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CHANGES IN THE TERMS OF TRADE FOR AGRICULTURE: NEW PLATEAU OR NEW PRECIPICE*

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This paper looks at the recent boom in agricultural commodity prices to see to what extent the changes these prices reflect are of a structural rather than short term nature. It concludes that they are essentially short term: a lagged supply response to the agricultural depression of 1970 and 1971; the coincidence of normal commodity cycles for several commodities; an unusual coincidence of adverse seasonal conditions in major producing areas, particularly the U.S.S.R.; and an unprecedented upswing in world economic activity. Nevertheless, there are a number of factors which suggest that, other than possibly in short term disequilibrium situations, agricultural commodity prices will not decline to previous levels: worldwide inflation; redirection in world agricultural support policies; and the energy crisis. Many of these factors will also influence prices of manufactured goods and hence the terms of trade.

After considering the problems of world food supplies and continued growth in world population, the paper suggests that there is little evidence of a major structural change in the market for agricultural commodities. Rather, it points to a return to the previous situation where there is a slight tendency for the terms of trade to move against agriculture.

The question implicit in this paper is whether or not a structural change has occurred in the world demand and supply situation for agricultural products. Will international prices for agricultural commodities remain high relative to those of manufactured goods, with a persistent tendency to shortages of agricultural commodities—at least in the absence of some far-reaching action by governments? Or has the situation since 1972 been reflecting essentially short-lived factors?

These issues also raise the question of world food needs in relation to supply possibilities. Even in the developing countries, production shortfalls result in part in effective commercial demand. Stock levels and food aid disposals also influence commercial supplies of these products.

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Although the present situation raises questions about the world's ability to feed its rapidly growing population, high agricultural prices and tight supply are not new. Early postwar and in the early 1960s, world agriculture experienced tight supply conditions, high prices and world (producer) optimism that the declining trend in real prices for agricultural commodities was reversed. The obverse was increased pessimism about problems of world hunger with continuing population growth; this was reflected in a surge in publications pointing with varying degrees of gloom to the likelihood or inevitability of widespread disaster or famine. [For example, 1, 2. 3]. That these questions are not new does not, however, mean that the answers may not differ now.

The main feature of world export prices of agricultural commodities and of manufactures over the last 20 years (Graph I) is the more or less steady drop in the terms of trade from the early postwar years and Korean War boom to the 1960s. This was followed by a slow decline until 1972/73, when there was not only a very substantial upturn in agricultural prices, but the growth rate of agricultural prices exceeded that of manufactured goods; that is, the terms of trade moved in favour of agricultural exporters. Australian farmers' terms of trade, based on prices received and paid by farmers, and hence differing slightly in concept from the world trade series, show a generally similar pattern (Graph II).

It is illustrative of the extent of the turn-around in world commodity prices that at one stage, in 1973/74, Australian f.a.q. wheat prices, at $4.16 per bushel f.o.b., were over three times 1969 levels; even so, in real terms, the average export return estimated for the 1973/74 pool remains less than half that in 1947/48.

