EC Agricultural Policies and Their Contribution to Turbulence in Agriculture

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Abstract: The Common Agricultural Policy (CAP) of the European Community (EC) has contributed considerably to turbulence in agriculture. In this paper, a model of the determinants of EC price policies is developed and tested empirically. The results show that the annual decisions on agricultural prices in the EC could be largely explained by past agricultural income growth and the actual development of EC budgetary expenditures. The paper concludes with a discussion of the contribution of EC price policy decisions to domestic and international turbulence in agriculture.

Introduction

We live in a world of change, instabilities, and uncertainties that create turbulence from which agriculture is not exempt. Throughout the world, agricultural sectors are subject to intense government intervention. "Trying to understand the behavior of government is important for three reasons. First, the sheer size of government as a component of economic activities is large in many countries. Second, government is the primary means by which income and wealth are redistributed.... Finally, government policy tends to be pervasive in the economy." (Schuh, 1981.) Macroeconomic and agricultural policies are major sources of turbulence in agriculture. Understanding the forces underlying the policy making process may clarify why turbulence occurs and may lead to the development of strategies to reduce it.

The focus of this paper is on the Common Agricultural Policy (CAP) of the European Community (EC), which has contributed significantly to turbulence in agriculture. The CAP has distorted international trade, increased the instability of world market prices, and contributed to distortions of agricultural incentives in many LDCs. Farmers in the EC depend not only on supply and demand conditions but also on decisions about guaranteed agricultural prices; the determinants of those decisions are, however, still largely unknown. This paper presents some theoretical considerations and empirical results with respect to CAP decisions and then draws some conclusions on policy-related turbulence in agriculture.

Some Theoretical Considerations and Empirical Evidence

Due to space limitations, it is only possible to sketch a model of CAP formation here (for details, see Witzke, 1985). Such a model could be characterized by four pivotal elements: policy goal function, policy instrument function, policy behavioural hypotheses, and policy constraints.

The most popular interpretation of the CAP income goal is that average agricultural income shows growth according to nonagricultural income. If it is assumed that the nonagricultural income growth (μ) is constant over time, then:[2]

$$(1)\quad WY^{\sim}_{t} = \mu\,,$$

where $WY^{\sim}_{t}$ is the desired growth rate of agricultural income in real terms.

Assume further that there is only one commodity and that policy makers' expectations about real agricultural income growth without additional adjustment of the guaranteed price ($WY^{o}_{t}{}^{*}$) are Nerlovian:

$$(2)\quad WY^{o}_{t}{}^{*} = \Sigma\alpha_{1}(1-\alpha_{1})^{t-\lambda}WY_{\lambda-1}\,,$$

where WY is the actual income growth rate, and the expression is summed from $\lambda = 0$ *to* t. Subtracting equation *(2)* from equation *(1)* yields the gap between the desired agricultural income growth and the one expected in the absence of any adjustments of the guaranteed price:

$$(3)\quad WY^{\sim}_{t} - WY^{o}_{t}{}^{*} = \mu - \Sigma\alpha_{1}(1-\alpha_{1})^{t-\lambda}WY_{\lambda-1}\,.$$

The gap could be closed by variations of the level of price support:[3]

$$(4)\quad \tilde{WY}_t - WY^{\circ}_t{}^{*} = \pi \tilde{WP}_t + u_t,$$

where $\tilde{WP}_t$ is the desired nominal growth rate of the guaranteed price and u_t is an error term. Equations *(3)* and *(4)* imply:

$$(5)\quad \tilde{WP}_t = (\mu/\pi) - (1/\pi)\Sigma\alpha_1(1-\alpha_1)^{t-\lambda} WY_{\lambda-1} + v_t.$$

