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EXCHANGE RATES AND FOOD IN THE EUROPEAN COMMUNITY

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EXCHANGE RATES AND FOOD IN THE  
EUROPEAN COMMUNITY

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ABSTRACT

The workings of the agri-monetary system in the European Community are not widely understood and seldom analyzed. This paper provides a simple theoretical framework that highlights the main features of the system and explains the policy options and potential costs and benefits that accrue to agricultural producers within the Community as exchange rates continue to fluctuate.

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## 1. Introduction

One of the main objectives of the Common Agricultural Policy (CAP) within the European Community (EC) has been the protection of agricultural incomes through adoption of stable, and commonly-fixed prices for a large number of agricultural goods. This principle of "common pricing" has given rise to a rather cumbersome community-wide regulation of target and intervention prices for individual agricultural products that aims at promoting free trade within the community as well as supporting agricultural incomes. Prices have traditionally been set in agricultural units of account (AUA's) and translated into domestic currency units through the application of "green rates". Adoption of this special exchange rate for intra-EC agricultural transactions (denominated in home-currency units per AUA) became an integral part of CAP as soon as bilateral exchange rates within the community started fluctuating and thus threatened the viability of the "common pricing" principle. Throughout the turbulent period of the 1970's and the period of transition from the early joint float of the European currencies (snake) to the creation of the European Monetary System (EMS), fixing of the green rates constituted one of the two principle features of the agri-monetary system.

The adoption of fixed green rates did not eliminate however the creation of cross-country price differentials in response to market exchange rate fluctuations. While the green rates were used to convert prices of agricultural goods from AUA into domestic currency units, trade between EC members was still conducted at the bilateral market-determined exchange rate. Thus, the 1969 devaluation of the French franc vis-a-vis the Deutsche mark brought about a deterioration of the French terms of trade and resulted in an improvement of the French competitive position within Germany and a corresponding deterioration of the German position within

France; in response to these developments the Community imposed an offsetting tax on French agricultural exports to Germany and a corresponding subsidy on German agricultural exports to France which came to be known as "monetary compensatory amounts" (MCA's). The adoption of MCAs became the second important feature of the agri-monetary system and an issue of continuous and heated debate within the Community.

Initially, for the five countries within the snake, the MCAs were fixed; they were variable for those outside the monetary arrangement as well as for all EC countries in the period of transition from the snake to the EMS.

Not all agricultural goods are subject to MCA's; presently those involved include milk and dairy products, beef and pork, maize and barley sugar and beets. As can be seen in Table 1, 2 and 3, the relative share of the commodities which are subject to MCA's in production and trade varies across countries. In three of the smaller EC countries (Luxembourg, Ireland, Denmark) production of these goods in 1977 accounted for over 80 percent of total agricultural production whereas in France and even more so in Italy their relative share in total agricultural production was markedly smaller (67 percent and 50 percent respectively).

In addition, while the average share of products subject to MCAs in intra-community trade was about half of total agricultural imports and exports, the trade distribution was and still is uneven; while Netherlands and Denmark seem to have the largest surplus in intra-community trade of MCA - type products especially pork and poultry, France, Ireland and

Table No. 1 - PRODUCTION OF GOODS SUBJECT TO MONETARY COMPENSATORY AMOUNTS AND  
SHARE OF FINAL PRODUCTION OF THESE GOODS IN TOTAL AGRICULTURAL  
PRODUCTION

