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The CAP and the Unequal Public Support to European Agriculture

Abstract: In order to measure the effect of public support on production, aggregate measures are constructed as effective rates of protection, including all government interventions that affect supply. These measures are constructed considering effective protection rates as a superlative index number, which requires an econometric estimation of the price aggregator functions. This makes it possible to measure the effect of public intervention of 10 European countries, between 1973 and 1989. The unequal public support between EC countries is due to output price differences under the CAP regime. It is also caused by a very unbalanced protection and support across commodities.

INTRODUCTION

In spite of 30 years of Common Agricultural Policy (CAP), the agricultural sector does not benefit from the same level of protection and support in all European countries. An explanation is that the prices received and paid by producers are very different across countries. A study based on the construction of Purchasing Power Parities (PPPs) for the agricultural sector shows that output price differences are considerable across countries, whatever the exchange rate used (Barkaoui *et al.,* 1992). Not all these price inequalities are caused by protection related measures. Some are caused by inefficiencies in the marketing sector or the existence of surplus areas and importing areas. However, national subsidies, such as subsidies through Value Added Tax (VAT), increase output prices in certain countries. CAP regulations, such as the sugar regime, also induce large discrepancies in average prices. The effect of institutional prices set in ECUs combined with the discrepancies between the Green Exchange Rates and the rate of PPP create considerable differences in prices faced by farmers across countries (Bureau and Butault, 1992).

Another explanation of the unequal effects of the CAP is that protection and public intervention in markets are very different across commodities. The way countries benefit from the CAP depends on their output mix, but also on their input mix. For example, a tariff on wheat could offset the protective effect of a tariff on milk, depending on the importance of wheat input in milk production. Since some countries produce milk with land using techniques and other countries rely heavily on feedstuffs, the negative protection on the input mix varies across countries.

Measures of protection, while not measures of policy impacts, can be used to evaluate the magnitude of sectoral income transfers and distortions in resource allocation (Josling and Tangerman, 1989). Instead of dealing only with protection at the borders (that is, tariffs and import quotas), we measure public intervention which affects production decisions. We consider the effects on producers and we focus on protection and support which are supply response distortive. As a result, production decoupled transfers are not included. However, we include all policies that affect the price of a product and all payments which are tied to output, but not reflected in the market price. An aggregate measure is used that incorporates the wide variety of policy instruments affecting supply

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response including tariffs, import quotas, price support achieved through intervention, production quotas, export subsidies, consumption subsidies, subsidies and tariffs on inputs. Although we will use the term 'protection' in the text to remain consistent with a familiar literature, what we measure is the supply-distortive public intervention. For instance, a very small tariff is imposed on soybeans imported by the community. Nevertheless, our nominal rate of 'protection' for soybeans is very high, since a premium given to the crusher for using European oilseeds leads to a price received by the farmers that is much higher than the world price.

EFFECTIVE PROTECTION

The rate of effective protection is the appropriate indicator of the effects of protection on producers. The Effective Protection Rate (EPR) is the rate of protection provided to the value added in the production of a product (Corden, 1987). Nominal protection (that is, protection on the final output) is a relevant concept if the objects of interest are outputs which enter the consumers' choice function. Protection of value added is more appropriate as a measure of protection in the production process (Vousden, 1990). The EPR is the most satisfactory concept to capture the incentive impact of policy on production structure (Gruebel and Lloyd, 1972; Tsakok, 1990). EPR measures have a direct interpretation, which is that the producers of a country with an EPR > 1 are receiving a greater return on land, labour and capital, given intervention, than they would have without intervention. Thus, the EPR sums up the net result of several trade and non trade taxes, subsidies and policies.

Two basic definitions of an EPR have been developed in the literature. Corden (1966) defines the EPR as the proportionate increment in value added per unit of output brought about by the protection structure (over its free trade value). Leith (1968) defines the EPR as the proportional change due to the tariff structure in the 'price' of the value added, with the assumption that such a price can be defined meaningfully. Most studies assume a Leontief technology. In this case the Leith and Corden measures are equal. However, when substitutions between inputs and outputs occur, the Leith measure is superior to the Corden measure (Bhagwati and Srinivason, 1984; Gruebel and Lloyd, 1972).