Commodity Background

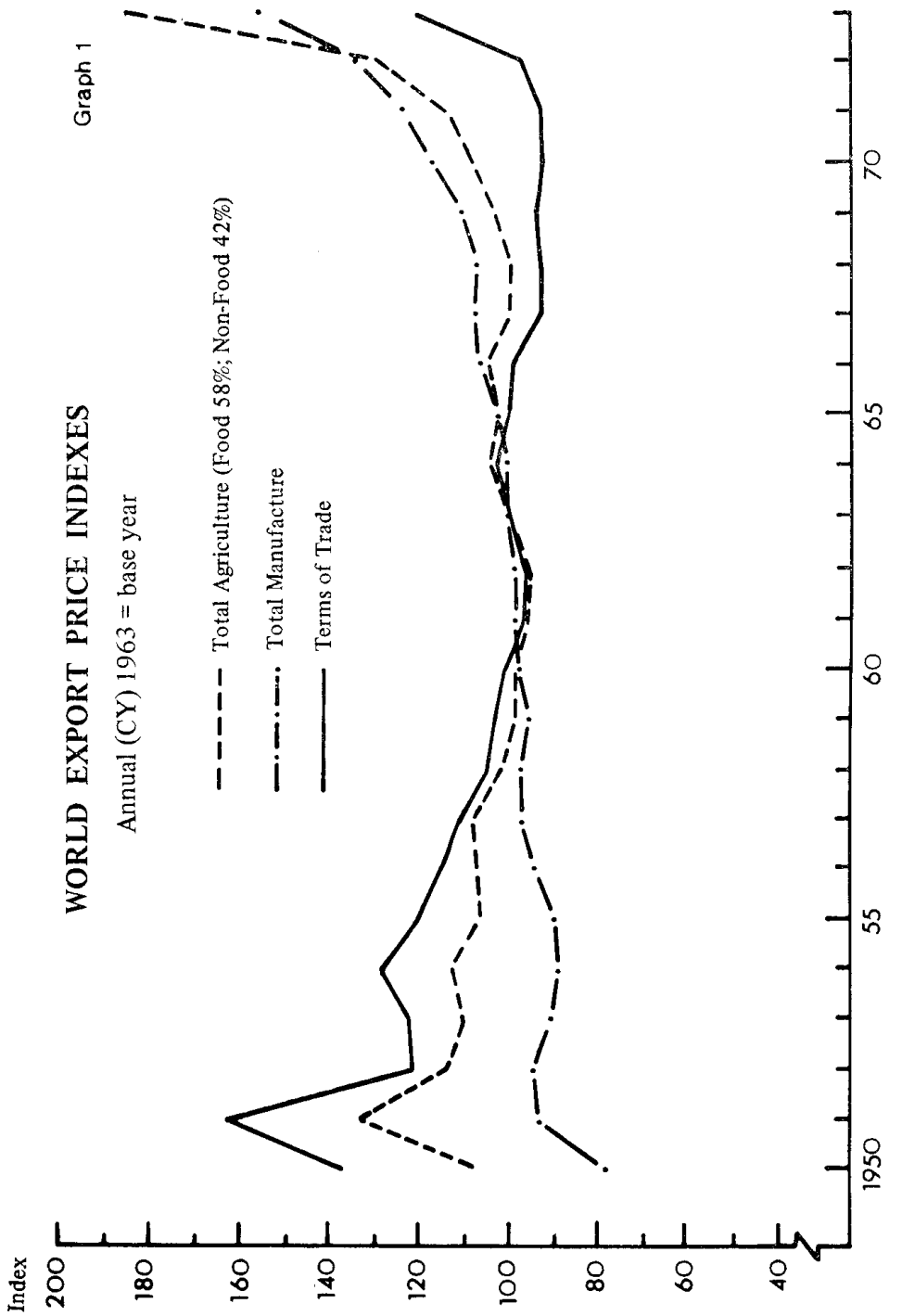
(a) *Grains/Livestock*

The main signal for the upturn in world agricultural commodity prices came with the Russian wheat purchases in 1972. In that year world wheat production had been rising, despite supply restraints in the U.S.A., Canada and Australia, and, until the U.S.S.R. entered the market, a build up of stocks seemed inevitable. With a poor 1972/73 U.S.S.R. harvest (down to some 86 million tonnes from 99 million tonnes the year before), the U.S.S.R. imported in 1972/73 some 17·5 million tonnes of wheat, 26 per cent of the world trade in that year (67·6 million tonnes). Excluding U.S.S.R. imports, world trade in wheat in 1972/73 would have been close to the usual level of about 50 million tonnes. Stocks at the end of 1972/73, 27 million tonnes, were the lowest since 1951/52 and have not yet been adequately replenished.

