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Floating Exchange Rates and International Trade in Agricultural Commodities .

Eight years have now passed since the first official devaluation of the US dollar in terms of gold an event which, in retrospect, is regarded as having brought to an end the system of fixed exchange rates established by the Bretton-Woods Agreement in 1944. That system has been replaced by a situation in which the former "key currencies", the US dollar and the pound sterling have been allowed to float roughly in line with market forces, and other countries have declared their intention either to float independently, or to align their exchange rates either to a specific foreign currency, or to a composite index of foreign currency values. This new situation, though scarcely corresponding to the theoretical view of flexible exchange rates, due, amongst other things, to a significant degree of government intervention in currency markets, results, in fact, in considerable fluctuations in bilateral exchange rates. The controversy regarding the desirability of fluctuating as opposed to fixed exchange rates is linked primarily to the efficacy of each system in resolving balance of payments disequilibria. From this macro-economic viewpoint no general consensus of opinion has been reached and, for example, five different approaches to the question have been summarized by H.G. Johnson.[5] The scope of this paper, instead, is limited to the consideration of the effects which the change in the system of exchange rate regulation may have had on trade in agricultural commodities.

The subject is of obvious importance to those countries where agricultural exports constitute a large percentage of total exports. But a further consideration suggests that it is also relevant to a wider range of countries.

First, in the onslaught of events at the beginning of the 1970s the official dollar devaluation was accompanied by a rapid rise in commodity prices. It has been inferred that some of this rise was also due to the switching of speculative funds into commodity markets in view of the uncertainty reigning in the foreign exchange markets at that time. If this were so, continuing uncertainty in currency markets, implicit in the present system of fluctuating rates, could be expected to cause similar disturbances in the levels, both relative and absolute of commodity prices, which may not be without consequence for trade flows, and the

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evolution of trends in production and consumption.

Secondly, movements in commodity prices are considered of funda-
mental importance in determining economic trends in industrialised
countries. N. Kaldor[7] has pointed to the fact that violent movements in
commodity prices have been followed by periods of economic recession,
whether the movements have been downwards, as in the 1920s, or
upwards, as in the early 1970s.

As regards price, it is well known that its upward trend has been far
more rapid in the 1970s than in previous decades. The index for agricul-
tural products has risen even faster than that for manufactures. The
steepest rises took place in 1973 and 1974, corresponding with the
second official devaluation of the US dollar in terms of gold. But the years
1973 and 1974 corresponded, too, with a rapid decline of world stocks in
cereals. Given the coincidence in timing it is virtually impossible to
estimate the relative contributions to the price increase of the effect of
supply shortage and that of exchange rate uncertainty, causing specula-
tive funds to be moved into commodity markets.

Similarly, as the rate of price increase slowed down (see FAO index for
agricultural commodities), or went into reverse (UN World Export price
index for food), in 1975 world cereal stocks increased and a possibly more
secure outlet for speculative funds became available in the USA with the
reopening of gold dealings for private investors.

It is, however, the variability of commodity prices rather than its
directional trend which is in question in relation to the debate on fluctuat-
ing exchange rates. In this respect the values of the coefficients of varia-
tion calculated on indices of prices for exported commodities in principal
exporting countries are of some interest. In all cases a greater degree of
variability is indicated for the years after 1971.

If, however, as has been argued, uncertainty caused by exchange rate
variability impedes the steady development of international trade, the
effects of the changeover would be seen presumably, in a slower rate of
growth of the volume of world trade, if not actually in a decline in the
volume of trade.

In a theoretical analysis of the situation facing a single firm trading in
conditions of uncertainty in the exchange markets W. Ethier[3] concludes
that the level of trade will be reduced to the extent that the firm is
uncertain as to how its revenue is dependent upon the future exchange
rate, but that where it has knowledge of the dependence of its revenue on
the future exchange rate, exchange uncertainty will influence the degree
of foward cover rather than the level of trade. D.P. Baron,[1] on the other
hand, again taking a theoretical approach at firm level, argues that
"uncertainty regarding exchange rates has no effect on trade" owing to
the operation of the forward exchange markets, although he qualifies his
view to the extent that there may be imperfections, either in capital or
foreign exchange markets.