1977

	Germany	France	Italy	Netherlands	Belgium	Luxembourg	United Kingdom	Ireland	Denmark
Products subject to MCA's	Mio DM	Mio FF	Mrd Lit	Mio HFL	Mio FB	Mio Flux	Mio £	Mio £	Mio Dkr
1. Cheese (Total)	2,099	11,413	1,068	279	4,581	89	391	22	691
2. Barley	1,591	4,732	19	115	2,354	92	531	95	3,854
3. Grain maize	143	5,969	439	-	-	-	-	-	-
4. Sugar beet	1,782	3,723	358	554	6,184	-	132	29	836
5. Milk	12,854	22,264	2,263	5,854	27,754	1,834	1,485	417	8,001
6. Beef and veal	9,653	22,373	1,913	2,879	26,709	1,402	1,011	514	4,313
7. Pork	12,090	10,308	1,119	3,978	36,762	521	607	108	8,401
8. Eggs	2,673	3,924	595	754	8,245	137	417	20	451
9. Poultry	884	6,021	1,139	916	4,290	13	430	30	718
Total (1 to 9)	43,769	90,454	8,917	15,329	113,979	4,088	5,008	1,237	27,265
-- Value of final agric. production	57,038	134,789	17,738	22,026	157,358	6,715	1,373	31,208	31,208
-- Percentage of prods. subject to MCAs, by value of final production	76	67	50	69	72	82	74	90	87
-- Total (1 to 7)	40,212	80,509	7,182	13,659	101,444	3,938	4,160	1,187	26,096
-- Percentage of 1 to 7 by value of final production	70	59	40	62	64	79	62	86	83

(1) The definition of "poultry" used in 1970 is not strictly comparable to that used in 1977.

Source: EC Commission, "Economic Effects of the Agri-Monetary System", COM(79) 11 final, March 14, 1979. Data from Eurostat.

Table No. 2 - TREND OF THE SHARE OF PRODUCTS SUBJECT TO MCAs IN INTRA-COMMUNITY AND EXTERNAL TRADE IN AGRICULTURAL PRODUCTS AND FOODSTUFFS: 1973-1976 (mio EUA)

		Import			Export		
		INTRA	EXTRA	TOTAL	INTRA	EXTRA	TOTAL
Germany + Netherlands Belgium Luxembourg	1973	45.9	17.8	31.0	47.9	42.6	46.6
	1974	43.6	17.4	29.6	45.8	40.8	44.5
	1975	44.1	22.3	33.1	50.6	42.1	48.7
	1976	44.3	18.2	30.5	48.5	39.8	46.5
France	1973	56.8	22.6	34.0	51.7	38.9	46.9
Italy	1974	56.1	19.0	31.8	51.3	40.8	47.1
United Kingdom	1975	57.8	22.5	37.6	50.9	41.1	47.1
Ireland	1976	57.3	18.1	32.9	51.3	36.8	46.0
Denmark	1973	28.1	7.4	12.1	66.4	50.5	60.2
	1974	29.5	6.6	12.0	65.2	46.0	57.7
	1975	27.9	6.3	11.9	70.1	49.3	62.7
	1976	25.0	11.2	14.8	64.9	46.1	58.1
EUR 9	1973	50.8	20.4	32.2	51.1	41.4	47.9
	1974	49.4	17.9	30.4	49.6	41.3	46.9
	1975	50.7	21.9	34.9	52.4	42.2	49.2
	1976	50.0	17.9	31.3	50.9	38.9	47.3

Source: EC Commission: "Economic Effects of the agri-monetary system" COM(78) 20 fina  
Feb. 10/1978--Data obtained from General Office for Agriculture.

Table 3: SHARE OF EACH MEMBER STATE IN INTRA-EEC TRADE  
(SENDINGS) - 1977

Products subject to MCAs	Germany	France	Italy	Netherlands	UEBL/BLEU	United Kingdom	Ireland	Denmark
1. Cheese	20.5	23.1	1.7	33.1	3.4	1.1	6.4	10.7
2. Barley	4.2	62.6	-	4.6	8.7	11.4	1.5 ]	7.0
3. Grain Maize	7.2	20.1	0.2	43.5	28.2	0.8	-	-
4. Sugar beet	26.3	44.6	-	3.0	11.4	0.5	4.8	9.4
5. Milk	68.4	13.4	-	3.5	10.2	1.6	0.4	2.5
6. Beef and Veal	15.6	23.2	0.1	11.7	3.0	9.4	26.8	10.2
7. Pork	7.7	4.1	3.4	36.6	21.6	1.2	2.4	23.0
8. Eggs	2.2	4.3	1.6	57.4	29.3	4.4	-	0.8
9. Poultry	1.3	9.1	0.4	70.6	7.4	3.0	1.4	6.8

Source: EC Commission, "Economic Effects of the Agri-Monetary System" COM (79), 11 final, March 14, 1979.

