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Some Economic Aspects of the International
Production and Transfer of Food

by

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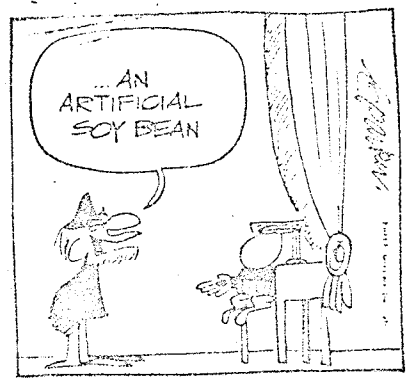
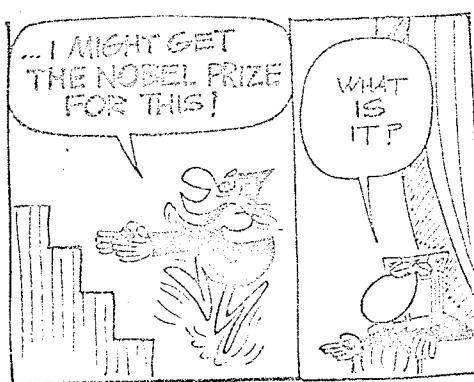
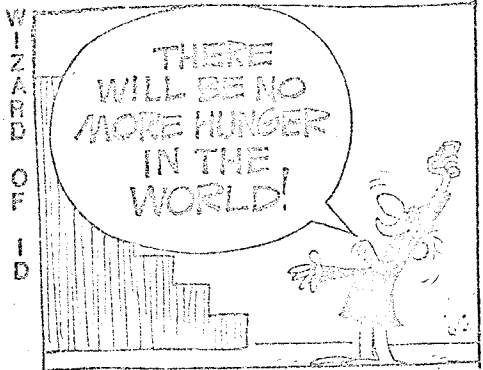


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Preface

A world food crisis occurred during 1972 to 1974 when prices of cereal grains increased four-fold. Some have held that this was a transitory phenomenon caused mainly by adverse weather which made for very poor crops in many areas of the world. Others feel that the crisis may be a sign that a fundamental imbalance between world food demand and supply is emerging and that this type of emergency will be more common in the future.

The worst phase of the 1972 to 1974 crisis now seems to be over with prices of cereals declining in the face of good crops in 1975 and 1976. In fact, the United States Department of Agriculture (USDA) has announced that America's surplus of wheat is at such a high level that acreage will once again be restricted in crop year 1978/79.

Notwithstanding the declining prices and America's decision to restrict acreage, there is significant cause for uneasiness about future world food security. Ever increasing population and affluence continue to put more demand pressure on available supplies, and agricultural resources such as easily accessible land, fertilizer and water are becoming scarcer. Additionally, there has been no fundamental break-through in agricultural technology in the recent past which might provide optimism for the prospect of substantially increased yields.

If it is true that there is a trend toward a sustained and basic discrepancy between demand and supply for food in the world there will be substantial price increases which could have serious repercussions for the foreign exchange poor, less developed world. Additionally, if the imbalance is very large, underdeveloped nations may face the situation of not being able to buy enough food at any price to maintain their populations at subsistence levels. Widespread starvation could occur in many areas of the world unless emergency food stocks are in existence and readily available.

The aim of this paper is to investigate the following: the causes of the price explosions which occurred for cereals during 1972 to 1974; the consequences of the price boom for the developed and less developed world from the point of view of the terms of trade; the efficacy of current international institutions (especially International Commodity Agreements) to alleviate world food distress; and, future prospects for improving the international distribution of food.

A study is undertaken of the evidence surrounding the circumstances of the significant price increases of cereals during the period 1972 to 1974 and an analysis is made of how seriously the phenomenon will affect various areas of the world. A main contention of the thesis is that the people of the less developed world are in a very insecure position with regard to maintaining subsistence food levels in that many of

them are outside the normal commercial market for grain and must depend on food aid. Another poor crop like the one experienced over wide areas in crop year 1972/73, coupled with the increasing demand pressures caused by population increases and the influence of affluence, could provide a situation with significant potential for widespread starvation in many of the poorer countries.

This perception of food insecurity in the less developed world led to a study of current international institutions associated with and working on the problem. Accordingly a major portion of the thesis is devoted to a study and analysis of International Commodity Agreements, and other proposed schemes, which are sometimes purported to be capable of providing a relief mechanism for the less developed world's problems of foreign exchange, development and food distribution.

