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National Interests in International Commodity Agreements: A Theoretical Framework and Quantitative Results For the Export Quota Scheme in Coffee

INTRODUCTION

Many studies on international commodity market intervention concentrate on the policy's aggregate impact on exporting countries or developing countries (for example Behrman, 1978a; Behrman, 1978b; Nguyen, 1980). Only a few studies emphasize that national impacts may differ significantly from the aggregate impact (for exceptions, see Koester, 1979; Lord, 1981; Newbery and Stiglitz, 1981, section 20). These studies, however, focus only on buffer stocks and on a purely price-stabilizing mechanism. Moreover, they analyse national impacts from a theoretical *ex-ante* point of view. In assuming a hypothetical functioning stabilization agreement, they do not provide sufficient insight into the economics of existing commodity agreements. The International Coffee Agreement (ICA), which is analysed here, is not a pure stabilization mechanism but raises prices and includes redistributive elements (Herrmann, 1988). Additionally, it is based on export quotas and not on buffer stocks.

It is shown in this paper how national interests in an international commodity agreement can be measured in economic terms. First, basic rules of the ICA are described and it is elaborated that the ICA is basically a price-raising agreement. Second, the theoretical concept to measuring national interests in such a price-raising commodity agreement is introduced. Then, national interests of 94 importing and exporting countries in the ICA are computed using data for 1982 and 1983. The ICA is a particularly interesting scheme to elaborate national interests, as some countries participate in the agreement while others do not. This has led to the coexistence of a controlled and an uncontrolled market with different prices. Finally, major results are briefly summarized and proposals for future research are given.

THE INTERNATIONAL COFFEE AGREEMENT:
BASIC RULES AND ITS PRICE-RAISING IMPACT

ICAs have a long tradition¹ and they have relied on the instrument of export quotas since the very beginning. The ICA of 1983 (as were the preceding agreements of 1962, 1968 and 1976) is supposed to:

*Kiel Institute of World Economics.

- avoid excessive fluctuations in the levels of world supplies, stocks and prices which are harmful to both producers and consumers (Article 1, 2);
- increase the purchasing power of coffee-exporting countries (Article 1, 4).

The redistributive element is to be created by increasing consumption and by realizing prices that are remunerative to producers, fair to consumers and lead to a long-term equilibrium between production and consumption (Article 1, 1 and 4).

Although a stabilizing and a redistributive function is attributed to the ICA, the quota policy laid down in the ICA is more suitable for price support than for price stabilization. It includes the following mechanism to increase prices in the regulated market. A quota system is valid for the market of the importing member countries, that is, the member market. The International Coffee Council sets a global annual export quota for all exporting member countries as the maximum to be sold in the member market. Annual national export quotas are fixed, too, and allocated as quarterly quotas. The quota scheme is controlled at the borders of importing member countries. These countries have to make sure that each coffee export of a member country is covered by a valid certificate of origin. The introduction, continuation or suspension of the quota scheme is bound by price rules. A crucial element of these price rules is whether the composite indicator price of the agreement, defined as the arithmetic mean of the indicator prices for other mild arabicas and robustas, is higher or lower than minimum prices fixed by the International Coffee Organization. No quota rule exists for sales to importing non-member countries, that is, the non-member market. Sales to this market are only punished indirectly as they lead to lower future export quotas for the exporting members. The ICA does not include a mechanism for lowering prices in boom periods. There is no instrument available to enforce export quantities in the coffee market that are higher than voluntary exports. Therefore, the quota scheme is not a price-stabilization device that can reduce price fluctuations in both directions around an equilibrium price, but is mainly a redistributive policy instrument that increases the world market price in periods of depression.

Coffee quotas were in force from September 1980 until February 1986 and led to a market separation with clearly higher prices in the regulated than in the unregulated market. In order to measure national interests in the ICA, information on the ICA's aggregate effect on world coffee prices are essential. In a separate contribution (Herrmann, 1988), the existing situation with the ICA in 1982 and 1983 was confronted with a hypothetical situation of a liberalized world coffee market. The hypothetical situation was constructed with an econometric world coffee model. Some of the aggregate impacts of the ICA calculated in this study are summarized in Table 1.