A THEORETICAL INDEX OF EFFECTIVE PROTECTION

Aggregate measures of support such as Producer Subsidy Equivalents or PSEs (OECD, 1987; Webb, Lopez and Penn, 1989) are commonly used as indicators of barriers to trade and government intervention in agriculture. However, the inconsistency of these measures with economic theory generates numerous problems. Among many theoretical problems, the PSEs assume that quantities produced under government intervention are equal to the quantities produced without intervention. This assumption is particularly unrealistic for the agricultural sector because of high substitutions between crops and between inputs when prices vary. Using the Leith concept based on the price of the value added, one can take advantage of the work of Bruno (1973) and Woodland (1982), which provides a rigorous microeconomic foundation for this analysis. It is possible to take into account the substitutions between inputs and outputs that would occur if public intervention was

removed. Therefore, measures of effective protection can be constructed as a 'superlative' index (Diewert, 1976) of the price of the value added.

Denote y a vector of outputs y_j, $j = 1, ..., N$; p is the vector of their prices. Denote x a vector of intermediate (variable) inputs x_i, $i = 1, ..., M$; w is the vector of their price. Denote $-z$ a vector of K primary factors $-z_k$, $k = 1, ..., K$. The technology can be represented by a revenue function:

$$(1) \quad R(p,w,-z) = \max_{y,x} \{py - wx : (y,x,-z) \in U\}$$

Effective protection requires a measure of the price of the value added. In order to ensure the existence of a unit value added function, it is necessary to assume separability (Bhagwati and Srinavasan, 1973) and constant returns to scale. We assume that the set of possibilities U is a cone and that the technology can be represented by a transformation function $T(y,x,-z) = 0$ which is of the form $T(y,x,-z) = T^*(y,x,-F(z)) = 0$, with F non decreasing, concave and linearly homogenous in z.

The interpretation of this separable form for T is that primary inputs combine to produce an amount $F(z)$ of a fictional intermediate product, real value added. This is then used along with other intermediate inputs to produce outputs (Woodland, 1982). Woodland (1977) shows that, under these assumptions, the revenue function, Equation (1), is multiplicatively separable. Therefore, the maximum value added, Equation (1), can be written as a product of two functions:

$$(2) \quad \begin{aligned} V(p,w,z) &= \{R(p,w,-z): T^*(y,x,-F(z)) = 0\} \\ &= \max_{x,y} \{py - wx: T^*(y,x,-F(z)) = 0\} \\ &= \pi(p,w)\ F(z) \end{aligned}$$

$$\text{where } \pi(p,w) = \max_{x,y} \{py - wx: T^*(y,x,-F(z)) = 0\}$$

The nominal value added function is the product of a price index $\pi(p,w)$, the price of the value added, and a quantity index $F(z)$, the quantity of value added. The Leith measure of effective protection is the percentage change in the price of the value added due to protection. Denote p^p, w^p the price vectors under protection and p^w, w^w the world price vector, the EPR is:

$$(3) \quad \text{EPR} = \pi(p^p,w^p) / \pi(p^w,w^w) - 1$$

We assume that world prices are observable. This requires the assumption that they are not affected by the observed protection, that is, the small country assumption. If the technology is assumed to be Leontief, one can postulate input output coefficients which are constant in the two price situations, and the computation of EPR is straightforward. This would lead to a 'PSE type' measure of EPR, using the x and y observed in the protected situation. Since this assumption is unrealistic, the calculation of effective protection requires the knowledge of the function π.