Other institutions, such as the Food and Agricultural Organization of the United Nations and the United Nations Conference on Trade and Development, have expended a great deal of time and talent during the past 20 years or so to the many problems faced by the less developed world. Progress has been slow and this has led other groups to offer novel and sometimes radical proposals which would restructure the present system. The thesis ends with a discussion of various points of view of the viability of the current World Political and Economic Order and analysis of how some improvements might be made.

Appreciation is expressed to Professors Clarence L. Barber and Henry Rempel of the Economics Department at the University of Manitoba for their assistance and advisement during the preparation of the thesis. A special thanks also is made to Colonel M. D. Gates and Major E. Selwyn of the Canadian Armed Forces for their encouragement throughout the course of my M.A. studies.

W.R.K.

A. THE CURRENT WORLD FOOD SITUATION

1. 1972 To The Present

Throughout the 'seventies increasing demand for food (particularly cereal grains), spurred both by continuing population growth and rising affluence, has shown indications of outrunning the productive capacity of the world's farmers. The result has been declining food reserves, much higher food prices, and more intense competition among countries for available and future food supplies. These fundamental changes in the world food situation have caught governments, international institutions and individuals unprepared and vulnerable.

In particular, a world food crisis occurred during the period 1972 to 1974 when prices of cereals -- which had been very stable since the mid-fifties -- increased four-fold. Investigation reveals that this emergency was not an isolated accident caused by an unfortunate combination of circumstances deleterious to grain production. In fact it may be the first intimation of what might become a recurring manifestation of an underlying basic imbalance in world food production and distribution.

In 1972, for the first time in more than ten years, a significant decline in world food production occurred as a

result of bad weather and crop failure in several regions. Cereal production fell by 33 million tons (approximately 3%) instead of increasing by 25 million tons as the growth of population and thus international demand currently requires, if a balance between the growth of demand and quantity supplied at stable prices is to be maintained. Stocks of wheat in the main exporting countries fell from 49 million tons in July, 1972 to 26 million tons in July, 1974. These problems created a grave financing situation for food deficit, developing countries since there was a simultaneous cut-back in food aid. Major fertilizer shortages occurred concurrently and the result was a threat of world-wide food shortages and, in some areas, the possibility of famine. As reported in the FAO Monthly Bulletin of Agriculture Economics and Statistics, the worst phase of that world food crisis is now over.

Wheat prices in international markets have declined during the past few months to levels of late 1972/73, and in real terms to even lower levels.

...World cereal production increased by 6 to 7% in 1976 following a small rise in 1975 and a drop of almost 3% in 1974. Output recovered by 9 to 10% in the developed countries after two years of declining production largely because of excellent crops in the U.S.S.R. Production decreased marginally in the United States following last year's (i.e. 1975's) record output. It also fell in Western Europe by 3 to 4% and by about 20% in Oceania where output in recent years has been subject to wide fluctuations. Although the final outcome of the Asian rice harvest is not yet certain, it appears that cereal production in the developing countries increased by 2 to 3% in 1976.

...Wheat production in 1976 is estimated at a record 405 million tons, 14% larger than (1975) and 5% above the long term (1960-1975) trend level of 386 million tons. ...weather conditions have been reasonably favourable in the U.S.S.R., the Indian sub-continent, Northern Africa and the Near East -- all areas that are vulnerable to periodic crop failures. Good or bumper crops are forecast in the U.S.S.R., the United States, Canada, Argentina, Brazil, Mexico, Algeria, South Africa, Turkey, Iran, India, Pakistan and China. The developing countries had another very successful year in wheat production with an estimated output of 135 million tons (14 million tons or 11% more than in 1975).¹

1975 and 1976 were good years not only for wheat but also for coarse grains and rice. The FAO Bulletin also reported an estimated 5% increase in world production of coarse grain in 1976. Total rice production is expected to be about 226 million tons, about 1 to 2% below the excellent 1975 harvest.