- 1 Binding export quotas raised the price in the regulated coffee market by 30 per cent on average for 1982 and 1983. Exporting member countries transmitted quota-induced oversupply partly to the unregulated market and depressed the price in that market by 10 per cent. These price impacts induced lower imports of the importing member countries, higher imports of the importing non-member countries and declining exports in both market segments.

TABLE 1 *Impacts of the International Coffee Agreement on prices, trade, expenditures, earnings and economic welfare in the world coffee market, 1982 and 1983^a*

| Variables | Existing Situation with International Coffee Agreement | Hypothetical Situation without International Coffee Agreement | Quota-induced impact (%) |
|--|--|---|--------------------------|
| Price in the regulated coffee market (\$/mt): | | | |
| 1982: | 2760.0 | 1872.6 | +47.4 |
| 1983: | 2787.2 | 2388.0 | +16.7 |
| 1982/83: | 2773.6 | 2130.3 | +30.2 |
| Price in the unregulated coffee market (\$/mt): | | | |
| 1982 | 2085.0 | 1872.6 | +11.3 |
| 1983: | 1739.1 | 2388.0 | -27.2 |
| 1982/83: | 1912.0 | 2130.3 | -10.2 |
| Imports in the member market (mt): | 3337105 | 3605285 | -7.4 |
| Imports in the non-member market (mt): | 590580 | 581717 | +1.5 |
| Exports to both market segments (mt): | 3927685 | 4187001 | -6.2 |
| Import expenditures in the regulated coffee market (1000\$): | 9255882 | 7650738 | +21.0 |
| Import expenditures in the unregulated coffee market (1000\$): | 1122888 | 1244309 | -9.8 |
| Export earnings in both market segments (1000\$): | 10378771 | 8895047 | +16.7 |
| Welfare changes (Mill.\$) ^b | | | |
| $-\Delta W_{IM}$: | - | - | -2239.0 |
| $-\Delta W_{IN}$: | - | - | +139.8 |
| $-\Delta W_E$: | - | - | +1704.7 |

Notes:

^aThe regulated market (member market) covers sales to importing member countries of the ICA. The unregulated market (non-member market) includes sales to importing non-member countries of the ICA. The impacts of the ICA on expenditures, earnings and welfare are shown on average for 1982 and 1983.

^bChanges in economic welfare are calculated on the basis of the surplus concept, described, for example, in Just, Hueth and Schmitz (1982). On the assumptions underlying the analysis, see Herrmann (1988). ΔW_{IM} (ΔW_{IN} , ΔW_E) indicates the change in economic welfare for the group of importing member countries (importing non-member countries, exporting member countries).

Sources:

Herrmann (1986, 1988).

- 2 Due to the ICA's price effects, the importing member countries as a group lost in economic welfare and experienced higher import expenditures. The exporting member countries gained in economic welfare and realized higher export earnings than in the benchmark situation. This is the result one would expect under a functioning redistributive commodity agreement or under a commodity cartel. The importing non-member countries, however, also realized welfare gains due to the agreement. They gained 140 mill. dollars per year and lowered their import expenditures by 10 per cent compared with the non-quota situation.

By use of this information on the ICA's aggregate impact on the world coffee market, national interests in the ICA can be identified.

A THEORETICAL CONCEPT FOR MEASURING NATIONAL INTERESTS IN THE INTERNATIONAL COFFEE AGREEMENT

Economic welfare in Marshallian terms is used here to indicate national interests. Two approaches to measuring national interests in international commodity agreements are distinguished:

Approach 1

The influence on national interests can be measured that is caused by the introduction of an international commodity agreement in an otherwise unregulated world market. This approach is based on a comparison between the situations with and without a commodity agreement. The hypothetical situation without agreement is treated as an analytical benchmark for evaluating the performance of an existing agreement. Usually, it does not represent a real option for the individual country as the 'average' country will not be in the position to restore an intervention-free world market. Hence, this is a descriptive approach to measuring national interests.