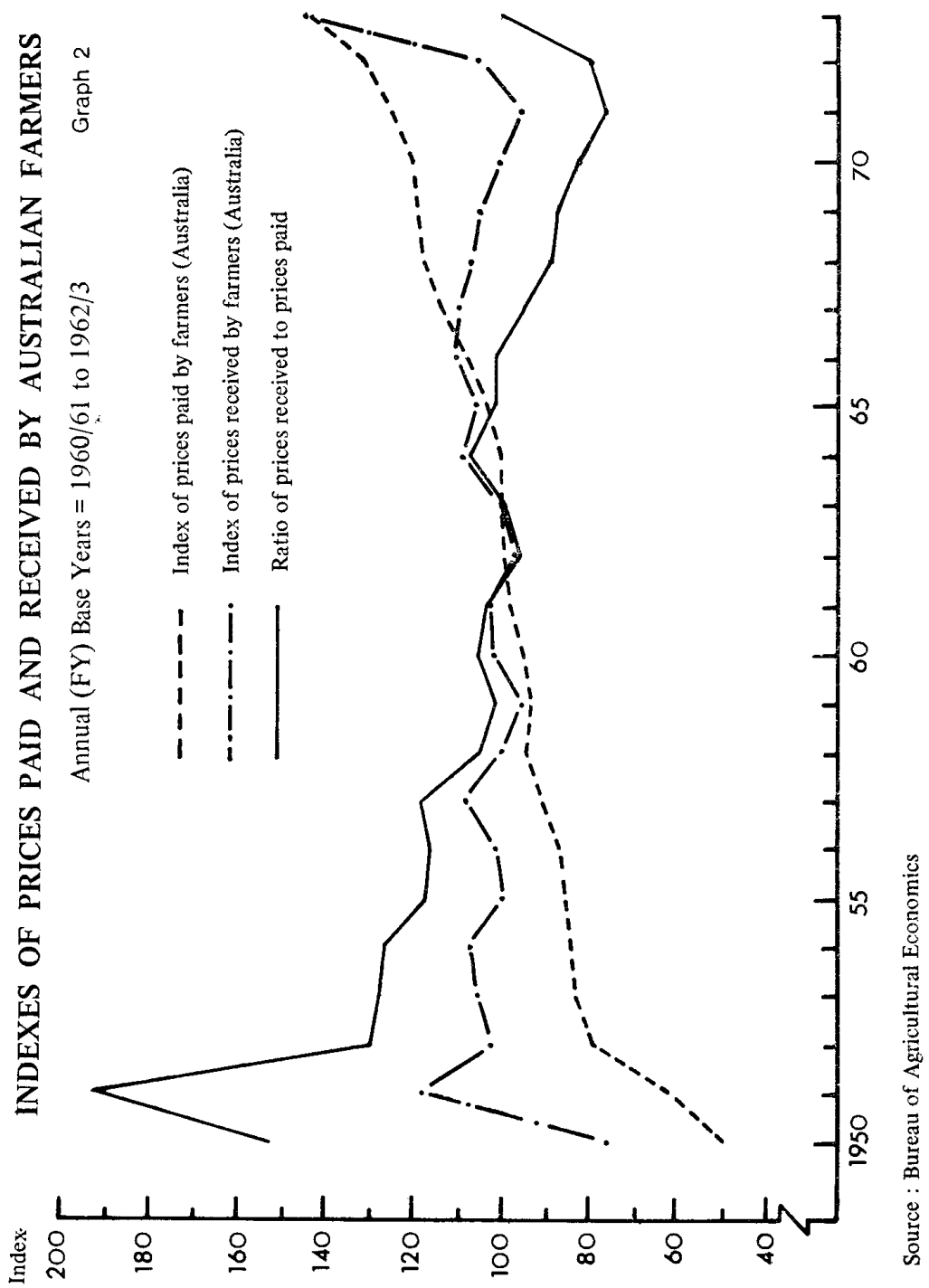
Coarse grain demand is a more dynamic component of the world cereal economy than wheat, with greater requirements likely in the future if consumer demand for animal products, particularly meats, continues to grow in western economies and policies to improve consumer diets are maintained in centrally planned economies [5].

Demand for meat in major consuming areas has been growing strongly in response to continuing population growth and high rates of economic growth, including substantial increases in demand in some developing areas. Production responses, however, tended to lag, being affected by adverse seasonal conditions in major producing areas which

Graph 1



Source : U.N.; GATT; FAO.



Source : Bureau of Agricultural Economics

affected meat production directly, and indirectly through effects on feedgrains; price ceilings in the U.S. in 1973 and high feed costs also slowed production in that country [8].

Efforts have been made in a large number of countries to increase meat production, but time lags in supply responses are substantial and rapid production increases in many countries are difficult for hygienic or technical reasons. From past efforts, however, production potential has increased as herd building has been under way in major importing and exporting countries at relatively rapid rates; production will also increase further once herd building ceases. In the U.S., the largest producer and a major importer, cattle numbers have been rising at about 3 per cent per annum in recent years—in the next 12 years a 44 per cent increase in cattle numbers has been projected by the U.S.D.A. [6]. Despite short term difficulties, in the longer term demand for meat seems likely to remain reasonably firm; given the significant increase in supplies expected in coming years, however, maintenance of high prices will depend upon sustained levels of real economic growth in the major importing areas.

As well as the meat market, a strong trade demand for grains depends upon, particularly, U.S.S.R., Chinese and European policies. The U.S.S.R. has taken added steps to increase production through price policies and by stepping up input supplies—fertilizers, farm machinery, etc. The U.S.S.R. seems unlikely, however, to remain a regular importer of major quantities of wheat and other grains. Some increase may be expected in Chinese imports, but grain production there has been growing more rapidly than population and has scope for continuing expansion [7].

In Europe there are conflicting influences: recent events have reduced public concern over high levels of agricultural support; high prices and supply difficulties have 'justified' to the protagonists of the C.A.P. high, and higher, support levels. The E.E.C. [9] could produce its own grain requirements and make imports unnecessary and continued high prices would give added encouragement to its increasing self sufficiency. On the other hand, some redirection of incentives to high protein, particularly meat, production can be expected in the C.A.P. and will work in the other direction.