Notwithstanding the recent good crops there remains significant reason for uneasiness about the future. Assessing prospects for the period to 1985 the World Food Conference reached the following conclusions:

a) World food demand is projected to grow at an annual rate of 2.4% (2% due to increases in population and 0.4% due to increased purchasing power) which corresponds to an additional annual requirement of 35 million tons of cereals;

b) if aggregate supplies expand enough to cover these needs, year to year fluctuations in global production, due inter-alia to climatic factors, might require some 50 million tons of reserves in 1985 to meet requirements. The risk of shortages seems likely to be greater in 1985 than in 1972;

1. FAO Monthly Bulletin of Agriculture Economics and Statistics Vol. 25 #11, Nov. 1976, (Rome: Food and Agricultural Organization of the United Nations -- Hereafter abbreviated to "Rome: FAO of the UN", 1976), p. 4.

c) Even assuming that both these objectives are met in 1985, there would remain 34 countries, with a total population of 800 million, where aggregate effective demand would be below the level required to satisfy basic energy needs.²

Growing global insecurity about food is related directly to the precipitous decline in world cereal reserves which occurred between 1972 and 1974. It is important to realize that there are two significant sources of demand for cereals. First of all, there is the commercial market where grain is traded among nations for normal pecuniary considerations. This market may be affected significantly by smaller reserve stocks since the concurrent price increases may be such that some countries become unable to afford necessary imports. The other source of demand, which is non-effective, stems from the countries mentioned in (c) of the above quotation. These nations are too poor to buy grain at any commercial price and are dependent on food aid for subsistence. They too are affected adversely by lower world reserves in that smaller excess stocks usually have the result of less food being available for aid purposes.

During the last 30 years both world markets have relied on two major food reserves: carryover stocks of grain in the principal exporting countries and crop land held idle in the United States through government subsidies. Together they provided a substantial buffer against the normal vagaries of agricultural production.

2. FAO Commodity Review and Outlook 1974-75, (Rome: FAO of the UN, 1975), p. 39.

In 1961 these reserves amounted to 222 million tons of grain, or 95 days of world consumption. By 1974, however, they had declined to a level representing global needs for only 26 days.³

The following two tables show the situation more precisely.

(Note that my figures differ slightly from Brown's but the trend is similar).

4
TABLE ONE

Food Security: Stocks of Cereals (mmt)

Yr	(a) World Consumption Per Year	World Consumption Per Day	(b) Carry Over	Carry Over As % Of Current Cons.	Reserves As Days Of Consumption
1971-72	1185.7	3.25	180 (c)	15	55
72-73	1208.9	3.3	160	13	48
73-74	1262.0	3.46	115	9	33
74-75	1275.6	3.5	104	8	29
75-76	1306 (d)	3.57	104	8	29
76-77	1337 (d)	3.66	116	9	32
1977-78	1369 (d)	3.75	169.5 (e)	12	45

3. Lester R. Brown with Erik P. Eckholm, By Bread Alone, (New York: Praeger Publishers, 1974), p. 3.

4. Sources: (a) Table six.
(b) FAO, Monthly Bulletin of Agricultural Economics and Statistics, Vol. 25, #7/8, Jul/Aug 1976 (Rome: FAO of the UN, 1976), p. 2.

(c) Brittanica: Book of the Year, (London: Encyclopedia Brittanica, Inc. 1976), p. 118.

(d) Estimate based on FAO world food demand projections. See Fn 2.

(e) USDA Foreign Agricultural Circular, Nov. 11, 1977 (Washington DC: US Government Printing Office, 1977), p. 2.

NOTE: Data as at beginning of crop year.

TABLE TWO⁵

Food Security: Idle Crop Land in U.S.

Crop Year	(a)	(b)	(c)
	Hectares Withheld (000,000's)	Equivalent Food Production Withheld (mmt)	Production Withheld as days of reserves
1971-72	14.4	49.3	15
1972-73	24.3	83.1	25
1973-74	7.9	27.1	8
1974-75	1.1	3.8	1

Thus in mid 1974 the world food situation was approaching crisis proportions. A poor harvest in any major producing country would have sent extraordinary starvation shock-waves throughout a large portion of the food sector of the world economy. The resultant very high prices would have fueled world inflation and affected adversely the entire world economy in a fundamental way. Fortunately, recent crops have been good and, although world reserves of grain are still low (in an historic sense), many feel that the crisis years of the early 'seventies' were brought on simply by an unfortunate combination of adverse agricultural conditions which are highly unlikely to be repeated

5. Sources: (a) USDA Agricultural Statistics 1976, (Washington DC: U.S. Government Printing Office), p. 518.
 (b) USDA Foreign Agricultural Circular, Nov. 11, 1977, op. cit., p. 14 (i.e. food production withheld figures based on acreage yields of 3.42 metric tons per hectare).
 (c) Based on consumption per day as shown in Table 1.

in the future. The recent easing in prices of commodities has allayed further the immediate concern over future shortages. Table 3 (page 8) shows representative evidence of the declining prices.