Approach 2

The influence on national interests can be measured that results from the individual country's decision to participate in the agreement or to stay outside. This approach compares the situation of participation with that of non-participation in an existing commodity agreement. As the consequences of a national decision are analysed, it is a decision-orientated approach to measuring national interests.

The first approach is traditionally used in quantitative analyses on the national impacts of international agricultural policies. The second is new and proposed here additionally. By using it, national interests in international commodity agreements can be shown more comprehensively when the agreement leads to a coexistence of a regulated and an unregulated market. Then, a member country can decide whether it wishes to remain a member or to leave the agreement. Analogously, a non-member has the choice to stay outside and purchase in the unregulated market or to join the agreement.

Both approaches will now be applied to three country groups: importing member countries, importing non-member countries and exporting member countries. It is assumed that importing member countries are only allowed to buy in the regulated market, whereas importing non-member markets purchase in the unregulated market. Exporting member countries may sell in both market segments, at a policy-determined price in the regulated and at the market price in the unregulated market. Suppose that the import demand functions of the importing countries are loglinear. According to *Approach 1*, the welfare impact of an international commodity agreement on an importing member country i can then be measured as

$$\Delta W_i = \int_{p_M}^{p^*} (\alpha_i p^{\epsilon_i}) dp \quad \begin{matrix} > \\ \leq \end{matrix} 0, \text{ if } p_M \begin{matrix} \leq \\ \geq \end{matrix} p^*, \quad (1)$$

and the welfare impact on the importing non-member country j is

$$\Delta W_j = \int_{p_N}^{p^*} (\alpha_j p^{\epsilon_j}) dp \quad \begin{matrix} > \\ \leq \end{matrix} 0, \text{ if } p_N \begin{matrix} \leq \\ \geq \end{matrix} p^*. \quad (2)$$

ΔW symbolizes the absolute change in economic welfare, M the member market and N the non-member market. p is a price, ϵ_i (ϵ_j) is the price elasticity of import demand of the importing member country i (importing non-member country j). α_i (α_j) is a parameter determining the level of the import demand function of the importing member country i (importing non-member country j). It is affected by non-price variables in the import demand function and by stochastic influences. * symbolizes the hypothetical situation without agreement. Generally, (1) and (2) measure the change in economic welfare due to an international commodity agreement compared with the hypothetical situation without agreement from the individual importing country's point of view.

The welfare change for exporting member countries is approximated by the change in their export earnings. The reason is that the price elasticity of export supply was not significantly different from zero for most coffee-exporting countries in the short run, and the change in producer surplus is then equal to the change in export earnings. Hence, the agreement's welfare impact on an exporting member country k is

$$\Delta W_k = \Delta E_k = p_M \bar{q}_k + p_N q_{Nk}^{ES} - p^* q_k^{ES*}. \quad (3)$$

E indicates export earnings and q^{ES} exports. In equation (3), the earnings in both markets in the existing situation with agreement are compared with the earnings in a hypothetical situation of a liberalized world market.

On the basis of *Approach 2*, the consequences of the national decision to participate in the agreement or not have to be analysed in the context of an existing agreement. The welfare impact arising from the decision to participate in the agreement compared with a withdrawal can be measured for the importing member country as

$$\Delta W_i = \int_{p_M}^{p_N^*} (\alpha_i p^{\epsilon_i}) dp \quad \begin{matrix} > \\ \leq \end{matrix} 0, \text{ if } p_M \begin{matrix} \leq \\ \geq \end{matrix} p_N^*. \quad (4)$$

For the importing non-member country, the welfare impact arising from the

decision to stay outside the agreement compared with an entry is characterized by

$$\Delta W_j = \int_{p_M}^{p_M^*} (\alpha_j p^{\epsilon_j}) dp \quad \begin{matrix} \geq \\ \leq \end{matrix} 0, \text{ if } p_M \begin{matrix} \leq \\ \geq \end{matrix} p_M^* . \quad (5)$$

