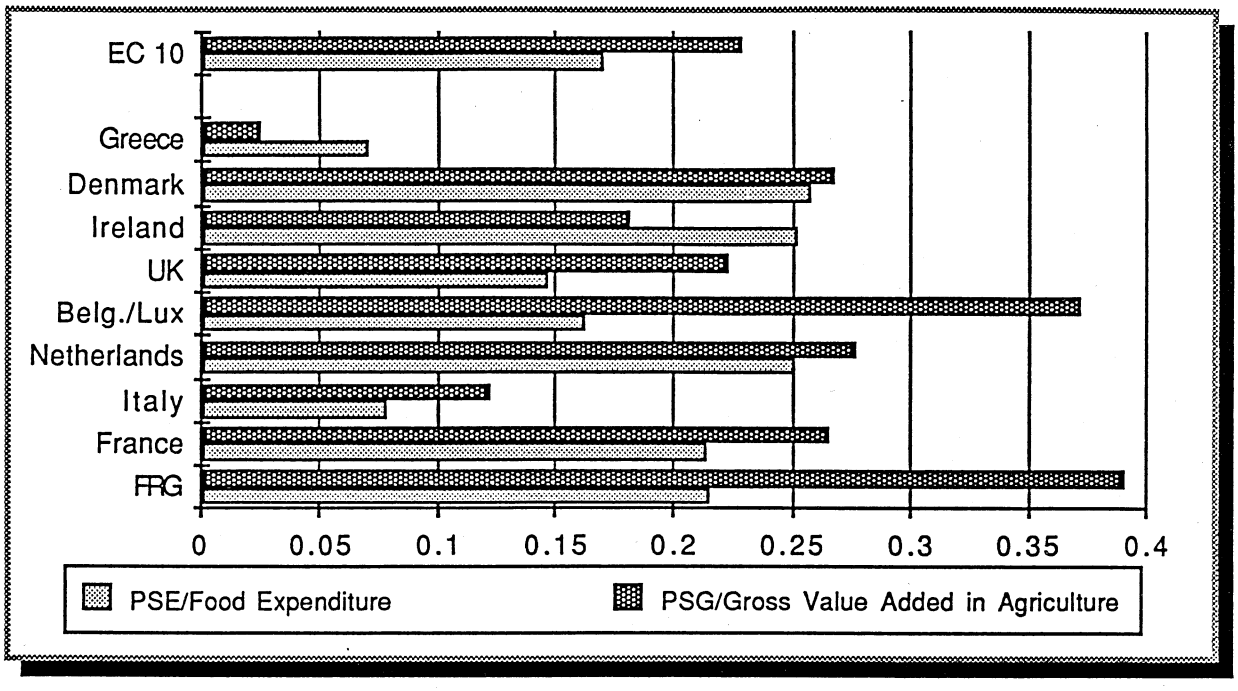
VI CONCLUSIONS

These results strongly suggest that the present CAP is extremely inefficient in transferring income from consumers and taxpayers to producers. The largest leakage of benefits in the complex transmission process results from the interaction between the Community and the international market, both through the effects of the CAP on world prices (the international trade offset) and through the effects of other countries policies on world prices (the international policy offset, which the CAP transfer mechanism must first overcome, before any benefit can be passed to producers). This inefficiency can only be resolved through international co-operation. This is precisely the object of the current round of GATT

negotiations. The United States and the Cairns Group are pressing for substantial reductions if not elimination of trade-distorting policies so as to reduce or eliminate these international consequences for world prices. A major factor in resistance to the introduction of less distorting subsidies and shifting the burden of farm support from consumer to taxpayer has been the apparent impossibility of maintaining current support levels within current budget constraints. These results indicate that this resistance is unfounded. Current support levels can be maintained for the vast majority of Community farms within existing budget expenditure levels by adopting a limited support system such as the PEG, because of the extreme inefficiency of the present system of support.

Meanwhile, the results of this analysis suggest that the current PSE being paid by consumers and taxpayers throughout the Community amounts to a 17 per cent tax on food, expressing the PSE as a ratio of food expenditure, and provides support to the farming sector, as producers' surplus gain equivalent to 23 per cent of agricultural gross value added (Figure 9). The estimates reinforce a familiar observation that the effects of the Common Agricultural Policy are far from common throughout the Community, either between member states or between interested groups of society.

Figure 9 - Cost and benefits of the CAP revisited



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