In this particular case, we cannot avoid the estimation of the function π. The EPR, as defined above, can be seen as a price index for a composite good between two price situations. It is similar to the usual index numbers defined from a representation of the technology and used for time series comparisons (that is, the Konus, Allen, Malmquist, or Divisia indexes; see Diewert, 1981). In the theory of index numbers, one wants to approximate these 'true' theoretical indexes (e.g., Konus' true cost of living index) using only observable data. Here, we face exactly the same problem, since the EPR aims to approximate the 'true' price index of the value added. If we used only the x and y observed in the protected situation, we would get the equivalent of a Laspeyres index, which is a poor approximation of the true price index. In index number theory, it is well known that the Laspeyres index is an upper bound of the theoretical index (see Diewert 1981, 1986). Therefore, the 'PSE type' measure, which assumes that the quantities remain constant when shifting from a protected to a non protected situation introduces a considerable bias in the estimation of protection. In index number theory one can derive superlative indexes which do not cause such a bias (Diewert, 1976). However, all superlative prices indexes use data on quantities in both price situations, that is, protected and unprotected prices. Since quantities in the world price situation are not observed, econometric techniques must be used to estimate the price index of the value added as a parametric aggregator function. When a parametric aggregator function is estimated, the price index in the world price situation can be obtained from the world price of the individual commodities. The parametric form must be flexible in order to allow for substitutions between commodities.

THE ESTIMATION OF PRICE AGGREGATOR FUNCTIONS

A flexible functional form is specified for the valued added function. World prices are observed for homogenous commodities. This involves a very large number of goods. It is impossible to estimate a flexible functional form on a large number of commodities for practical reasons. A solution is to make further separability assumptions and to use nested aggregator functions, as proposed by Fuss (1977). This can be done using a two stage optimization procedure. The value added is a function of a limited number of aggregate commodities, that is, intermediate inputs X_h and outputs Y_s (for example, grains). Each of the X_h and the Y_s is itself a function of a subset of individual commodities x_i and y_j (for example, wheat, barley, etc.). The list of individual commodities includes 19 outputs and intermediate inputs. The nested structure of the nested price functions is described in Bureau (1993). This approach is valid under the assumption of homothetic separability between subgroups of commodities. The two stages are integrated through the estimation in a first stage of an instrumental variable for the aggregate price index of the separable group of commodities Y_s and X_h. The value added function is the upper stage of the model, and is estimated as the second stage in the optimization procedure. The practical implication of a separable form for the value added function is that we assume that the quantity of aggregate Y_s (and X_h) is chosen in a first step, and then the optimal mix of these aggregate quantities is chosen. Thus, the mix of the components of Y_s (that is, the relative level of the elements of the vector y_s) depends only on the price of the commodities included in the aggregate Y_s, and is independent of the level and the mix of other aggregates as well as the prices of commodities outside Y_s.

A Diewert and Ostensoe (1988)'s quadratic normalized restricted function was specified for π and for the aggregator functions defining the price P_s of the aggregate Y_s. This particular functional form has the advantage that curvature conditions can be imposed globally (and not locally as in the case of a translog function) without destroying the flexibility of the function (Diewert and Wales, 1987). Moreover, the imposition of multiplicative separability leads to a simple form of the function. The price aggregator functions for the aggregate Y_s and X_h were estimated by FIML, jointly with share equations. The fitted values of the prices are used as instruments in the estimation of the value added function. The value added function is estimated with an iterative Zellner procedure, which leads to a three stage iterative least squares. Curvature conditions are imposed as in Wiley *et al.* (1973). The specification of the function, the econometric procedure and the estimation results are described extensively in Bureau (1993). The result is a parametric expression of π as a function of prices p and w. This function gives a fitted value for $\pi(p^p, w^p)$. The fitted value of $\pi(p^w, w^w)$ is constructed by replacing the protected prices by the world prices in the function. The EPR is defined as in Equation (3), that is, as a ratio of fitted values minus one.