The market impact of a sustained demand for livestock feed will also depend largely upon the U.S. response. In the early 1960s the U.S. supplied over 50 per cent of world exports of coarse grains; this dropped to close to 40 per cent in 1970/71, but exceeded 50 per cent in 1972/73. In the event that demand continued to increase at recent rapid rates, there would be some difficulties in further expanding production of soya beans and grains rapidly. U.S. soybean acreages have grown rapidly—1973 averages were about a third above the 42 million acres harvested in 1970 and 1971. One view is that the U.S. in 1973/74, with 19 million acres still set aside, was close to its short run maximum production [9, p. 8], part of the remaining set-aside acreage being considered of limited use. Alternatively, although substantial areas of additional land could be brought into grain production by diverting from other uses, including natural pasture, technology is likely to be the main factor increasing supplies. The U.S.D.A. has projected for 1985 potential increases in production compared with 1970 levels of wheat (+35 per

cent), maize (+50 per cent) and soybean (+44 per cent) that assume only an 8 per cent increase in acreage—the remainder coming from yield increases, assuming technical change continuing at historical rates [6].

On balance, therefore, there is substance in the FAO view that, for wheat, '. . . production should maintain its basic capacity to outgrow effective demand, at least during the remainder of the decade' [10, p. 68]. For coarse grains, the circumstances of wheat also apply substantially, with the capacity to increase supplies being large and probably sufficient to remain ahead of demand. Because of the range of inter-relationships in the feed/livestock economy, the position, however, is less predictable. Indeed, with the dependence of the world market on U.S. supplies and as U.S. exports are a small proportion of total U.S. production, changes in domestic U.S. usage, as well as moderate production fluctuations, can affect the world market significantly and considerable instability is likely.

(b) *Rice*

With wheat, rice meets some 40 per cent of man's energy needs and is the staple food for some two million people. The world rice market until 1972 was characterized by excess supplies and falling prices. Prices rose in 1973 due mainly to a drop in production of 4 per cent in 1972 following adverse seasons, particularly in the Far East. Ninety per cent of rice production is in South East Asia, a region likely to experience similar seasonal influences. There is then considerable risk of production instability and, with world trade some 5 per cent of production, marked instability in world rice trade volumes and prices.

(c) *Sugar*

World consumption of sugar has been increasing steadily, but production has not kept in line and stocks have fallen. The continued growth in consumption despite higher prices could mean demand is less price elastic than previously assumed [11, p. 6-7], due to increased manufacturing use, reduced availabilities of effective substitutes—or possibly the effect of income growth offsetting any decline in demand due to price increases.

The situation for sugar is complicated by controls exercised domestically—and internationally to the end of 1973—on the industry. Also, with some 70 per cent of total world exports coming from developing countries, it is more difficult to forecast how market forces will affect developments.

In the past increased production and low prices have followed high prices. Beet production could expand without difficulty—but at the expense of other production since the land is substitutable. For cane, in developing countries, opportunity costs would be less, but substantial investments in plant and technology would be necessary—these were limited during the latter 1960s and might take time to materialize. Consequently, cyclical factors, only partially associated with the general commodity boom, seem to have been more important than structural factors; the eventual downturn in prices, however, while it could be substantial, particularly in the absence of a renewed International Sugar Agreement (I.S.A.), may take some time to materialize.

(d) *Fibres*

For wool and cotton, the 1972 cyclical upturn in demand in the industrial countries was important in the price upturn, as was reduced supply. The sustained downturn in supplies—reflecting prolonged low price levels and droughts in Australia and South Africa—was important in the wool price upswing [13, p. 13]. Cotton was also influenced by the upturn in world textile activity with supplies being relatively low.

Wool, and to a lesser extent cotton, prices have in recent years exhibited a fluctuating pattern somewhat out of phase with that of overall economic activity. Wool price falls in 1970 and 1971 were partly attributable to competition from low man-made fibre prices reflecting excess man-made fibre production capacity (following over-reactions to earlier fibre prices). Prices then rose in response, in part, to high prices and physical shortages of man-made fibres due to under-capacity as investment was deferred in the textile depression of 1970 and 1971.

Reasons for the Agricultural Boom

Of the variety of influences that affect the market situation for agricultural commodities at any time, the recent past points to four influences of major significance resulting in the price boom. In the first place, there was a marked response to the rural recession which occurred in the years preceding and up to 1970/71. In the adjustment by agricultural sectors in many countries to the market situation at that time, resources were withdrawn from agriculture at a substantial rate and investment slowed or was negative, as in the case of the large scale reductions in sheep numbers in Australia. Government action seeking to limit resource use in agriculture or in particular agricultural industries included that of the U.S., Canada, Australia for wheat; the U.S. for coarse grains and cotton; Japan and U.S. for rice; for sugar, the various sugar exporting members of I.S.A.; and the E.E.C. for butter. In total this adjustment process would by itself have led to an upturn in agricultural prices—as indeed was in process in 1971/72. It also meant the normal slow responsiveness of agricultural supply to demand increases was accentuated further.