The welfare effect for an exporting member country k arising from its decision to participate in the agreement can be measured as:

$$\Delta W_k = \Delta E_k = p_M \bar{q}_k + p_N q_{Nk}^{ES} - p_{Nk}^* q_{Nk}^{ES*} . \quad (6)$$

p_N^* is the hypothetical price in the non-member market which would have been valid if the importing member country had left the agreement and entered the non-member market. p_M^* is the hypothetical price in the member market which would have been valid if the importing non-member country had joined the agreement. p_{Nk}^* is the hypothetical price in the non-member market which would have occurred if the exporting member country had left the agreement and offered its total export supply in the non-member market. q_{Nk}^{ES*} is the exported quantity of country k in the non-member market in this hypothetical situation.

QUANTITATIVE ANALYSIS OF NATIONAL INTERESTS IN THE INTERNATIONAL COFFEE AGREEMENT

The presented theoretical concepts are now applied to the ICA in 1982 and 1983. These years have been chosen because: (i) the parallel-market problem showed up in the 1980s; and (ii) 1982 and 1983 were the first years in which the quota regulation prevailed permanently. The equations (1) to (6) form the basis for the empirical analysis. These equations contain observables as well as unobservables. Generally, the variables characterizing the existing situation with agreement can be taken from published sources (FAO; International Coffee Organization 1983,1985). However, the prices and quantities in the hypothetical situations (marked by *) cannot. The hypothetical price p^* entering the equations (1) to (3) is taken from Table 1. For p_M^* in equation (5), p_M is used. This means that we assume a quota policy that would still realize a target price if new members entered the agreement. P_N^* in equation (4) and p_{Nk}^* in equation (6) are calculated for each country individually. The computations are based on a model of the non-member market and the Newton-Raphson procedure is used to solve the non-linear model. The price elasticities ϵ_j and ϵ_j are taken from estimated national import demand functions for coffee.²

Table 2 presents the quantitative results for both theoretical concepts. The main findings are as follows:

1 According to *Approach 1*, the introduction of the ICA on an otherwise liberalized world coffee market has lowered economic welfare of all importing member countries. It has raised economic welfare of all exporting member countries and of all importing non-members which imported in 1982 and 1983. The median welfare loss of the importing member countries was 41.2 million dollars and the impacts ranged from -0.4 (Ireland) to -341.8 (F.

R. Germany) and -711 million dollars (USA). The median welfare gain of exporting member countries was 17.3 million dollars with peak values of 581.6 and 332 million dollars for Brazil and Colombia. The importing non-member countries realized a median welfare gain of 2.6 million dollars due to the introduction of the ICA, and the highest welfare gains went to Algeria and the German Democratic Republic with 24 and 20.6 million dollars respectively. In general, the strongest welfare impacts within each country group experienced the large coffee importers or exporters.³

2 The results of *Approach 2* show interesting differences from *Approach 1*. All importing non-member countries realized welfare gains due to the decision to stay outside instead of entering the ICA. However, the median welfare gain is now much higher (10.9 million dollars) as are the peak values for the German Democratic Republic and Algeria with 78.3 and 64.4 million dollars. As long as the Coffee Organization realizes a target value for p_M in the regulated market with $P_m > p^* > P_N$, national interests are more positively affected under *Approach 2* than under *approach 1*. This holds also true for the exporting member countries. They raised their export earnings and economic welfare due to the decision to participate in the agreement instead of leaving it. The median gain was 34.1 million dollars as compared to only 17.2 million dollars according to *approach 1*. This is due to the fact that leaving the agreement would have depressed export prices at least to p_N , for large exporters much more. Therefore, p_{Nk}^* in equation (6) would have been clearly lower than p^* in equation (3). From the importing member countries' points of view, the welfare impacts arising from the decision to participate in the agreement instead of a withdrawal are ambiguous. It was assumed that the commodity authority would succeed in segmenting both markets also in case of withdrawals. Therefore, a price increase is to be expected in the non-member market in the case of a withdrawal, and p_M^* might rise above p^* and even beyond p_M .⁴ Consequently, 11 large importing members gained from the decision to stay inside the agreement compared with a withdrawal, whereas 12 small importers lost as a consequence of their membership decisions. The median country realized a welfare loss of 0.6 million dollars. Compared with *approach 1*, the decision-orientated approach may indicate higher welfare losses (for example, Cyprus), lower welfare losses (for example, Norway) or welfare gains instead of losses (for example, France).