If the desired growth rate of agricultural income were the only variable that determined CAP decisions, $\tilde{WP}_t$ would be equal to the actual price policy decision. But there is a "political" price of the CAP. As public debates and political disputes in the EC during the last couple of years have shown, the EC budget expenditures can be considered the political price of EC price support. Assuming that CAP decision makers' expectations about the growth rate of budgetary expenditures are Nerlovian, we propose the following hypothesis about the effect of the growth rate of budgetary expenditures (*WB*) on price decisions:

$$(6)\quad WP_t = \tilde{WP}_t - \gamma\Sigma\alpha_2(1-\alpha_2)^{t-\lambda} WB_{\lambda-1},$$

where WP_t is the actual price decision in t. Equations *(5)* and *(6)* imply:

$$(7)\quad WP_t = (\mu/\pi) - (1/\pi)\Sigma\alpha_1(1-\alpha_1)^{t-\lambda} WY_{\lambda-1} - \gamma\Sigma\alpha_2(1-\alpha_2)^{t-\lambda} WB_{\lambda-1} + v_t.$$

Equation *(7)* expresses the price policy decisions as a function of past income and budget growth rates and a constant term that is determined by the agricultural income goal (μ) and the price policy parameter (π). Notice that the negative signs imply that both comparatively low past income and budget growth result in a relatively high price increase.

The following is one result of regression analyses run on the basis of equation *(7)*:[4]

$$(8)\quad WP_t = 6.316 - 0.828\, WY_{t-2} - 0.290\, WB_{t-0.5}.$$

$$(7.409)^{***} \quad (2.907)^{**}$$

The estimated coefficients show the expected signs and are highly significant, indicating that it is possible to explain CAP price decisions via past agricultural income and EC budget expenditures. Both variables are, however, endogenous. The estimates of the growth rate of agricultural income as a function of past price decisions are:[5]

$$(9)\quad WY_t = 1.759 + 1.390\, WP_{t-2}.$$

$$(4.048)^{**}$$

More than 70 percent of total budgetary expenditures of the EC have been due to agricultural price support measures. Those expenditures depend to a large extent on the world market prices in US dollars and the exchange rate of the European Currency Unit (ECU) against the US dollar (Witzke, 1985). A strong dollar and high world market prices of agricultural commodities contribute to a reduction of the level of protection in the EC (in terms of the ECU) and reduce export restitutions per unit and thus total budgetary expenditures. The results of a regression analysis of *WB* using the growth rates of world market US dollar prices ($WPWM^{\$}$) and the ECU/dollar exchange rate (*WER*) as exogenous variables are:[6]

$$(10)\quad WB_t = -0.8438 - 0.094\, WPWM^{\$}_t - 0.305\, WER_t.$$

$$(2.446)^{*} \qquad (3.965)^{**}$$

Contribution of CAP Decisions to Turbulence in Agriculture

EC decisions on agricultural market regime prices are characterized by considerable fluctuations over time (e.g., Tangermann, 1983) and represent an important source of instability and uncertainty not only for EC agriculture but also for other countries (e.g., Sarris and Freebairn, 1983). Those decisions are endogenous rather than exogenous and can largely be explained by past growth rates of agricultural income and budgetary expenditures. The understanding of that mechanism could aid in the prediction of the outcome of EC price decisions (thus reducing the uncertainty) and could also help avoid misinterpretations of CAP decisions (as occurred around the turn of the 1970s). Considering the relatively modest adjustments of market regime prices during that time and several publications by the EC Commission (1981a and 1981b), many experts began hoping that the CAP would be reoriented towards a reduction of protectionism (e.g., Council of Economic Advisors to the German Ministry of Agriculture, 1981). That belief turned out, however, to be incorrect, mainly because the forces underlying the decision making process of the EC had been neglected because they were unknown at that time. In fact, those relatively modest price decisions were not symptoms of a policy change but rather a consequence of comparatively high agricultural income growth and increase in budgetary expenditures due to high price rises in the past. Once there had been budget relief and relatively low agricultural income growth, the growth rate of guaranteed prices increased again.