Second, cyclical patterns in commodity markets, partly, at least, independent of general market influences, became affected by the general influences because of coincidental shortfalls of complements and substitutes. Thus the peak of the sugar cycle was lengthened and intensified by consumer expenditure growth and the greater difficulty of attracting additional land into sugar beet production; wool production expansion was slowed by the profitability of beef and grain production; the U.S. hog cycle was at its low point in 1972 and the reduced availability of pig meat that this implied helped push beef prices up while high prices for feed grains extended the hog cycle trough well into 1973, well beyond its customary duration. Interactions through substitution and complementarity in use, as in and between the food grain and livestock feed markets, were also mutually self-supporting.

Third, a series of adverse climatic conditions, unusual in their severity and their extent, was experienced at a time when production was already being adjusted down and stocks were relatively low. Of course, there will usually be adverse seasonal conditions of a major nature some-

where; for example, world agricultural production rose by 3 per cent in 1971/72, although Cuba and parts of the Near East suffered severe droughts, and severe floods caused extensive damage in a number of countries, including Brazil, several Asian countries and the U.S.A.

In 1972/73, however, seasonal conditions were unusually severe. Adverse winter and summer seasons in the U.S.S.R. in 1972—the most severe for 100 years—reduced grain, oilseed and sugar production [13, p. 25]. Failure of monsoonal rains in South East Asia reduced wheat and rice crops in India and elsewhere. Droughts in Africa affected maize and oilseed supplies as well as livestock production. Floods in the U.S.A. in 1973 reduced cotton and maize production. Livestock feed supplies were affected not only by U.S.S.R.'s reduced sunflower seed supplies but also by a substantial drop in Peru's fishmeal exports. China's adverse weather led to a return to high levels of wheat imports, increased sugar imports and substantial cotton purchases.

Improvement in seasons and additional resources devoted to agriculture in 1973 led to record grain crops in the U.S.S.R., Europe and parts of Asia, and to good crops elsewhere. These increases were insufficient, however, to replenish stocks. Low stock levels generally have made the current situation one of considerable vulnerability should there be a further widespread occurrence of bad seasonal conditions around the world. The consciousness of this vulnerability has itself been an important influence on demand in the last year or so as attempts have been made to hedge against the dangers of greatly inadequate food supplies.

As a consequence of these three factors, the supply of agricultural products, which in 1972/73 declined for the first time for many years, failed to match an accelerating rate of growth of demand reflecting continued growth in world population—about 2 per cent per year—and an unprecedented upswing in world economic activity. In 1972 and 1973 economic activity expanded rapidly in each of the three main industrial areas of the world—the U.S.A., Europe and Japan. Rapid growth in consumer expenditure in the industrialized countries directly affected commodities such as meat (and indirectly feed grains and protein meals) and textile fibres. Effects were also felt through improved balances of payments of countries—particularly, but not only, developing countries —where imports are subject to administrative control; increased foreign exchange earnings facilitated increased imports of food and agricultural raw materials (or maintenance of previous levels despite higher prices).

Counteracting Factors

Most of these influences are of an episodic or cyclical nature; in consequence, it would be expected that, in response to the agricultural boom, the mechanisms have already started or will be shortly under way, which will counteract or reverse these influences. Many have indeed been under way for some time. Substantial additions to the resources available to agriculture have already been made. Governmental controls on agricultural production have been lifted in most countries. The U.S. released some 60 million acres from its set-aside programmes. In Canada and Australia wheat controls have been substantially eased. In Japan constraints on rice production have also been eased.

Most countries are making special efforts to encourage increased agricultural production, given their experience, not simply with high prices, but with physical shortages as a result of export controls imposed during 1973 by the U.S.A. and a number of other agricultural exporting countries.

Recent experience will increase the priority given to agriculture in developing countries and in centrally-planned economies; the U.S.S.R. and China are attempting, by increasing input supplies, to increase domestic production further. It will also reduce pressures to limit agricultural support policies in the E.E.C. and other major import regions. Japan is encouraging increased food production at home and overseas [14].

In addition, the current high incomes to agricultural resources provide funds for additional investment and incentives for those within and outside agriculture to devote additional resources to agricultural production.

A second counter is that the possibility exists of more or less independent cyclical influences starting to work in the opposite direction, but slowly and with limited influence. Wool production will recover only slowly, while synthetic competition will be constrained by the energy crisis. Sugar production in some cane producing regions could be increased more easily than in beet areas, but the increases may be slow. Possibly, as production increases, wheat prices could move down ahead of other grains and result in acreage shifts to other products, so accelerating supply increases and price pressures.

While present low stocks provide little reserve should an extensive series of adverse seasons occur again, the probability of the coincidence of such events is low. While large market impacts of adverse seasons can be expected, a reverse situation would result from unusually favourable seasons.