CONCLUSIONS

This paper has presented a methodological basis for measuring national interests in an international commodity agreement. A descriptive and a decision-orientated approach were distinguished and used to measure national interests of 94 countries in the ICA. Major results are:

1 The ICA led to a welfare loss for the importing member countries compared with a hypothetical free-market situation, whereas the exporting member countries received a welfare gain as well as the importing non-member countries.

TABLE 2 *Implications of the International Coffee Agreement for national interests of individual importing and exporting countries, δ 1982/83 (million dollars)^a*

| Importing Countries | Change in Economic Welfare | | Exporting Countries | Change in Economic Welfare | |
|--------------------------|----------------------------|-------------|--------------------------|----------------------------|-------------|
| | Approach I | Approach II | | Approach I | Approach II |
| <i>Member countries:</i> | | | <i>Member countries:</i> | | |
| Australia | -22.6 | -15.1 | Angola | +9.2 | +22.1 |
| Austria | -39.9 | -10.6 | Benin | +1.7 | +2.6 |
| Belgium | -67.6 | +38.0 | Bolivia | +4.3 | +6.5 |
| Canada | -59.3 | +23.0 | Brazil | +581.6 | +2531.5 |
| Cyprus | -1.7 | -3.2 | Burundi | +17.0 | +32.6 |
| Denmark | -40.0 | -6.8 | Cameroon | +49.8 | +140.2 |
| Finland | -41.2 | -3.5 | Central African Republic | +9.8 | +17.7 |
| FR Germany | -341.8 | +8753.6 | Colombia | +332.0 | +1447.9 |
| France | -216.4 | +2068.1 | Congo | +1.5 | +2.1 |
| Greece | -13.7 | -13.2 | Costa Rica | +35.7 | +149.1 |
| Ireland | -0.4 | -0.6 | Dominican Republic | +20.1 | +40.8 |
| Italy | -162.9 | +675.6 | Ecuador | +42.9 | +122.6 |
| Japan | -123.2 | -552.8 | El Salvador | +87.3 | +324.0 |
| Netherlands | -99.5 | +137.4 | Ethiopia | +50.0 | +156.4 |
| New Zealand | -4.9 | -5.8 | Gabon | +0.5 | +0.7 |
| Norway | -27.0 | -16.3 | Ghana | +0.5 | +0.6 |
| Portugal | -12.6 | -12.0 | Guatemala | +64.3 | +261.2 |
| Spain | -78.1 | +105.2 | Guinea | +2.6 | +4.8 |
| Sweden | -64.3 | +29.9 | Haiti | +11.3 | +23.3 |
| Switzerland | -40.5 | -8.9 | Honduras | +23.5 | +85.2 |
| United Kingdom | -63.4 | +34.7 | India | +21.3 | +81.0 |
| USA | -711.0 | +7119.1 | Indonesia | +71.1 | +439.2 |
| Yugoslavia | -17.5 | -18.2 | Ivory Coast | +151.0 | +599.8 |
| | | | Jamaica | +0.7 | +1.0 |