the Benelux countries seem to be relatively self sufficient. Germany, on the other hand, is a net exporter of dairy products and Ireland a net exporter of beef and veal; both countries however, together with Italy and the United Kingdom are net importers of other MCA-type goods.<sup>1</sup>

Thus not all countries are equally sensitive to issues pertaining to the management of the MCAs and the whole question of their planned abolition within the framework of the EMS. It is important to note for example that in early January 1979, implementation of the EMS was "indefinitely postponed over the French government's insistence that the system of border taxes and subsidies currently imposed by the EEC on its trade in certain agricultural commodities be phased out before implementation of the EMS" (Federal Reserve Bank of Chicago, International Letter, 1/5/79).

These differences were papered over when the EMS was finally enacted in March 1979 but were never actually resolved. More importantly the workings of the agri-monetary system and the implications of MCA fluctuations for the terms of trade and the trade balance have never been widely understood or clearly expounded. It is the objective of this paper to develop a simple analytical framework that elucidates the workings and interconnections of the system and to highlight some of the central issues that underline the continuing debates and justify the negotiating positions of the various countries.

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<sup>1</sup> Given the aggregation and the form of the data in Table 2, the trade balance in MCA-type goods cannot be ascertained. Table 3 however in conjunction with Table 2 provides a rough idea.

Section 2 presents a simple log-linear trade model that incorporates and explains the workings of the green rates and MCAs. Section 3 discusses the net benefits or costs that accrue to a country due to the functioning of the MCAs and their implication for relative diversification of trade across commodities.

## 2. Effects of MCA Fluctuations on Export and Import Prices and

### Quantities: An Aggregate Model

For a country whose currency is being devalued, application of MCAs implies (a) that producers of export-type goods which are subject to MCAs are being taxed and (b) that consumers of import-type goods are subsidized so that the foreign-currency export and import prices of these commodities remain fixed.

On the export side, producer prices are stated in home currency units,  $p_x^p$ , while consumer prices which include the relevant MCA tax<sup>2</sup> are stated in foreign exchange,  $q_x^c$ . Foreign exchange units are translated into home-currency units through application of the bilateral market exchange rate,  $e$ .<sup>3</sup>

The export supply function can be written as,

$$\ln p_x^p = \ln p + s_x^{-1} \ln X, \quad (1)$$

where  $p$  is a vertical shift parameter representing domestic cost conditions,  $s_x$  is the price elasticity of supply and  $X$  is the quantity exported. The demand function giving the foreign currency consumer

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<sup>2</sup> Consumers of the importing country are being taxed since the currency is appreciating.

<sup>3</sup> The model presented here is analytically similar to Katseli (1978) and comparable to Branson and Katseli (B-K) (1981a, 1981b).

price of exports is,

$$\ln q_x^c = \ln q + d_x^{-1} \ln X \quad (2)$$

Here  $q$  is a shift parameter representing the domestic cost of production of import-competing goods in the foreign country and  $d_x$  is the price elasticity of demand. Given the application of MCAs, the price paid by consumers in the importing country equals the producer price in foreign exchange plus the ad-valorem MCA. Thus,

$$\ln q_x^c = \ln q_x^p + \ln (1 + MCA) = \ln q_x^p + MCA. \quad (3)$$

Equation (3) can be solved for the producer price and converted into home-currency units by using the relationship,

$$\ln p_x^p = \ln e + \ln q_x^p. \quad (4)$$

The demand function giving the home-currency producer price is:

$$\ln p_x^p = \ln q + d_x^{-1} \ln X + \ln e - MCA. \quad (5)$$

Total differentiation of equations (1) and (5) yields the following solutions for percentage changes in prices and quantities:

$$\hat{p}_x^p = k(\hat{q} + \hat{e} - d(MCA)) + (1 - k) \hat{p} \quad (6)$$

$$\hat{X} = s_x k(\hat{q} + \hat{e} - d(MCA) - \hat{p}) \quad (7)$$

where  $k \equiv \frac{d_x}{d_x - s_x}$ ,  $0 < k \leq 1$ , can be thought of as an index of

market power on the export side. As noted in B-K (1981a, 1981b), in the small country case,  $d_x \rightarrow -\infty$  and  $k \rightarrow 1$ .