Finally, concurrent very high levels of economic activity in the three principal economic areas—U.S.A., Western Europe and Japan—are unusual; already a number of countries have introduced measures to reduce the rapid rate of price increases and counter the inflationary effects of shortages. A slower rate of economic growth was expected, particularly in the U.S., in 1974 with effects on commodity prices later in 1974 or in 1975 even before energy became a major issue [15].

Other Influences

Economic growth in Western Europe, Japan and the U.S.A. will be materially reduced as a result of reductions in oil supplies, price increases (even if not maintained at present levels) and the general hesitancy and uncertainty that the energy crisis has induced. The OECD has reduced its estimates of economic growth though it still expects, given appropriate policies, a relatively small increase in real national product in the major economic areas. Major reductions in growth rates in these countries might be avoided if these countries took expansionary action—though the real income transfer in favour of oil exporting countries is a fact of life. A reluctance to expand can be expected with high rates of inflation and difficulties certain in the balance of payments of many countries. This will be particularly serious for the developing countries, but will also be a difficult problem for major agricultural

product importing developed countries. While greater flexibility of exchange rates will facilitate adjustment by these countries, more aggressive approaches to exports and less liberal import policies may well be a concomitant. If so, it could have a cumulative effect and result in a rapid slowdown in international trade with serious implications for commodity trade.

The future pattern of exchange rate movements might have some limited influence on terms of trade movements. In the short run, U.S. dollar devaluation, given the market strength of the U.S. (with Canada) in grains and soybeans, made these exports cheaper in major importing areas; hence price increases, in U.S. dollar terms, reduced demand less than expected. The subsequent upward adjustment of U.S. currency relativities will raise the real cost to importers and so ease demand to a degree. Generally, exchange rate movements are likely to affect manufactured goods as much as agricultural commodities; hence they would be unlikely to affect significantly the terms of trade.

Schuh has argued that the increasing over-valuation of the U.S. dollar led to excessive agricultural adjustment in that country and to a transfer of the fruits of accelerated rates of technological change—induced by the under-valuation of U.S. agricultural resources—to consumers, domestic and overseas [16].

Internationally, the production-inducing effects of any accelerated technical change may have offset the excessive withdrawal of resources from the U.S. agricultural sector. A reversal of the process through devaluation and subsequent floating of the U.S. dollar will not markedly affect the position. If this upvaluation of U.S. agricultural resources induced a withdrawal of government support payments—and this appears to be in train for whatever reason—this would tend to raise international costs. In the longer run consumers are, in any case, likely to benefit from technical change, exchange rate over-valuation or not, but it is open to question whether technical change is really accelerated by the pressures that over-valuation of the exchange rate implies—it may offset, through lower investment rates, any tendency to innovate to maintain profitability.

In the short run prices on international markets will be determined by supply and demand at that time. In the long run, however, prices reflect long run production costs, net of government subsidies, of suppliers on international markets. If, as in U.S., government assistance is likely to be reduced, costs will increase and so will international prices to bring forth a given supply to meet any given demand.

Productivity growth will almost certainly lag behind present and prospective high rates of inflation and, in consequence, increases in monetary costs of production can be expected; consequently, internationally prices will not fall as a trend level to the low monetary levels experienced in the 1960s (individual country price levels will reflect their exchange rate movements). Inflation, however, will also affect the price of manufactured goods internationally. For this reason, the terms of trade are likely to follow past patterns—and to the extent that adjustment in world agriculture takes place too slowly, to trend slowly downwards, in the absence of other factors.

The energy crisis could, of course, influence this situation and may in the longer term reduce generally the extent of the downwards move-

ment in the terms of trade for agricultural products. Production costs, and hence production, of both agricultural and manufactured goods, will be affected by the substantial increases in shipping costs resulting from increased fuel prices, with short and longer term effects perhaps slightly more disadvantageous to agricultural than to manufactured goods. The immediate costs of agricultural and manufactured goods production will also rise noticeably, agricultural production being markedly dependent upon energy inputs. An acre of maize in the U.S. producing some 8,000 kilocalories of energy, requires almost 3,000 kilocalories of direct energy inputs, about 90 per cent derived from fossil fuel—principally for machinery use, transport and nitrogen fertilizers [17]. Erlich suggests that for each calorie of food produced in the United States, about 1·5 calories of fossil fuel are consumed by agriculture and related activities [18, p. 104].

The world fertilizer situation was already tight before the energy crisis, with demand well up as a result of attempts to raise food production; stocks were at an all time low and prices at record levels. Capacity had fallen in response to earlier low prices, and shortages were occurring in the U.S. accentuated by the price freeze [19, p. 44; 20]. In this situation, Moroccan phosphate rock prices were raised by 200 per cent early this year [21].