*Non-member
countries:*

| | | | | | |
|-------------------------------|-------|-------|------------------|-------|--------|
| Algeria | +24.0 | +64.6 | Kenya | +50.5 | +160.6 |
| Argentina | +7.1 | +24.6 | Liberia | +0.8 | +2.5 |
| Chile | +0.9 | +5.3 | Madagascar | +31.1 | +76.2 |
| Czechoslovakia | +9.3 | +37.0 | Malawi | +0.3 | +0.6 |
| Egypt | +4.6 | +11.6 | Mexico | +54.0 | +284.0 |
| German Democratic Republic | +20.6 | +78.3 | Nicaragua | +23.0 | +67.3 |
| Hong Kong | +1.4 | +4.0 | Nigeria | +1.3 | +2.0 |
| Hungary | +9.4 | +26.9 | Panama | +2.5 | +4.3 |
| Israel | +4.4 | +12.0 | Papua New Guinea | +19.6 | +56.8 |
| Jordan | +2.2 | +10.9 | Peru | +22.4 | +64.0 |
| Korea, PDR of | +2.7 | +9.8 | Philippines | +15.2 | +27.8 |
| Lebanon | +1.9 | +8.8 | Rwanda | +17.5 | +35.5 |
| Libya | +0.5 | +1.8 | Sierra Leone | +4.4 | +5.3 |
| Morocco | +3.8 | +13.6 | Sri Lanka | +1.9 | +2.8 |
| Poland | +8.0 | +20.2 | Tanzania | +27.8 | +70.5 |
| Romania | +2.2 | +12.1 | Thailand | +4.4 | +8.2 |
| Saudi-Arabia | +2.6 | +17.6 | Togo | +5.4 | +7.4 |
| Senegal | +1.0 | +2.8 | Trinidad/Tobago | +0.4 | +0.6 |
| Somalia | -0.6 | +1.3 | Uganda | +94.4 | +337.9 |
| South Africa | +2.6 | +6.8 | Venezuela | +0.8 | +1.4 |
| Sudan | +1.3 | +5.7 | Zaire | +43.7 | +118.0 |
| Syria | +0.4 | +4.2 | Zimbabwe | +3.3 | +5.5 |
| Tunisia | +0.4 | +2.9 | | | |
| Turkey | +0.5 | +2.2 | | | |
| USSR | +6.4 | +34.1 | | | |

Notes: *The price elasticities used in the calculations are summarized in Herrmann (1987) where additional quantitative results are presented. The underlying import demand and export supply functions are shown in Herrmann (1988).

Source: Author's calculations with data from FAO and International Coffee Organization (1983, 1985) by use of the method outlined in the text.

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DISCUSSION OPENING – VINOD THOMAS

The coffee agreement

The earliest international agreement on coffee was established during World War II, when the preclusion of coffee shipments to Europe created the prospect of huge oversupplies. At that time, and subsequently, the International Coffee Agreements have been designed to support coffee prices. The price support scheme has relied on export quotas, but unlike the International Cocoa Agreement, no international buffer stocks have been established. Another feature of the coffee agreements has been that since 1976 country quotas have been based on a

country's past exports as well as its holding of verified stocks. The global quota takes into account world consumption and inventories so as to regulate price. The global quota goes into effect when the market price falls below the floor of an agreed price range, and it is suspended when it exceeds the ceiling. Over 99 per cent of the world's net exporters and about 90 per cent of importers participate in the agreement.

Before turning to the specific questions raised by Herrmann's interesting paper, let me suggest three broad issues emerging from the coffee agreement. First, what are the links between the price support function as described above and price stabilization, and what are their respective welfare effects? A pure price support scheme requires a mechanism for addressing the problem it leads to of overproduction and its financing. If export quotas are in effect, this problem is transferred internally to a country, which it can resolve by internal taxes on domestic production, stock build-up, consumer subsidies and so on. Alternatively, international buffer stocks can be built up in boom periods, to be used for stabilization in lean periods. Second, and related to the first, what are the distinctions between a producers' cartel versus one that is constituted jointly by producers and consumers? If there is no price stabilization objective, what is the incentive for the consumers to participate in the agreement? Third, what are the longer-term implications of these price altering schemes. How do they affect domestic production of commodities and crop diversification, and how do they influence patterns and trends in the world consumption of the commodities in question?