Indices of volumes of world trade both in manufactures and in agricul-
tural products belie the assertion that the uncertainty inherent in a system

of fluctuating exchange rates would impede the continued expansion in world trade. Although the index of trade volumes in agricultural commodities lagged behind that for manufactures, both grew at a faster rate than during the 1960s. This was so for agricultural commodities despite the decline in the index of 1974 and 1975, which took it below the high levels reached in 1973, but no further.

The effects of variations in exchange rates, however, could be expected to be more obvious at a bilateral level of trade flows, with a tendency for an exporter to increase his exports to those countries whose currencies had appreciated in relation to his own, and a tendency for exports to those countries against which his own currency is appreciating to experience a relative, if not absolute, decline.

At this level, more emphasis has recently been given to the interaction of agricultural policy and balance of payments, both in the USA and in the EEC, where a system of border taxes (MCAs) has been introduced to counteract possible effects on agricultural trade flows of exchange rate variations between member countries. G.E. Schuh[9] stressed the importance of the exchange rate variable in the agricultural policy of the USA and a lively debate ensued, in which other authors attempted to verify the proposition with different results[10] and suggesting[6] that other factors had interposed an influence on price, at least as important as that of the US exchange rate.

This paper concentrates on the bilateral trading aspects of exchange rate variability, but from the point of view of specific commodities, rather than from that of any single country. The objective is to attempt to assess the importance of exchange rate movements in commodity trade as one of the many influences operating in commodity markets.

2   BILATERAL TRADE IN AGRICULTURAL COMMODITIES: SOME PRELIMINARY CONSIDERATIONS

It may be useful, at this stage, briefly to outline a framework of reference within which to analyse the effects of an exchange rate variation between a single exporting and a single importing country.

In theory the depreciation of an exporting country currency (or the revaluation of an importing country currency) would reduce the cost of imports to the importer in terms of the importer's own currency; the gain to the exporter would ensue from an increased volume of exports sufficient to offset the fall in foreign currency receipts from his price decrease (in foreign currency terms).

This mechanism may be counteracted, however, by several factors all working, basically, to undermine the necessary conditions of price elasticity demand on this part of the importing country for the exports in question and elasticity of supply on the part of the exporter. These factors include the possibility of (i) an equivalent currency depreciation by a competing exporter and (ii) an appreciation of the currencies of other

importing countries. The structure of the market can likewise influence the final outcome insofar as, (iii) the exporter has some control over his export prices and quantities which may be exerted with primary regard to an aspect of economic policy other than balance of payments. This may occur in the case of state trading agencies attempting to maintain a minimum export price level, or where the market is dominated by large private firms. Moreover, (iv) the importing country may exert control over the quantity of imports and use this control with primary regard to minimising the outlay of foreign exchange. Finally, as regards trade in agricultural commodities in particular, both export supply and import demand elasticity are heavily influenced by (v) seasonal variations in production, both in importing and in exporting countries, particularly where the product is consumed (vi) domestically in the exporting country, and where (vii) it is produced in the importing country.

The net results of these factors, operating either singly, or in combination, on the conditions of import demand elasticity and export supply elasticity may be to offset to some extent the potential effect of an exporting country's devaluation in its trading relations with a single importing country. Thus, for example, if exporting country A devalues with respect to importing country B by 10 per cent, but export prices increase by 12 per cent (for reasons ii, v, vii) the price advantage to country B is eliminated, and, depending on B's bilateral trading prospects with other competing exporters, there may be no reason to expect an increase in quantity flows of exports from A to B.

In fact, in a preliminary test of correlation between trade volumes and bilateral exchange rates for the period 1970–76 covering forty bilateral trade flows between main exporting and importing areas for six major commodities, only one-fifth of the correlation coefficients proved significant at the 0.05 level of probability.