The recent experience of a price boom in agricultural commodities from mid 1972 to 1974 and its subsequent reversal raises two questions relating to the longer term prospects for the world food commodity scene:

- a) What will be the future trend of agricultural prices?
and,
- b) What degree of price instability can be expected in commodity markets?

2. The Future Trend of Prices

The main concern centers on whether world commodity prices in the foreseeable future are likely to settle at levels higher or lower than their pre-boom averages. First of all, the 1972 to 1974 price rise has no recent parallel, with the possible exception of the events during and after the Korean War boom in the early 'fifties. The comparison has little validity however; the earlier boom was mild in comparison as prices of all primary commodities rose only 50% as compared with the almost 150% increase in 1973 to 1974. As well, the Korean war boom was of a shorter duration (i.e. only about 9 months) and it was restricted to only a few commodities, mainly industrial raw materials, while the impact of the recent price rises has extended to almost all commodities.

TABLE THREE

Selected World Grain Prices, CIF Rotterdam
(In U.S. dollars per metric ton)

	W H E A T			C O R N	S O R G H U M
	U.S. No. 2 Dark Northern Spring 14%	U.S. No. 2 Hard Winter 13½%	Canadian Western Red Spring 13½%	U.S. No. 3 Yellow Corn	U.S. No. 2 Yellow Sorghum
1970/71 (July-June)	73.71	71.19	74.13	69.07	68.20
1971/72 (July-June)	69.74	66.69	72.62	57.01	60.80
1972/73 (July-June)	100.14	92.50	101.97	77.12	78.64
1973/74 (July-June)	202.95	200.35	214.40	132.90	127.20
1974/75 (July-June)	204.26	189.05	209.65	143.18	135.53
1975/76 (July-June)	187.15	177.70	195.12	128.80	122.50
1976/77 (July-June)	141.17	137.02	143.71	118.90	108.52

6. Source: USDA Foreign Agricultural Circular, Nov. 11, 1977, op. cit., p. 25.

As the FAO Review puts it:

The Korean War boom was essentially an inventory phenomenon created by expectations of shortages rather than by real declines in production and supplies. It was superimposed on a basic tendency toward a recovery of world agricultural production from the damages of the second world war. Consequently, agricultural markets very soon reached a situation of plentiful supplies and low prices which continued throughout the fifties and sixties, and even as late as 1968, prices were still below the pre-Korean level, the U.N. index standing at 100 as against 136 in 1951 and 110 in 1950.

By contrast the 1972-74 commodity boom was caused, on the one hand, by the coincidence of widespread production shortfalls of agricultural commodities in major producing and consuming countries, and on the other, by a very rapid acceleration of import demand, mainly for current consumption and partly for speculative purposes, in part due to declines in domestic supplies, and in part to an unusually sharp upswing in economic activity of almost all industrialized countries, whose gross national product in 1973 rose at the average rate of 6.5% - the highest rate of expansion since the mid-'fifties.⁷

The 1972 to 1974 boom was accompanied by accelerating inflation. Consumer prices in most developed countries rose by between 5 and 10% from 1971 to 1972 and in a few countries by more than 10%. From 1972 to 1973 the rate of increase in consumer prices accelerated and reached double figures in many countries. Table 4 shows the evidence. Inflationary pressures continued throughout 1974 even though world levels of economic activity declined substantially. Rates of inflation have slowed during 1975 and 1976 but this has been accompanied by increases in unemployment levels unprecedented since the 'thirties. Persistent disequilibrium in the world monetary system and a steep rise in energy costs were other unique features of the early 'seventies.

7. FAO Commodity Review and Outlook 1974-75, op. cit., p. 21.

Thus there are basic differences between the short-lived commodity boom just after the Korean War and that of 1972 to 1974. The price increases in this decade seem to be related more closely to underlying changes in the world economy. There is a possibility that the world may now have entered an era of resource exhaustion and, consequently, of prospective tightness of supplies. If this is true there will be rising real costs of agricultural production, reflecting increasing costs of inputs and of environmental protection, which may be increasingly difficult to offset through technological progress.