How is  $d(MCA)$  determined? Given the "common pricing" principle of CAP, prices of agricultural goods are fixed in a common numeraire or unit of account (UA) and converted into domestic currency units through the application of a green rate,  $g$ , defined as the home-currency price of the unit of account.<sup>4</sup> Variations of the price of agricultural goods in units of account are determined by the Council, so that the rate of variation in  $P_{UA}$  equals the target rate, i.e.  $\hat{P}_{UA} = \hat{P}_{UA}^*$ .

It follows that,

$$\hat{P}_x = \hat{P}_{UA}^* + \hat{g} \quad (8)$$

Substituting (8) into (6) and solving for  $d(MCA)$  yields the change of the export tax that would make the change in producer prices equal to the warranted one, as given in equation (8):

$$d(MCA) = \hat{q} + \hat{e} + \frac{1-k}{k} \hat{p} - \frac{1}{k} (\hat{g} + \hat{P}_{UA}^*).$$

Given the present structure of the EC however, MCAs are applied only in the case of market exchange rate fluctuations (relative to fluctuations in the green rates) and variations in domestic cost conditions are not taken into account. Thus  $\hat{q} = \hat{p} = 0$ . Furthermore, in calculating MCAs each country is assumed to be a price taker in international markets so that  $k \rightarrow 1$ . Thus in fact,

$$d(MCA) = \hat{e} - (\hat{g} + \hat{P}_{UA}^*). \quad (9)$$

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<sup>4</sup>Recently there are proposals to fix agricultural prices in ECU where "the ECU equivalent in national currencies ('green rates') will, like the earlier representative rates, continue to be fixed by the Council" (Bulletin of the European Communities, No.5, 1979, p. 150-151).

Substitution of (9) into (6) and (7) yields the following expressions for the percentage change of export prices and quantities for those goods which are subject to MCAs:

$$\hat{p}_x^p = k\hat{q} + (1 - k)\hat{p} + k(\hat{g} + \hat{p}_{UA}^*) \quad (10)$$

$$\hat{X} = s_x k (\hat{q} + \hat{g} + \hat{p}_{UA}^* - \hat{p}). \quad (11)$$

The following can be concluded:

(a) In the absence of domestic and foreign cost variations, producer prices are affected only by changes in the green rates and the negotiated Community-wide changes in the prices of agricultural commodities. Bilateral market exchange rate fluctuations do not affect  $\hat{p}_x^p$ .

(b) A given percentage change in the price of a commodity in units of account or proportional changes in green rates do not affect producer prices equally across countries; the effects depend on the relative elasticities of supply and demand. The more inelastic the supply ( $s_x \rightarrow 0$ ) and the less market power the country possesses ( $d_x \rightarrow -\infty$ ), the larger  $\hat{p}_x^p$  will be for a given change in  $\hat{p}_{UA}^*$ .

(c) If the country is in fact "small", the price of exports will not be affected by domestic cost variations; producer prices will remain constant only if in addition to fixed green rates and  $\hat{p}_{UA}^*$ , foreign cost conditions remain unchanged.

On the import side the analysis is exactly symmetrical. In the case of a country with a depreciating currency, a subsidy is provided in order to offset the reduction in the foreign price of imported commodities due to the depreciation.

The supply curve of imports is denominated in foreign exchange prices:

$$\ln q_m^P = \ln q + s_m^{-1} \ln M. \quad (12)$$

In equation (12),  $q_m^P$  is the foreign-exchange price that the producer receives,  $q$  is again a vertical shift parameter representing foreign cost conditions<sup>5</sup> and  $M$  is the quantity imported. Given the subsidy provided due to the MCAs,

$$\ln q_m^P = \ln q_m^C + \ln (1 + MCA) \approx \ln q_m^C + MCA. \quad (13)$$

Thus,

$$\ln q_m^C = \ln q_m^P - MCA. \quad (14)$$

Conversion into home-currency units and substitution of equation (12) for  $q_m^P$  yields the following supply curve that domestic consumers face:

$$\ln p_m^C = \ln q + s_m^{-1} \ln M + \ln e - MCA. \quad (15)$$

The demand curve is determined in home-currency units:

$$\ln p_m^C = \ln p + d_m^{-1} \ln M. \quad (16)$$

Here again  $p$  represents domestic cost conditions and  $M$  the quantity imported.