We also live in an international world. The fact that EC price policy decisions are influenced by changing world market dollar prices and ECU/dollar exchange rate allows some interesting additional insights into some international policy interrelationships and repercussions. The present high value of the US dollar against the currencies that form the ECU reduces the difference between domestic EC prices and world market ECU prices and thus eases the budget situation, which in turn contributes to relatively higher increases of guaranteed prices in the EC. The arguments with respect to world market prices in US dollars are quite similar: comparatively high US dollar prices on the world market (caused, for example, by the 1983 drought in the USA or by the US PIK programme)[7] reduce export refunds per unit and thus EC budget expenses.

Although the quantitative effects are still unknown, lines of argument such as the following appear to be plausible. The comparatively high value of the US dollar against the ECU during the last couple of years has, *ceteris paribus*, eased the EC budget situation and thus contributed to comparatively high increases in guaranteed prices. As the large-country assumption holds for EC agriculture, the increased surplus production of the EC has caused relatively lower world market prices and thus contributed to agricultural income problems in other countries, additional income measures there, or both. Assuming that those other countries are not small in economic terms and that they introduce measures that in essence reduce their supply of agricultural commodities (such as a PIK programme), it becomes obvious that such measures in turn contribute to relatively high growth rates of guaranteed agricultural prices in the EC.

The US dollar will not always be overvalued. A devaluation could significantly increase the budgetary expenditures beyond their present level and seriously jeopardize the most recent attempt to consolidate the budgetary basis and thus create further financial and political turbulence in the EC. At present, it appears that the USA is not completely opposed to retaliatory measures against agricultural protectionism in the EC. But retaliation might be costly for the USA and might create the danger of a trade war. A devaluation of the US dollar, however, would not only remove the implicit US export tax but could also contribute to a reduction of agricultural protectionism in the EC without provoking a trade war.

Notes

[1]University of Minnesota. This research was supported by the Agricultural Experiment Station Project No. 14-65. My thanks to S.J. Thompson and G. Schmitt for valuable comments on an earlier draft of this paper.

[2]This assumption is identical to the assumption that CAP decision makers orient the agricultural income goal along the trend of nonagricultural income growth.

[3]In this paper, all growth rates are in real terms, except WP^- and WP, which are nominal growth rates. Alternative model specifications would be either to express all variables in nominal terms and introduce inflation explicitly or to formulate the model in real terms. Both model alternatives would require formulation of additional hypotheses about the formation of EC decision makers' expectations with respect to the inflation rate. The model presented here avoids that, which could be considered an advantage because of the few degrees of freedom in the empirical analysis. Moreover, the model formulation presented here is very similar to the EC Commission's "objective method," which was used in the 1970s to determine the desired nominal price adjustments.

[4]WP = growth rate of the weighted average of market regime prices in national currencies; WY = growth rate of 3 years' moving average of agricultural net value added at factor costs per person employed in agriculture; WB = growth rate of gross guarantee section expenditures minus growth rate of total EC budget expenditures (all growth rates in percent). Price decisions 1975/76–1981/82. Absolute t-values in parentheses. Significance levels: $*** \geq 0.99$; $** \geq 0.95$; $F = 38.21$; $R^2 = 0.941$; and R^2 (adjusted) = 0.912.

[5]Here WP is in real terms. Absolute t-values in parentheses. Significance level: $** \geq 0.95$; $R^2 = 0.841$; and R^2 (adjusted) = 0.837.

[6]$WPWM^{\$}$ is the growth rate (in percent) of the weighted average of world market prices for wheat, sugar, butter, and skimmed milk powder in US dollars. The weighting factors reflect the EC production of those commodities. Significance levels: $** \geq 0.95$; $* \geq 0.90$; $F = 12.303$; $R^2 = 0.860$; and R^2 (adjusted) = 0.790.

[7]Basically, the PIK programme payments to farmers are subsidies for not producing certain agricultural commodities (Egertson, Hasbargen, and Benson, 1983).

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