Nevertheless, although the direct effects of an exchange rate variation may be difficult to trace, particularly at the aggregate level of national statistics, it is hard to imagine that at trading level it is totally irrelevant. Moreover, in the hypothetical example cited previously, given the possibility that B's exchange rate may fluctuate in relation to the currency of a competing exporter C the outcome of A–B trade may well be influenced by the movements of exchange rates B : C; the influence[1] may be felt both on the levels of A's negotiated price and on the volume flows. In this situation, the problem of establishing a methodology which would permit us to identify the effects of exchange rate movements becomes paramount. It is evident that it would be extremely difficult to construct an econometric model capable of incorporating all the relevant variables. Instead, in this paper we have chosen a more limited approach and in doing so we have ignored the possible effects on bilateral trade of the currency variations of competing exporters.

3 THE METHODOLOGY

The methodology used here was evolved by Kreinin[8] and applied by him to exports and imports of industrial goods in the time period 1970–72 for several major trading nations.

Kreinin's methodology for the investigation of the effects of exchange rate variability on export flows permits us to identify a "pass through" effect of exchange rate variations on export prices, i.e. the extent to which an exporter country's depreciation (appreciation) is reflected in a fall (rise) in its export price in terms of the importer's currency. The formula for measuring the "pass through" effect is:

$$\alpha_i = 1 - \frac{{}_iP_x^k - [{}_cP_x^k - {}_cER^k + ({}_cP_d - {}_iP_d)]}{{}_iER^k} \qquad (1)$$

where: k denotes the exporting country;
i denotes the importing country;
x relates to exports;
c denotes an importing country used as "control";
α_i is the "pass through" effect for importer i from exporter K;
P denotes the percentage change in export prices;
ER denotes the percentage change in exchange rates;
P_d is a measure of the percentage increase in domestic prices;

The formula for measurement of the "pass through" effect may be explained as follows. The increase in export price to an importing country i ($ {}_iP_x^k$) whose currency appreciated (depreciated) with respect to the exporter's currency, is compared with the increase in export price to an importing country C (Control), whose currency remained stable, or relatively so with respect to the exporter's currency. The theoretical validity of the "control country" approach and the desirable attributes of a country selected as control are amply discussed in Kreinin's paper. The basic idea is that the control country is used as a proxy for a situation that would have emerged had there been no exchange rate variability.

The terms ${}_cER^k$ introduced into equation (1) makes allowance for the situation where the control country's currency experienced some (smaller) variation in terms of K's currency; the possible effects of differences in internal rates of inflation in the i and c countries that might filter through on to the level of prices agreed for import transactions is discounted by $({}_cP_d - {}_cP_i)$.

The formula can likewise be applied in the case of an appreciation of the exporter country's currency; in this case the "pass through" effect would be interpreted as the extent to which the exporter currency appreciation accounted for price increases to the i country.

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[1] Yet a further complication arises if exporting agencies request payment in a third currency, or if national governments place restrictions on the availability of certain foreign currencies to their importers.

If we denote the expression $[_cP_x^k - {}_cER^k + ({}_cP_d - {}_iP_d)]$ in the numerator by $_cP_x^k adj$, formula (1) can then be restated as:

$$\alpha_i = 1 - \left(\frac{_iP_x^k - {}_cP_x^k adj}{_iER^k} \right) \qquad (2)$$

The expression in the bracket in formula (2) may be termed the "absorption" effect. If its value is less than one and positive, we have what will be termed a "moderate" pass through effect. In the case of an appreciating importing country currency, this may be interpreted as meaning that K's export prices have risen to the i country relatively to a situation where no appreciation had taken place, but that some of the rise has been offset by the "pass through" effect; the advantage to the importer of the effect of the appreciation has been "absorbed" by the relative increase in K's export prices to an extent measured by the "absorption" effect. In the case of a depreciating importing country the disadvantage of its depreciation has to some extent been "absorbed" by a relative decrease in K's export prices, relative to a situation of bilateral exchange rate stability.