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<sup>5</sup>It is assumed here for simplicity that foreign cost conditions are the same on the export and import sides. Otherwise  $q_x$  and  $q_m$  would represent the relevant parameters.

Differentiation of equations (15) and (16) yields the following solutions for  $\hat{p}_m^c$  and  $\hat{M}$ :

$$\hat{p}_m^c = k' (\hat{q} + \hat{e} - d(MCA)) + (1-k') \hat{p} \quad (17)$$

$$\text{and } \hat{M} = d_m k' (\hat{q} + \hat{e} - d(MCA) - \hat{p}) \quad (18)$$

where

$$k' \equiv s_m / (s_m - d_m); \quad 0 < k' \leq 1. \quad \text{As } s_m \rightarrow \infty \quad \text{and } k \rightarrow 1,$$

the country becomes "small" in the import market.

Variations in  $p_m$  can now be decomposed into variations in the target prices of agricultural goods denominated in units of accounts  $\hat{p}_{UA}^*$  and variations in the green rate; equation (17) can be subsequently solved for  $d(MCA)$  as on the export side. In view of the fact that MCAs are applied without reference to domestic or foreign costs and with the assumption that  $k' \equiv 1$ , equation (9) applies here as well:

$$d(MCA) = \hat{e} - (\hat{g} + \hat{p}_{UA}^*).$$

Thus, in the presence of MCAs,

$$\hat{p}_m^c = k' \hat{q} + (1 - k') \hat{p} + k' (\hat{g} + \hat{p}_{UA}^*) \quad (19)$$

$$\hat{M} = d_m k' (\hat{q} + \hat{g} + \hat{p}_{UA}^* - \hat{p}) \quad (20)$$

and given equation (14),

$$\begin{aligned} \hat{p}_m^p &= \hat{p}_m^c + d(MCA) \\ &= k' \hat{q} + (1 - k') \hat{p} + \hat{e} - (1 - k') (\hat{g} + \hat{p}_{UA}^*). \end{aligned} \quad (21)$$

Equations (19), (20) and (21) can be interpreted in a way analogous to the export side:

(a) Besides domestic and foreign costs, consumer prices of imported commodities which are subject to MCAs are affected only by variations in the green rates and in CAP-regulated prices. Thus, in the presense of MCAs exchange rate movements do not affect the terms of trade defined as  $p_x^p/p_m^c$ . They affect as one would expect only producer prices in domestic currency units (equation 21).

(b) As on the export side,  $k'$  is an important determinant of the effects of  $\hat{g}$  and  $\hat{p}_{UA}^*$  on  $\hat{p}_m^c$ .

(c) If the country is in fact small, equation (19) becomes,

$$\hat{p}_m^c = \hat{q} + \hat{g} + \hat{p}_{UA}^* \quad (22)$$

The above framework for analysing the effects of the agri-monetary system can now be used to highlight the potential net budgetary benefits and costs that are associated with adoption and participation in the system.

### 3. Benefits and Costs of Participation in The Agri-Monetary System.

It should be evident from the analysis of the previous two sections that the net financial benefits accruing to a country from the workings of the MCAs depend on the composition and magnitude of the trade deficit as well as the movement of its exchange rate. This becomes clearer in the context of the model developed in section 2.