DATA

The data are described extensively in Bureau (1993). The ratio of the observed protected price and the world price of an individual commodity define a nominal protection rate. The protected price is a price at the farm gate level. The data come from various sources, such as Eurostat's price data base, the Farm Accountancy Data Network, and information on markets. In the case of beef and milk, the intervention price is used since other data sources were not consistent with the data available for the world prices. Milk is assumed to be composed of milk powder and butter, and the intervention price is also used. However, the common intervention price is corrected for price differences across countries that correspond to differences observed in the price of the raw product. World prices rely mainly on the unit value (FOB) of the exports outside the European Community (source Eurostat external trade data base). When a commodity is not exported in large quantities, the price is the CIF import price. In the case of beef, there are quality differences between the meat traded and produced, and the nominal protection rate was constructed from budget sources, that is, on the basis of unit refunds. In addition to the difference between world and protected prices, the nominal protection rates include the unit value of direct payments, and all forms of premiums. These data come from the detailed list of expenses of the European Guidance and Guarantee Fund provided by the EC Commission. A detailed list of the data and procedure used is available upon request. Rates of protection have been compiled since 1973, except for Greece where data are missing prior to 1980. Table I shows nominal rates of protection for selected commodities, average 1973–1989.

DIFFERENCES IN EFFECTIVE PROTECTION IN EUROPE

Table 2 presents the effective protection rates for the periods 1973–89 and for the periods 1985–89 and 1974–78 (the year 1973 is not very meaningful for the countries joining the European Community).

Table 1 *Nominal Rates of Protection, Selected Commodities: Average 1973–89 (1981–89 for Greece)*

	Germ	France	Italy	Neth	Bel-Lu	UK	Irel	Denm	Greece
Wheat	1.39	1.14	1.53	1.27	1.26	1.20	1.11	1.26	1.34
Barley	1.45	1.17	1.62	1.35	1.42	1.32	1.16	1.36	1.39
Corn	1.64	1.26	1.73	-	-	-	-	-	1.40
Sugar beets	2.04	1.70	2.28	1.87	2.04	2.01	2.08	1.85	2.37
Rapeseed	1.79	1.28	1.22	-	-	-	-	-	-
Soybean	-	-	-	-		-	-	-	1.49
Sunflower	-	1.10	1.40	-	-	-	-	-	1.39
Olive oil	-	1.22	1.29	-	-	-	-	-	1.16
Milk	1.14	1.10	1.21	1.10	1.12	1.08	1.07	1.12	1.13
Poultry	1.46	1.12	1.49	1.60	1.31	1.27	1.33	1.70	1.74
Pigmeat	1.18	1.20	1.29	1.18	1.35	1.06	1.10	1.14	1.22
Beef	1.62	1.63	1.75	1.75	1.71	1.48	1.34	1.43	1.83
Sheep	2.21	2.34	2.82	2.74	2.38	1.73	1.90	1.90	2.93

The EPR can be interpreted as the extra returns to an aggregate of primary inputs (that is, capital, land and labour) provided by public intervention. An EPR of 0.32 for example, means that the returns to these aggregate primary inputs is 32 percent larger than what it would have been under the world market price. Therefore, this indicator measures how much of the government support has ended up in the manager, worker, capital-owner and landowner's pockets. After that, some of this government support has generated returns to suppliers of intermediate inputs. These intermediate input suppliers include grain producers whose grain is purchased by some animal producers. The intermediate input suppliers also include foreign exporters. For example, it is well known that one effect of European public intervention is to contribute to financing the US ethanol program, through an increase in the returns to the corn gluten feed exported to the European Community. One step further would be unravel the effect of public intervention as returns to capital, land and labour in order to investigate how much public support contributes to higher returns to self-employed labour. However, in the typical European family farm, decisions regarding the household are not always separable from decisions regarding the production process. Land is most of the time owned by the manager. Returns to capital may differ from the market interest rate, even for long periods of time (which rules out an interpretation in terms of short term gaps between ex-ante and ex-post returns). This makes it difficult to single out the returns to the self employed labour provided by public intervention.

Belgium–Luxemburg, The Netherlands and Germany obtained the highest EPR over the 1973–89 period. This suggests that the support provided by the CAP has increased the returns to primary factors in those countries more than in the other European countries. Italy, France, Ireland and Denmark obtained a lower EPR over the 1973–89 period. The comparison between the 1974–89 period and the 1985–89 period shows that the EPR has decreased for Germany and The Netherlands, while it has increased for France, the United Kingdom and Ireland.