8
TABLE FOUR

Percentage Change from Preceding Year in Consumer Price Indexes for Food - Selected Countries, 1972-1973.*

Country	1972	1973
United States	4.4	14.5
Australia	3.8	15.2
Brazil	11.1	n.a.
Canada	7.6	14.5
France	7.9	9.4
Germany	5.7	7.6
India	6.4	21.3
Indonesia	10.3	43.4
Italy	6.3	12.0
Japan	3.9	13.0
Kenya	3.3	4.8
Nigeria	1.5	n.a.
Thailand	6.5	14.4
United Kingdom	8.8	15.0

* The percentages are computed from annual data with base period 1970.

8. Source: United Nations, Monthly Bulletin of Statistics, various issues, as portrayed in Dale E. Hathaway "Food Prices and Inflation", Brookings Papers on Economic Activity, 1974(1), (Washington DC: The Brookings Institution, 1974), pp. 70-71.

In summary there are two contrasting views on the subject of future trends of agricultural prices. Some suggest that the events of 1972 to 1974 may be the first sign of a fundamental change in the balance between world food demand and supply; rapidly rising demand in both the industrial and the developing countries will put increasing pressure on agricultural resources. The changes in relative terms of trade for commodities which occurred from 1972 to 1974 will probably remain and high prices will likely be maintained in the future. Recent declines in prices are seen to be temporary -- brought about by bumper crops in 1975 and 1976.

The other point of view is that the shortages of 1972 to 1974 can be traced to transient factors such as bad weather, wayward anchovies etc., and that the possibilities for expanding food production are far from exhausted. No panacea is foreseen but this group holds that policy decisions at the national and international level will generate the required research and investment to increase production and thereby keep food costs and prices relatively low -- with a possibility of reducing real prices to the low levels of the 'fifties and 'sixties.

It is impossible to predict future levels of world food prices mainly because little solid information exists concerning the economic constraints on increasing agricultural output, even in the developing countries. There is little doubt that the technical potentialities of world agriculture are vast, however, it is also clear that the four major resources used to produce grain -- land, water, energy and fertilizer -- are now in tight

supply. The familiar "influence of affluence" continues to exert pressure on available food supplies as more and more people demand the inefficient conversion of grain to meat, milk and eggs. As Lester Brown has it:

The combined effect of population growth and rising affluence is expanding the world demand for food at a rate without precedent. At the turn of the century, the annual growth in global demand for cereals was probably about 4 million tons per year. By 1950 it was about 12 million tons per year. As of 1970, only twenty years later, the world demand for cereals was expanding by 30 million tons per year - the equivalent of the annual wheat crop of Canada, Australia and Argentina combined. And this increase in demand is incessant, occurring in years of good and bad weather alike.⁹

There seems to be no good reason to believe that aspirations of the world's people for a higher quality and more varied diet will decrease, therefore, short of some fundamental break-through in increasing crop yields it is likely that pressure will be applied to bring less accessible land into production which would lead to increased costs. Another alternative which has been put forward frequently, is that available land, particularly in the less developed world, will have to be cultivated more intensely to provide increased yields. I will return to this point later.

3. General Problems of Price Instabilities

Another longer term issue, being discussed more often since the price boom of 1972 to 1974, is that of price instability -- its causes and potential effects. There are

9. Brown, op. cit., p. 6.

increasingly frequent assertions that the exceptionally unstable prices of this period may become a typical, or at least more recurrent, feature of commodity markets in the absence of appropriate countervailing measures.

The range of price fluctuations varied widely among different commodities. Sugar showed the highest degree of instability although world trade in this particular commodity is somewhat uncharacteristic.¹⁰ Other products such as wheat, maize, barley, rice, cocoa, tea and coffee also showed considerable price fluctuations. Table 5 (page 14) shows some data.

The volatile price movements of 1972 to 1974 and the likelihood of this instability becoming a permanent or more regular market feature in the future may be due, to some extent, to some longer-term and fundamental changes in commodity markets.