#### A. Net Benefits From The Workings of The MCAs.

For a country with a depreciating currency imports of goods which are subject to MCAs are subsidized while exports are being taxed. Thus, the net financial benefits that a country obtains is given by the difference between total subsidies (S) and taxes (T):

$$NB = S - T = M(p_m^p - p_m^c) - X(p_x^c - p_x^p). \quad (23)$$

Given equations (14) and (3) which translate consumer into producer prices, it follows that:

$$NB = M p_m^c MCA - X p_x^p MCA = MCA (M p_m^c - X p_x^p). \quad (24)$$

Differentiating (24) and substituting the appropriate equations for  $\hat{p}_m^c$  (equation 19),  $\hat{M}$  (equation 20),  $\hat{p}_x^p$  (equation 10) and  $\hat{X}$  (equation 11), it follows that the change in net benefits from the imposition of MCAs is<sup>6</sup>:

$$dNB = (M p_m^c - X p_x^p) d(MCA) + [M p_m^c (1 + d_m) k' - X p_x^p (1 + s_x) k] MCA (\hat{g} + \hat{p}_{UA}^*).$$

Given the determination of MCAs from equation 9, namely that,

$$d(MCA) = \hat{e} - (\hat{g} + \hat{p}_{UA}^*),$$

it follows that,

$$dNB = (M p_m^c - X p_x^p) \hat{e} + [X p_x^p (1-k) (1+d_x) - M p_m^c (1-k') (1+s_m)] MCA [\hat{g} + \hat{p}_{UA}^*]. \quad (26)$$

A number of interesting conclusions can be drawn from equation (26):

a) If the green rates and target prices remain unchanged, the main beneficiaries from the agri-monetary system are countries whose currency is depreciating and which are on the average net importers of goods that are subject to MCAs such as Italy or the United Kingdom in the 1970s. Alternatively, countries which are net exporters such as France are net losers.

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<sup>6</sup> Domestic and foreign cost disturbances are set equal to zero.

b) For cases of symmetric market power on the export and import sides, devaluation of the green rates or increases in the target prices bring positive returns to countries which are net exporters of MCA-type goods.

c) The change in net benefits from fluctuations in green rates and target prices depend not only on the trade balance of MCA commodities but also on the relative elasticities of supply and demand.

The analysis above sheds light on some of the negotiating positions that have been held by different countries of the Community at different times; the United Kingdom's rising concern over the MCAs as the pound started appreciating, France's traditional opposition to MCAs, or Germany's long position in favor of the agri-monetary system can be conveniently explained in light of the analysis that is summarized in equation (26).

Two other issues pertaining to diversification across commodities and countries deserve further analysis.

#### B. Diversification across Commodities

As it was shown in Table 1, the share of MCA-type goods in total production varies across countries from less than fifty percent in the case of Italy to over 80 percent in the case of Denmark. Since not all of the agricultural production is covered by MCAs, it follows that exchange rate fluctuations affect the relative price of agricultural commodities. In cases where exchange-rates have been moving continuously in one direction or the other one would expect reallocation of production away from or towards MCA-type goods depending on the direction of change of the exchange rate and the change in target price or foreign demand

conditions. As can be seen by comparison of equations (6) and (10), ceteris paribus devaluation of a currency increases the domestic price of those agricultural exports that are not subject to MCAs relative to those that are. Thus one would expect in such a case a relative reallocation of production towards non MCA-type goods. This might partially explain why Italy among all EC countries experienced the smallest increase in the share of production of MCA-type goods between 1970 and 1976 (Commission of the European Communities, 1978).

### C. Diversification across Countries

The other interesting issue which should be pointed out, pertains to trade deversification within and outside the Community. As can be seen in Table 2 most European countries export roughly equal shares of MCA-type goods within and outside the Community. It is clear that for trade with countries that do not belong to the EC, MCAs are not relevant and hence countries with devaluing currencies can expand trade outside the Community when imposition of MCAs prevent them from doing so within the EC. This might explain why as can be seen in Table 2, during the 1970s there was an increase in the share of MCA-type exports traded outside the Community for the countries within the EC with the weakest currency (Italy, United Kingdom, France, Ireland).

The analysis of trade diversification across countries is straightforward and follows the arguments of section 2 and the disaggregation method presented in B-K (1981b).

Starting from equation (6), exchange rate movements can be disaggregated and decomposed as follows:

$$\hat{e} = \sum_{i=1}^N a_i \hat{T}_i + \sum_{i=H+1}^N \alpha_i \hat{T}_i \quad (27)$$

where  $i = 1 \dots h \dots H$  are the countries that adhere to CAP and  $i = H + 1 \dots N$  are the non-CAP countries. Furthermore,  $a_i$  are the export shares to each country, and  $T_i$  represent units of home currency per unit of  $i$  currency. Given the workings of MCAs, exchange rate variations are offset for the  $H$  countries belonging to CAP and domestic prices of export goods are affected only by variations in green rates and target prices as in equation (10).