Over 40 per cent of world fertilizer usage is nitrogen—derived from fossil fuels—natural gas, naptha, fuel oil, refinery gases or coal. Estimates suggest additional fertilizer usage to increase agricultural production in the developing countries would need to be 60 per cent based on nitrogen [21, pp. 95-102]. This suggests that the real economic costs of expanding that production could increase substantially and involve an even greater dependence on fossil fuels. This has particular significance for the successful continuation and expansion of the Green Revolution.

Although world production of synthetic fibres currently absorbs about 0·5–0·7 per cent of world annual consumption of petroleum products [25, 26], shortages of synthetic fibre intermediate and end products have already been accentuated by the oil cuts and subsequent price increases.

Increases in petroleum product prices would be quite significant in the longer term for the competitive position of wool vis-a-vis synthetic fibres. Both will, of course, be affected by higher transport, power and wage costs but synthetic fibres will also be affected by direct input cost increases as a result of the energy crisis. Maiden estimates that present price increases of direct fossil fuel inputs represent an increase of 20 per cent in synthetic fibre production costs [26, p. 15]. While, as Maiden says, 'prices actually charged for synthetics . . . are likely to be determined by the availability of fibres relative to the demand they face at any point in time . . .' [26, p. 16], the important thing is the longer term position; the costs of production will affect the supply of synthetic fibres on the market. The longer term competitive position of wool is therefore likely to be improved; short run price variability will, of course, still remain.

The impact of synthetic substitutes for meats and livestock feeds, the development and extension of which has been given considerable stimulus by recent high prices, will also be affected by developments in the fossil fuel market. Synthetic meat products are mainly in the

form of soyabean protein extenders, where the longer term price of soybeans is an important factor. Attention in Europe is directed more to single cell protein for livestock feed based on petroleum products or natural gas. The substantial proposed expansion of capacity in this field has apparently already been affected by the unfavourable developments in energy pricing [27, pp. D68-71; 25, pp. 17-19].

Attempts are likely to be made to reduce environmental pollution problems and improve conservation practices in agriculture. To the extent that the real costs are met by agricultural sectors, costs of production will increase. The increase in agricultural costs from this source may be matched in part by comparable developments in manufacturing industry.

The World Food Problem

The world food problem has implications for commercial trade in agricultural commodities. Population projections put world population in 1990 at about 5·4 billion; that is, the world must feed a further 1·8 billion people in the 20 years between 1970 and 1990. Nevertheless, the world fed an additional 1·0 to 1·1 billion people over the 20 years to 1970 [25, pp. 9-12]. In the past 20 years, world per capita food production increased slightly—by some 1½ per cent per year in the developed countries and about ½ per cent per year in the developing countries, 1972/73 being an abnormal, if unfortunate, year when per capita food production fell slightly. Hunger is still an enormous world problem, however. FAO estimates the absolute numbers suffering from hunger and malnutrition in 1970 at some 300 to 500 million, the same absolute numbers (though proportionately lower) as 15 years earlier [28, p. 23].

The main factor in population growth rates has been the decline in death rates in developing countries—birth rates have varied little over time. It is not necessary to be a complete Malthusian to accept that population growth is not only significant for growth in food demand but that food supplies influence importantly declining death rates even where ostensibly related to reduced disease incidence. 'Where death certificates are issued for pre-school infants in the poor countries, death is generally attributed to measles, pneumonia, dysentry or some other disease when, in fact, these children were probably victims of malnutrition' [29, p. 89]. Or, as Erlich puts it, 'starving people don't necessarily die of starvation. They often fall victim to some disease as they weaken' [2, p. 36].

Some fears for the future are expressed in physical terms—that the world will not be able to produce enough food, the criterion being calculated physical needs of the human population. Lack of availability of cultivable soils is the usual fear; but widely accepted estimates put the world's potentially arable land at about 7·86 billion acres, some three times the annual harvested area at present. The gross cropped area could be increased to 16 billion acres if irrigation and multiple cropping are allowed for. 'On a world-wide basis, therefore, soils capable, under good management, of producing food are not yet in short supply. They may not be for a long time' [28, p. 410]. Indeed, Colin Clark calculates that we could presently feed 35 billion people

at U.S. consumption standards [30, pp. 157-160]. Moreover, this discussion has not taken into account the possibilities of non-agricultural foods.

Whether the world has the capacity to feed itself is a question of little logic to economists since the real question is what costs it is necessary to incur to feed any given population. Eventually these would rise substantially if technology failed to keep up with population growth and increasingly less favoured resources were drawn into the food production process. The terms of trade concept concerns effective demand—a balancing of supply and demand simply means that the commercial market can be satisfied, not that the needs of the world's population can be satisfied. This latter issue is essentially a question of povery; poverty is likely to create drastic problems of a social or political nature well before any difficulties of physical resource scarcities occur in the feeding of the growing world population.