Should, however, the "absorption" effect assume a positive value greater than one, it becomes evident that K's export prices have taken a path, contrary to expectations derived on the basis of the exchange rate variation. The export prices to an appreciating currency importer have risen by more than his currency appreciation, whereas they have fallen to a depreciating currency importer by more than his currency depreciation. This situation could conceivably arise if, for example, a depreciating importer's currency has depreciated less with that of a second exporter and is thus in a stronger position to bargain with the original exporter. Conversely, if the appreciation of an importing country's currency with the first exporter exceeds the rate of appreciation with a second importer, it may be willing to offer a higher price to the first exporter.

Finally, where the "absorption" effect assumes a negative value the overall movement in K's export price has reinforced the movement to be expected on the basis of the exchange rate variation. For an appreciating currency importing country, prices fell more than in a hypothetical situation of no bilateral currency variation, whereas for a depreciating currency importer they rose more. In each case, the "pass-through" effect to the importer was magnified rather than absorbed by the movement in K's export prices. This situation could arise if an exporter were anxious to secure receipts in an appreciating currency, or to avoid loss in a depreciating currency.

4   THE ANALYSIS OF THE EXCHANGE RATE EFFECTS ON TRADE

Although this model does not take account of multilateral variations in exchange rates between competing exporters, it has several advantages in an application to trade in agricultural commodities. In particular any effects on trade with the i country deriving from conditions of K country supply, notably seasonal variations in production, domestic consumption of the exported product and price control over exports, should also be reflected in trade with the control country, and should not therefore invalidate the analysis. Parallel conditions influencing the two importer markets can less safely be assumed not to influence the price differential and, where they exist and are of sufficient importance, may be expected to introduce a bias in specific markets.

4a   *The data*

The six commodities eventually selected for more detailed investigation were: wheat and maize, commodities which are also produced in importing countries, and cotton, tea, cocoa and coffee, commodities which are not produced in the major importing countries. The original intention was to study trade flows from the three major exporting regions to each of their three major export markets (defined on the basis of 1976 trade statistics), but it has not been possible yet completely to fulfil this objective.

Trade with centrally planned economies has been excluded, as have trade flows with the EEC area for commodities subject to "intervention prices".

The 3 digit SITC level of disaggregation of commodity data obtained from UN statistics was used; for certain products a finer level of disaggregation would have been desirable, but extremely difficult to obtain, for exports by destination.

Bilateral currency rates of exchange were obtained by conversion through units of national currency per US dollar, as published by the IMF, taking, where possible, the period average rates at their national market to US par rates.

As a measure of the rates of internal inflation, national consumer price indices relating to food, derived from UN statistics were used for all commodities except cotton; for cotton the corresponding consumer price index (all items) was used.

Where data permitted, the calculations were made first for the four-year period 1973 to 1976 and subsequently, because of its peculiarity, for two sub-periods 1973–74 and 1975–76.

The percentage changes in prices, exchange rates and quantities were taken as the difference between the end-of-period and beginning-of-period values of each variable calculated as a percentage of the average annual value of the variable in the time period under consideration.

4b   *The results*

The calculations were performed for three time periods: the four-year 1973–74 and 1975–76 and the two sub-periods 1973–74 and 1975–76. The subdivision of the four-year period was considered necessary because there is greater likelihood of the erosion of the "pass through" effect over a longer time period and because it seemed interesting to examine the period 1973–74 in isolation, given the unusual disturbances in the market in that period.

Altogether 38 combinations of importer – control countries were con-sidered. Some difficulties were encountered in identifying appropriate control countries. A major requisite of the control country is that its exchange rate should be stable in terms of the exporter's currency. Because of the continuous fluctuation in exchange rates, it was rarely possible to use the same importer – control country combination for each of the three time-periods.

The detailed results for each trade flows are available separately on request.

In Tables 1, 2, and 3 the results are classified for each time period according to whether the "pass-through" effects were moderate, rein-forced by price movements ("absorption" effect negative) or offset by contrary price movements ("absorption" effect positive and greater than 1). The breakdown is given for each commodity according to whether the importing country currency appreciated or depreciated.