In the beginning of the period, Ireland and the UK had the lowest rates of protection in Europe, since UK and Irish prices were relatively low prior to the EC membership. In

Germany, Belgium and The Netherlands, the high rate of protection in the beginning of the period was mostly due to the high prices of beef and pigs relative to world market prices. French prices were low for grains and milk. Since France was a major European exporter, prices were close to the intervention price. Poultry prices were also low, since a large share of production consisted of frozen poultry for export in very competitive Middle East markets. Prices were much higher in Italy. However, the large production of vegetables, fruits, and olive oil contributed to a low rate of protection. In France, as well as in Italy, grains were significant components of feedstuffs. This also contributed to a low EPR since protection on inputs has a negative effect on the EPR.

During the 1970s, UK and Irish prices increased subsequent to EC membership. The level of protection in these countries peaked in the 1980s. World prices for pigs became very low when the EC stopped being a major importer. This caused the rates of protection in Germany, The Netherlands, Denmark and Belgium to peak in 1979.

The protection on grains and oilseeds increased more rapidly than the protection on other commodities in the 1980s. This was mainly due to a reduction in price for grains on the world market. The increase in oilseed production contributed to high EPRs in France and Italy. Direct payments also increased for some Italian crops such as olive oil and tobacco. As a result, major grain producers, such as France, the UK, and Italy show an increasing trend in the EPR over time. Concurrent with a decrease in pig and beef prices in the Netherlands, Germany and Belgium, the trend in the EPR is negative.

Table 2 *Effective Protection Rates*

Average	Germ	France	Italy	Neth	Bel-Lu	UK	Irel	Denm	Greece
1973–1989	0.32	0.21	0.16	0.34	0.43	0.28	0.24	0.25	-
1973–1978	0.35	0.14	0.15	0.36	0.42	0.10	0.10	0.6	-
1985–1989	0.28	0.35	0.17	0.20	0.37	0.39	0.30	0.25	0.23

Table 3 *Spatial Price Indices of Aggregate Agricultural Output*

Average	Germ	France	Italy	Neth	Bel-Lu	UK	Irel	Denm	Greece	EC
1973–1989	109	96	103	95	103	97	91	103	95	100

Source: Barkaoui *et al.* (1992).

Note: The spatial index is the ratio of the PPP for agricultural output to the nominal exchange rate. The base is 100 for the EC-10 aggregate.

At the end of the period (1985–89), major grain producers were among the most protected countries due to the very low world market prices for grains between 1986 and 1988, which led to a producer price which was up to two and a half times the world price. Although it is not clear in Table 2, this was no longer the case in 1989. After 1988, the nominal protection on grains had gone back to lower levels due a decrease in producer prices and negative levies. At the end of the period, nominal protection on pigs had become very low in all countries but Italy. Although nominal protection on milk was high after 1985, there is a considerable decrease in 1989, due to higher world prices and lower interior prices (levies). During 1981 to 1989, the UK, Belgium, France and Ireland were

the countries with the highest EPR. Except for Belgium, these countries had the lowest EPR in the beginning of the period (1973–78).

CONCLUSION

Effective rates of protection provide a theoretical framework for measuring the level of public support to producers. EPRs can be used to measure various policies, including protection at the border and interior support. They can be expanded to include all forms of public intervention which distort the producer's supply response. In this case, they are more consistent with microeconomic theory than some other alternative aggregate measures of support such as the PSEs which include production decoupled support.

In this study, we focused on the unequal effects of protection and public support generated by the CAP. The results illustrate that the CAP increases returns to primary factors unequally among countries. The unbalanced structure of the protection in Europe is a major explanation. All commodities are not supported the same extent under the CAP. Countries like France and the United Kingdom have benefited from the considerable support on grains. France and Germany also benefited from the considerable support on beef. Meanwhile, countries where there are products with little support, such as flowers in The Netherlands and vegetables in Italy, have less benefited from the CAP support.

The unequal public support measured by the EPR also comes from price differences across countries. Bureau and Butault (1992) have pointed out the large discrepancies in prices received by European producers. The computation of PPPs for the agricultural sector by Barkaoui *et al.* (1992) illustrates the magnitude of price differences for the aggregate output (see Table 3). These differences are a major explanation of the ERP differences as measured in Table 1.