Herrmann's paper provides partial and static answers to some of these questions. He measures the revenue enhancing effect for producing countries and the welfare reducing effect for consuming countries of a coffee price increase in a two-year period. Traditionally, researchers have evaluated the welfare effects of the existence of such agreements. Herrmann assesses the situations with and without agreements. An innovative feature of the paper is that he also evaluates the welfare effects for a country in joining or not joining an agreement which is in effect. The assumption and details of the methods used are not provided in this paper itself. An initial clarification is why the aggregate results under Approach 1 reported in Table 2 differ from the welfare changes in the econometric modelling in Table 1.

Effect on net exporting countries

The calculations indicate benefits to exporters from the existence of ICA, as well as from the decision to participate in it. This, however, is simply the revenue effect during 1982-83 from a higher than free-market price achieved by ICA. Several questions come to mind: first, the welfare effect is not solely the revenue effect if a supply response (even in the short run), for example, from greater fertilizer use, is allowed for. Second, higher prices and lower exports imply stock build-up and carry-over costs, which are not considered by the paper. In Colombia, stocks in 1983 were over 12 million bags (122 per cent of exports) with estimated holding costs of US\$40 million per year, or 12 per cent of its estimated gain. Third, the discussion by focusing on the short term with fixed

supplies, does not consider one important element of benefit or cost from price changes – the induced effect of a higher price on producers, coffee production, diversification and consumers.

Effect on net importing countries

Herrmann sees the agreement as purely a price raising mechanism. If that were the case, the question arises why net importing or consuming countries join the agreement freely. As a group, the consumers must also perceive a price stabilization goal (if not within a year, at least over time). In fact the price range, I mentioned at the outset, is the range within which the ICA seeks the price to stabilize. The mechanism for stabilization is changes in the quota, including the introduction and suspension of the agreement. Stocks may not be financed by international funds, but producers hold considerable stocks both in expectation of future price increases, and because stock levels contribute to their export quotas. At present, 16 per cent of a country's export quota is based on its stocks and the rest is based on past and expected production. According to one estimate, without a price stabilization function, world prices in 1986 would have been much higher. Colombia's Coffee Federation also estimates that price instability during 1972-80 without an effective agreement would have been several times greater than in the 1980s with agreements in effect.

The estimates suggest that even while ICA hurts importers, the bigger importers would be even worse off if they left the existing agreement. This presumably assumes that the exit of a consuming country would raise the price outside ICA, but will have no effect on ICA itself. But if a single small consumer left ICA, it should be better off as a non-member purchasing in the unregulated market. If a large consumer did the same, on the other hand, the price in the unregulated market would rise, if no major producer also decides to leave ICA in response. But realistically, the price in ICA should fall, bestowing a benefit to the consumers staying behind. Given a tight producers' cartel, an individual consumer in general may indeed be better off staying as part of it. But in the aggregate, consumers would not be as worse off as depicted in the paper since those staying behind would face a lower price.

Strategic questions

According to the paper, producers are better off with the agreement; and given the agreement, any producing country would be far worse off not joining it. This is an all or nothing proposition, and a single producing country could be further better off by staying within ICA but also selling in the unregulated market. Consumers are better off without ICA,¹ according to the paper; and given ICA, the big consumers would be worse off staying outside of it. If it is clearly better off without ICA, why would a big consumer join ICA thereby strengthening the cartel's existence. In general, why do not the member consumers leave ICA? Even if such action does not break up the cartel, the price supported in the ICA is likely to fall. This suggests that there must be a price stabilization role as well,

which can result even without international buffer stocks. If so, there must be some gain to consumers during some periods; either way there must also be some cost to producers from stock build-up for price support and/or stabilization. These elements need to be accounted for in the analysis.²

NOTES

¹Though their losses in absolute numbers are comparable to the producers' gain, they are much smaller as per cent of their GDP.

²It might be noted that the member consumers are also represented in the ICA negotiations by the coffee traders and not only the final consumers. The former would want to minimize their purchase price, but they lose from higher prices only depending on the price elasticities they themselves face.