Of the three possible outcomes for a depreciating currency importer, that where commodity price movement proved contrary to the exchange rate effect was the least unfavourable. The most unfavourable outcome was that where commodity price movement and exchange rate effect reinforced each other. Conversely, for an appreciating currency importer and situation of "price movement reinforce" was the most favourable and the least favourable was that where commodity price movement was contrary to the exchange rate effect. By "favourable" is meant that unit price of imports in domestic currency would be relatively lower, and thus less likely to cause inflationary pressure.

Table 1, refers to the four-year period, and depreciating importers are in the majority. It can be seen that the number of cases where a moderate pass through effect is detected is very small and apply only to depreciating importers, implying an unfavourable situation for them. Rows Bi and Cii of the table indicate situations where relative price movements have been upwards and unfavourable to the importers and clearly they predomi-nate. Nevertheless almost one-third of the observations are contained in row Bii which indicates a relative fall in price to appreciating importer currencies. It is worth noting that the observations in line Bii represent more than half the appreciating importer countries and it may perhaps be inferred that the relative price reductions may mark a greater willingness of exporters to trade with such countries, as well as a fear of losing trade to competing exporters.

TABLE 1   *Results of estimates of "pass through" effects for 1973–76* (number of cases)

	Wh.	M	Co.	T	Cf.	Ct.	Total
A. *Moderate "pass through"*							
(i) depreciating importer	1	1	0	0	0	0	2
(ii) appreciating importer	0	0	0	0	0	0	0
B. *Price movement reinforced*							
(i) depreciating importer	5	1	0	1	0	1	8
(ii) appreciating importer	1	0	1	1	1	2	6
C. *Price movement contrary*							
(i) depreciating importer	0	1	1	0	1	0	3
(ii) appreciating importer	0	0	1	3	1	0	5
D. *Totals*							
(i) depreciating importer	6	3	1	1	1	1	13
(ii) appreciating importer	1	0	2	4	2	2	11

TABLE 2   *Results of estimates of "pass through" effects for 1973–74* (number of cases).

	Wh.	M	Co.	T	Cf.	Ct.	Total
A. *Moderate "pass through"*							
(i) depreciating importer	1	1	0	0	0	3	5
(ii) appreciating importer	0	0	0	0	0	0	0
B. *Price movement reinforced*							
(i) depreciating importer	0	1	0	0	0	0	1
(ii) appreciating importer	0	0	0	0	0	2	2
C. *Price movement contrary*							
(i) depreciating importer	3	0	0	0	0	0	3
(ii) appreciating importer	2	0	0	0	0	0	2
D. *Totals*							
(i) depreciating importer	4	2	0	0	0	3	9
(ii) appreciating importer	2	0	0	0	0	2	4

TABLE 3   *Results of estimates of "pass through" effect for 1975–76* (number of cases)

	Wh.	M	Co.	T	Cf.	Ct.	Total
A. *Moderate "pass through"*							
(i) depreciating importer	0	0	0	0	0	0	0
(ii) appreciating importer	1	0	1	1	1	2	6
B. *Price movement reinforced*							
(i) depreciating importer	2	2	0	2	0	1	7
(ii) appreciating importer	1	1	2	3	2	2	11
C. *Price movement contrary*							
(i) depreciating importer	0	0	0	0	0	0	0
(ii) appreciating importer	2	0	0	0	0	0	2
D. *Totals*							
(i) depreciating importer							
(ii) appreciating importer	4	1	3	4	3	4	19

Key: Wh. = Wheat; M. = Maize; Co. = Cocoa; T. = Tea; Cf. = Coffee; Ct. = Cotton.

Table 2, relating to the period 1973–74 shows a greater incidence of the moderate "pass-through" effect almost in half the cases. All, however, apply to depreciating currency importers and indicate that benefits of a relative price decrease have been offset by a currency depreciation. In this period, the appreciating importer countries are evenly divided between the extremes of a highly favourable situation and a highly unfavourable situation, with no case falling into the classification of a moderate pass-through effect.