One should keep in mind the limitations of this study. The EPR results are conditional on the assumption that the European Community is a small country. This assumption is obviously heroic for products such as milk, since EC exports have a considerable influence on the world prices. These results show trends in the world prices that are sometimes exogenous to the CAP. For example, the decrease in EPR of some countries corresponds to changes in the world price of some important commodities, more than it corresponds to real policy changes. Another reason for the differences in EPRs is that each European country does not have the same input mix. The larger the share of intermediate input in the total input, the higher is the unit return to the primary factor. This contributes to an EPR which is higher in the Netherlands than in Ireland, even if the nominal protection on the outputs (that is, the returns to all inputs) are comparable in both countries.

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DISCUSSION OPENING – Elisbetta Croci-Angelini *(Siena University, Italy)*

It seems to me that the paper I am here to discuss is quite accurate and I do not have much to object to. The results — striking as they may appear and with the added characteristic of taking into account more elements than usual — are fairly much in line with the common knowledge that the CAP, while unable to avoid undesired side effects, has not managed of achieve its goals. However, I would like to attract your attention to a few points related to the subject of the paper.

At the very outset, the author argues that 'In spite of 30 years of Common Agricultural Policy (CAP), the agricultural sector does not benefit from the same level of protection and support in all European countries'. Some (I believe not rhetorical) questions arise from this sentence. (a) Why should they have benefitted from the same level of protection to the same extent? (b) How do you measure the benefits from protection? (c) Why is the member country's level of protection the relevant level?

I would like to discuss these issues and find out on what concepts they are based. The first question refers to a concept of competition widely shared by our profession. Since the very beginning of the experiment of economic integration in Europe, it was held among the 'founding fathers' that competition was to be granted within the EEC. This concept of competition often refers to a race (with some initial line up) and is based on the myth of equality of opportunities. In economics this can be likened to a comparative statics exercise involving a one-period economy, after which the winner of the competition is easily singled out and rewarded. Competition is deemed good because the rivalry implicit in it, by guaranteeing the survivial of the fittest, leads to an efficient allocation of resources. There is, however, a hypocritical side to it, as this idea of competition describes the world we experience in a grossly insufficient way. We live in a multi-period economy where the original line up does not usually take place, rules may change while running and many elements, forbidden in a proper race, are de facto either admitted or tolerated. History counts and the winner tends to keep winning.

The effective rate of protection (ERP) is certainly more accurate in pointing at bonuses, penalties and the like, but it still refers to this very short term concept of competition. No wonder that the common level of protection has benefitted the agricultural sector of the various countries to a different extent, as the author correctly proves in his paper. This is certainly due to differences in the prices paid and received by producers, in the efficiency of the marketing sector, in national subsidies and VAT rates, as well as in the Green Exchange Rates, as the author points out, but the importance of a host of long term elements, ranging from the behavioural to the insitutional, and for brevity referred to as 'different structures', should never be overlooked. Indeed, this requirement was acknowledged by the 'founding fathers' when stressing the need of a structural policy whose role was quickly forgotten. Did the unequal public support contribute to a more or to a less fair competition in agriculture? Did it foster convergence or divergence of the structural elements, or was it neutral?

A second point refers to how to classify the supply-distortive public interventions (i.e. public intervention which affects production decisions) and measure the benefits from protection. In principle, all public intervention could be regarded as supply-distortive, but we can limit our scope to those elements which are cost-distortive at the producer's level. However, in evaluating the benefits from protection, all costs involved should be taken into account, not only the most obvious fixed and variable costs, but also all transaction costs and externalities, to come up with some measure of the opportunity cost which is the relevant concept. Again, this concept is grounded on a short term idea of competitive markets, which in turn makes all the more blurred the picture of what should be understood as the benefits of protection.

This leads me to the third point. Why are we so obsessed with measures and findings at the member country level? The obvious reason, in addition to the availability of disaggregated data, is the Council of Ministers' decision-making process. Yet, the implication is that however 'common' we would like to call it, it can only be a sort of

compromise among member counties, for which reason expecting even a faint level of economic optimality is far too unrealistic.