Trade Instability

Instability will remain a major feature of world agricultural trade. For wheat, U.S.S.R., India and China represent about half world production and are near self-sufficient. Trade is marginal and substantial climatic variations possible. Requirements of the three countries vary enormously—from over 22 million tonnes (37 per cent of world trade) in 1965/66 to less than 8 million tonnes in 1968/69 and 1970/71 (13 per cent) and back to over 23 million tonnes (35 per cent in 1972/73. In these three countries the internal economic mechanism does not perform the market equilibriating function; for example, in U.S.S.R. previously bad crops led to imports of cereals, but also to belt tightening and considerable livestock slaughter; in 1972/73 attempts were made to maintain diets and livestock numbers with grain imports being correspondingly higher. With policy changes such as this, the reflection of production variations in fluctuating trade requirements is greater and less predictable. For coarse grains, the marginal nature of U.S. exports, and the dominance of those exports in world trade, also tends to potential instability.

Variations such as these in import requirements and the marginal nature of trade—5 per cent for rice, 10 per cent for meat, 15 per cent for wheat—explain why rapid movement is possible from a surplus to a deficit situation—and back should a series of particularly favourable seasons occur.

With greater variability in world agricultural trade possible, the danger of periodic shortages of food at world levels is real—as is the possibility of significant surpluses and price falls. While the question of international stockholding policies will become of increasing significance, the experience of the 1960s was that exporters were increasingly looking to avoid depressed prices and seek stability by means of co-operative international arrangements, including production restraints and supply management policies. These objectives will be pursued further in the G.A.T.T. negotiations and elsewhere. To the extent such policies are successfully achieved, the terms of trade of agriculture will be improved.

Conclusions

This paper is only concerned with longer term trends in the terms of trade; in the short term, supply and demand at any point in time will determine prices and the terms of trade; in such circumstances, supply will also reflect immediate and once-only influences, while demand will also include expectational and speculative influences. I make no attempt to project the immediate short term position.

For the terms of trade in the longer term to maintain a new plateau would require that future agricultural commodity prices increase from their present levels at the same rate as those of manufactured goods. The evidence suggests that much of the present high level of agricultural prices is due to short term or episodic factors: the cyclical reaction of world agriculture to the recession of 1970/71; the unusually widespread series of adverse seasonal factors in 1972/73; the coincidental occurrence of other episodic influences, plus the increasing interdependence of commodities; and the demand effects of a cyclical upturn in economic activity of an unprecedented magnitude.

To the extent that present price levels reflect these influences, a substantial movement back from present price levels can be expected, though it may take some time for this to occur, because, among other things, of fertilizer and other input shortages [21]. Even so, the historical pattern of prices—at least in the postwar period—does not suggest the parity of growth of rates of prices of agricultural and manufactured goods is a normal pattern.

In the longer term the likelihood is against a precipitate fall in the terms of trade and for money prices of agricultural commodities to remain above past levels. The reasons include: world-wide inflation; possibly some reduction in government subsidies in the U.S. and elsewhere; the direct impact of the energy crisis on agricultural production costs and its indirect effect on fertilizer costs and availabilities and hence on food production in importing countries; increasing costs of pollution control and conservation; and the likely greater rate of cost increase of synthetic substitutes.

Prices of manufactured goods are likely to be affected by many of the same factors as will affect agricultural prices. The relationship between the two price series must clearly be subject to very considerable uncertainty, but even with the energy crisis there is no evidence, at this stage, to suggest major structural changes in the world agricultural situation that will prevent a return to the kind of relationship that previously obtained—that is, a slight tendency for the terms of trade to move against agriculture in the long term because of the slowness of agriculture to adjust.

The Australian situation should reasonably parallel the world situation; the Australian terms of trade will be influenced rather more by meat prices and the benefits to wool prices from the energy crisis, but are likely to be particularly affected by the dependence of Australian agriculture on the Japanese market for which the energy crisis will be particularly significant. The possible decline in the proportionate influence of the higher priced home market in the longer term, to the extent that Australian production increases faster than population growth, may also influence the Australian terms of trade—though such

a rate of growth would itself imply reasonable export returns.

Inevitably, we can expect profit margins in agriculture to return to more normal levels. In the long run, they will only go below normal if a tendency to surplus were to persist which would hold down prices—and consequently the terms of trade. Ultimately, therefore, an important influence on the terms of trade will be the speed of the process of adjustment in world agriculture; with the greater range of adjustment assistance measures available, and more importantly the greater awareness of the requirements of adjustment, this should be more rapid than in the earlier postwar years. The terms of trade will also reflect importantly the extent to which agricultural producing countries accept and implement policies designed to fit production more effectively to market demand.

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