The results for the period 1975–76 are shown in Table 3. This period was more tranquil than the other two, and therefore the results can be expected to be more meaningful. A moderate pass-through effect is shown for appreciating importer countries, and it covered one third of their group. The majority of appreciating currency importers fell into the category where price movement reinforced the "pass through" effect. Looking at this phenomenon from the point of view of the exporting country it would be necessary to examine the relative elasticity of demand for his exports before any conclusion could be drawn as to benefits ensuing in terms of foreign currency receipts. Whilst all cases of appreciating currency countries coincided with outcomes favourable to the importer, it is a striking fact that all cases for depreciating importers correspond with the most unfavourable of outcomes i.e. where price movements reinforced the exchange rate effect.

5   CONCLUSIONS

The method used here has allowed us to identify the direction of an actual change in export prices relative to a (simulated) situation of constant exchange rates and relate this to change in exchange rates in a bilateral trading situation.

The results obtained have permitted us to identify two types of situation in which price changes have assumed a direction coherent with the exchange rate variation where a moderate "pass-through" effect has resulted, and where price movements have reinforced the exchange rate effect. The majority of cases fell into these two categories (49 out of 58 in the three periods considered; 33 out of 39 in the two-year periods).

Analysis of the shorter time periods takes an added significance in the context of the controversy over the efficacy of the use of exchange rate policy in correcting balance of payments disequilibria. Even if one accepts that "given sufficient time for adjustment . . . all internationally traded goods will command the same price everywhere" (the "law of one price" as summarised in (8)) the price effect, through exchange rate variation, may be discernible in a relatively short time period.

The question here, however, has not been posed in terms of balance of payments, but rather an attempt has been made to shed light on the possible price effects of exchange rate variation on commodity trade. The evidence is not yet sufficient to indicate that the contribution of commodity trade to balance of payments could be altered by a policy of exchange

rate manipulation. For this, further evidence of import and export elasticities of demand would be necessary. Moreover, as is well known, large sections of trade in agricultural commodities are subject to regulation which eliminates price advantage, and thus, by implication, any advantage deriving from exchange rate variation. Insofar as the price effects of exchange rate variation affect the internal rate of inflation, the results of our analysis reconfirm the advantages of appreciating currency importers.

Although the analysis suggests that exchange rate variations are "passed through" into commodity prices, it has not been possible to make direct comparisons with what might have been a comparable situation with fixed exchange rates and devaluation. One feasible answer could be that in anticipation of devaluation, price movements to strong currency countries would tend downwards and vice versa for weak currency countries (an effect corresponding with "Price movement reinforced" in the present exchange rate situation). It is possible that this would create greater price instability than the present system of floating exchange rates at times when currency realignment became necessary.

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DISCUSSION OPENING – KAZUSHI OHKAWA

Exchange rate variations are expected to change the relative prices of exportable and importable commodities and hence induce responses in their supply and demand. These changes in turn, are expected to restore an equilibrium in the balance of payments. Such simple expectations,