The member states supplement the CAP with their own national policies. Not only the CAP provides an unequal support to European agriculture, but national policies add to it and could have been modified, but have not been stopped, through the years. What does a map of national plus common public support reflect in terms of social equity and productive efficiency? What an ideal system would be, for stopping us short of pointing at these inequitable results? The common, as opposed to the national, attitude would suggest a public support which is equitable and efficient regardless of the (differing) benefits it may yield at the member state level. The national attitude, however, after over 30 years is still prevailing.

GENERAL DISCUSSION — R.M.W. Johnson, Rapporteur *(Ministry of Agriculture, New Zealand)*

Discussion flowing from Paavo Makinen's opening on the von Witzke and Hausner paper followed the line that there is no cure for the treadmill effect. Perhaps policy may delay the effect, lower farm prices should not be taken as a reason for automatic support. Questions were also raised about the realism of the authors' assumptions about the land market. Land markets may not be perfect.

Lynn Kennedy, who presented the paper, was questioned about the use of first order auto-regression on data (when trend is present) to test the model. This is not a rigorous test and will not reveal weaknesses in the model. Market conditions are not perfect for land (with regard to authors' market assumptions? He was also asked if there would be changes in consumer surpluses over time (Not so, said Dr Kennedy).

In opening the discussion on the Schmitz paper, Ewa Rabinowicz (Sweden) said that the paper is interesting but has some weak spots! He argued that the case for food security in Europe and developing countries is weaker than ever before and is not relevant to the issue of CAP reform. The measurement of a minimum standard should distinguish between supply and demand effects by separating the production and expenditure bases. The measure adopted of probability of falling below a critical level is too demand oriented. Account should be taken of whether there are physical limits to food availability in developing countries. Self-sufficiency in Sweden was no longer an issue. The stochastic properties of the model suggested should be explored further. There is a need to distinguish between real and nominal protection rates. In the case of developing countries, income distribution is important, and net importers could benefit from any reduction of prices following reform.

Further discussion of the paper centred on conditions faced by different LDCs and on breadth of the definition of food security. The paper states that effect of CAP is negative for LDCs because world market prices are lowered and are more volatile. However, there is a need to make a distinction between net food importing and net food exporting countries in LDCs. For importers, urban consumers have benefitted from low would market prices. Some of the audience thought that the price-lowering effect would be unlikely to be surpassed by the volatility effect. Regarding the impact of the reform of CAP, it was argued that the author should take account of substitutability of locally produced food (de Janvry and Sadoulet). If substitutability is high, higher world market prices induce higher domestic food production in LDCs. Food imports are lower. If substitutability is low, higher world food prices makes consumers in LDCs worse off.

It was also suggested that the gains net importing LDCs made from low world prices may have encouraged the large growth of the urban. It was also argued that the definition of food needs is too narrow. Two aspects that were raised concern the effect of transfers and food aid and the importance of distribution systems. When governments give aid in the name of food security, they look at shortages in production. Distribution systems are neglected. Sometimes, the crisis is caused by poor distribution systems and markets and not a failure in production.

Elizabetta Croci-Angelini (Italy), in opening the discussion on Bureau's paper said that paper has been carried out very carefully. It is interesting and informative that CAP has not guaranteed uniform protection to member countries. In terms of the conference agenda one should ask what effect this has on competition? It also raises the question of whether

countries should be protected to the same degree? It does not seem possible to equalize income by present methods. The results suggest that there should not be a CAP at all! Public interventions are supply distorting and it appears transaction costs are often neglected in evaluations of this sort. Their inclusion should enable better estimates of opportunity cost of such policies.

In further discussion, it was argued that the suggestion that payments of set-aside be left out of protection calculations should be disregarded. They should be included, because the balance is weighted too much in favour of farmers as it is. It was also suggested that the EPR rate for Germany (0.32) looks too low considering the large transfers that are involved.

Discussion participants included D.Gale Johnson (USA), Oeivind Hoveid (Norway), K. Pilgram (Germany) and Eric Tollens (Belgium).