Foreign cost conditions can also be decomposed accordingly so that,

$$\hat{q} = \sum_{i=1}^H \alpha_i \hat{q}_i + \sum_{i=H+1}^N \alpha_i \hat{q}_i \quad (28)$$

Given the above disaggregation rules, equation (6) and (10) can be combined into equation (30) below, which gives the fluctuation of the home-currency price of MCA-type goods taking into account both the intra Community and extra Community trade:

$$\begin{aligned} \hat{p}_x^p = & k \sum_{i=1}^H \alpha_i \hat{q}_i + k(\hat{g} + \hat{p}_{UA}^*) + k \sum_{i=H+1}^N \alpha_i \hat{q}_i + \\ & + k \sum_{i=H+1}^N \alpha_i \hat{T}_i + (1 - k) \hat{p}. \end{aligned} \quad (29)$$

Rearranging terms:

$$\hat{p}_x^p = \hat{p} + k(\hat{g} + \hat{p}_{UA}^*) + k \sum_{i=1}^H \alpha_i (\hat{q}_i - \hat{p}) + k \sum_{i=H+1}^N \alpha_i (\hat{T}_i + \hat{q}_i - \hat{p}). \quad (30)$$

In equation (30) the rate of variation of export prices of MCA-type goods is expressed as a function of variations in domestic and relative cost conditions, in the green rate and the target prices as well as in

variations of the home country's real exchange rates vis-a-vis all the non-CAP trading partners.

The following can be concluded from equation (30):

a. In the presence of diversified trade, domestic prices of exported MCA-type goods are also affected by bilateral real exchange rate movements between the home country and every non-CAP trading partner. While the existence of MCAs insulate domestic prices from exchange-rate fluctuations they do so only for intra-Community trade and not for trade outside the EC. For example, a real devaluation of the ECU and hence the Irish pound (a member of the EMS) relative to the English pound, still increases domestic prices in Ireland by  $k\alpha_1 (\hat{T}_1 + \hat{q}_1 - \hat{p})$ .

b. As in the aggregate version of the model relative cost conditions between other EC countries and the home country affect the rate of change of export prices and hence exports. An increase in the foreign cost index relative to the domestic one increases export prices by  $k\alpha_1 (\hat{q}_1 - \hat{p})$ . Finally,

c. In the case of a country which is a price taker in export markets ( $k \equiv 1$ ), domestic cost conditions are irrelevant as one would expect.

The preceding analysis can be extended to the import side as well:

$$\hat{p}_m^c = \hat{p} + k'(g + \hat{p}_{UA}^*) + k' \sum_{i=1}^H \beta_i (\hat{q}_i - \hat{p}) + k' \sum_{i=H+1}^N \beta_i (\hat{T}_i + \hat{q}_i - \hat{p}). \quad (31)$$

All the conclusions that were derived from equation (30) are equally applicable here where  $k'$  is an index of market power on the import side and  $\beta_i$  are the import shares from each trading partner.

From equations (30) and (31) it follows that when trade is

geographically diversified, real exchange-rate fluctuations remain important determinants of variations in the terms of trade and hence the trade balance even in the case where trade consists exclusively of MCA-type goods. More importantly, for countries with weaker currencies, the MCA system results in redirection of trade: a real effective devaluation makes it profitable to export MCA type goods outside the European Community and import them from within the EC.

In conclusion it is evident that in a world where trade is diversified both across commodities and countries the main effect of MCAs is to alter further relative prices rather than insulate the agricultural sector from the instability of the international monetary system. Depending on their exchange rate experience and their targets countries can bypass the constraints of MCAs by diversifying their trade further and/or can use them in their favor as a major source of subsidies. It is for these reasons and for the high administrative cost of its operation that there is a growing feeling within the Community that the agri-monetary system should at the end be dismantled.

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