Commodity	K Country	Importing Country	Control Country	"Absorption effect"[1] 1973–76	1973–74	1975–76
Wheat	USA	Japan	Korea	N F	N F	R, 4.16
	,,	,,	India	N F	R, 3.72	R, 6.09
	,,	India	Japan	D, –2.70	N F	N F
	,,	Korea	Japan	D, 0.56	D, 1.16	N F
	,,	,,	Korea	N F	N F	R, –17.43
	,,	Korea	Japan	D, 0.56	D, 1.16	N F
	,,	,,	India	D, –2.46	N F	N F
	Canada	Brasil	Japan	D, –0.94	D, 0.07	D, –1.13
	,,	,,	Algeria	D, –1.38	D, 3.93	D, –2.15
	,,	Japan	Algeria	D, –2.57	D, 2.00	N F
	Australia	Egypt	Japan	R, –0.11	R, 3.59	R, 0.30
Maize	USA	Japan	Korea	N F	N F	R, –3.43
	,,	Spain	Japan	D, 0.26	N F	D, –1.08
	,,	,,	Korea	N F	N F	D, –0.31
	,,	Korea	Spain	D, 3.27	D, –0.58	N F
	,,	,,	Japan	D, –1.14	D, 0.71	N F
Cotton	USA	Japan	Korea	N F	N F	R, 0.36
	,,	Korea	Japan	D, –2.29	D, 0.03	N F
	,,	,,	Korea	N F	N F	R, –1.22
	,,	Italy	Germany	N F	D, 0.67	D, –1.79
	,,	,,	Switzerland	N F	D, 0.49	N F
	Turkey	Switzerland	Germany	R, –83.93	R, –10.30	R, 0.92
Cocoa	Ivory Coast	USA	France	D, 17.92	N A	R, –0.31
	,,	,,	Netherlands	N F	N A	R, 0.31
	,,	,,	USA	R, 20.35	N A	N F
Coffee	Ivory Coast	USA	France	D, 28.49	N A	R, –1.39
	,,	,,	Netherlands	N F	N A	R, 0.55
	,,	Netherlands	France	R, –3.16	N A	R, –2.30
	,,	,,	USA	R, 13.52	N A	N F
Tea	Sri Lanka	Netherlands	UK	R, 1.78	N A	R, –1.72
	,,	,,	USA	R, 1.55	N A	N F
	,,	USA	UK	R, 1.49	N A	R, 0.53
	,,	,,	Netherlands	N F	N A	R, –1.22
	India	UK	USA	N F	N A	D, –2.77
	,,	,,	Netherlands	D, –1.82	N A	D, –1.08
	,,	Netherlands	USA	R, 1.58	N A	N F
	,,	USA	Netherlands	N F	N A	R, –1.60

N F – Not Feasible: exchange rate variation of the control country exceeded that of i country;
N A – No Available: data 1973 not available;
R –   i country's currency appreciating;
D –   i country's currency depreciating;
[1] – "Absorption effect": see formula (2) in text.

however, are possible only if the exchange adjustments are reflected in the prices of tradable goods, instead of being interrupted by the effects of other factors related and unrelated. Accordingly, what we call "pass-through" effects and their measurements are at issue. This is an important but controversial issue at the aggregate level, pertaining to the relations of balance of payments and domestic prices and home inflation, particularly in the context of comparison between the conditional floating system and the fixed exchange rate system. On the other hand, it is also important for us to analyse specific features of commodity markets in international trade because each commodity (or group of similar commodities) has its own performance of supply and demand and hence price.

The Loseby-Venzi paper seems to have an intermediate nature between the aggregate and the commodity approach with taking up major agricultural commodities. Their measurements and major conclusion pertain to those commodities, but some discussion and speculative observations are tried in relation to the problem of the macro approach.

May I suggest that the problems left for further research may be fruitful if deeper scrutiny is carried out in a specific context of each major commodity, including the measurement of elasticities of export supply and import demand. In this connection there are just two points I wish to raise along this line, apart from measuring technique.

1   Do you identify any different features between the two groups: wheat, maize (products also produced in importing country), and cotton, cocoa, coffee and tea (products not produced in importing country)? This aspect pertains also to countries, DCs and LDCs.

2   In general, can we identify special features of agricultural commodities as compared to industrial goods? In addition to the seasonal variations you mentioned, I am tempted to wish to know more about the characteristics of agricultural commodities, particularly in measuring the pass-through effects. I am inclined to share a speculation that in the case of agricultural commodities the effects of the other factors may be greater. In saying this I do not intend to cast clouds on your major conclusion that the pass-through effects are discernible for agricultural commodities, even though the findings suggest diversification.

GENERAL DISCUSSION – RAPPORTEUR: ALBERT J. NYBERG

In discussion it was noted that before World War II there were free exchange rates and these were frequently determined by wholesale price index ratios. It was suggested that exchange rate changes would tend to cause changes in the price of manufactured products (where they or their components were traded) but the price of raw materials would not change.

An enquiry was also made as to the practical relevance of floating exchange rates for LDCs, as the effects are minimal in the short run.

In reply to the general discussion, Margaret Loseby indicated that in theory, arbitrage occurs in primary commodity markets in both place and time but in practice she felt that a one-world price did *not* exist. She agreed that in many LDC markets the effects and relevance were minimal.

Participants in the discussion included Ardron B. Lewis and Ali Mohammad.