...one of the more significant sources of potential market instability in the future arises from the success, achieved after

10. With sugar, exports normally constitute less than one-third of total world production. For example see the following data: (million tons)

	1972	1973	1974	1975
World Production	71.9	76.02	79.89	78.43
World Exports	20.78	22.26	23.16	23.27

Of that sugar which is imported, the United States accounts for more than 30% and Britain another 20%. Since both of these economies have usually maintained special trading agreements with a number of countries, less than 50% of exported sugar constitutes the free market. World price, then, and the world market are based roughly on about 15% of total world production. This contributes greatly to the instability of that segment of trade in that this residual bears the brunt of price fluctuations and world price is thus very unstable. See Alton D. Law, International Commodity Agreements, (Massachusetts: D. C. Heath and and Co., 1975), p. 48 and FAO Commodity Review and Outlook 1975-1976, (Rome: FAO of the UN, 1976), p. 76.

TABLE FIVE

Changes in International Prices of Selected Agricultural Commodities

	1974 Average Price	Indices				Annual Rates of change			
		Annual		Quarterly		Trend 1961 to 1973	Change 1973 to 1974		
		1973	1974	I	II			III	IV
U.S.\$/ ton	(.....Indices 1963 = 100.....)					(.....percentage)			
Sugar <u>1/</u>	655	114	258	131	176	261	465	5.4	126
Cocoa <u>2/</u>	1538	206	283	239	311	291	290	5.4	37
Tea <u>3/</u>	1392	81	111	114	123	117	130	-2.4	37
Coffee <u>4/</u>	1501	196	200	211	214	185	189	3.9	2
Coffee <u>5/</u>	1292	177	210	214	227	201	199	6.8	19
Rice <u>6/</u>		228	366	380	387	362	336	2.9	60
Wheat <u>7/</u>	221	222 <u>10/</u>	284 <u>11/</u>	311	301	278	298	2.4	28
Maize <u>8/</u>	149	186	248	241	223	254	273	3.1	33
Barley <u>9/</u>	150	203	267	263	240	261	305	2.1	32

- 1/ Raw, International Sugar Organization composite price.
2/ New York, 3 nearest futures. 3/ London, all teas.
4/ Santos 4, spot New York. 5/ Uganda, spot New York.
6/ FAO price index for rice. 7/ Canadian Western Red Spring 13½%.
8/ U.S. no. 2 c.i.f. North Sea Ports. 9/ Canada Feed No. 1, 2 c.i.f. Rotterdam.
10/ Eight month average. 11/ Nine month average.

11. Source: FAO Commodity Review and Outlook 1974-75, op. cit., p. 4.

years of experimentation with national supply management measures, notably in North America and Japan, in reducing the surplus stocks which accumulated as a side effect of agricultural support policies. In the past twenty years, the existence of such stocks in effect constituted a security reserve for the world as a whole, as it provided a means of meeting exceptional import requirements resulting from crop failures. However, the margin of safety inherent in this situation has been steadily shrinking. During the 'sixties, the ratio of carry-over stocks to world consumption has been declining for a number of principal commodities. Notable among these are wheat, coarse grains...sugar and coffee. ...surplus stocks are bound to emerge again from time to time. But the unwillingness of such countries to continue serving as the world's "residual" suppliers and their technical ability to avoid the embarrassment of holding costly surplus stocks, means that in future exporters' stocks can no longer be relied upon to serve as a permanent reserve for coping with large scale crop failures all over the world, virtually irrespective of commercial considerations.

Another source of increasing instability ...has been the pursuit of self-sufficiency and the expansion of output in the traditional importing regions, almost invariably against the background of rising domestic consumption. With western Europe, the U.S.S.R., India and the People's Republic of China, there are now four very large areas, accounting for about 50 percent of grain consumption and for 55 percent of world population, which are close to self-sufficiency in grains. ...Given the fact that only a small fraction of their consumption of these products is imported, relatively small fluctuations in production have a magnified effect on international prices.

...Another long-term factor with important repercussions on world commodity markets is the increasing participation of the U.S.S.R. and the People's Republic of China as members

of the international trading community. This is the third time in the last decade that the U.S.S.R., normally a regular wheat exporter, has entered the world market as a major importing country with a highly destabilizing effect on grain markets. Also, recent large purchases of sugar and soybeans by the U.S.S.R. and of cotton by China gave a strong boost to markets for these commodities.¹²

Finally, modern agriculture is dependent increasingly on the intensive use of fertilizers, pesticides, mechanization, irrigation methods and hardy, high-yielding seed varieties. If any of these inputs become in tight supply, for whatever reason, future yields will be threatened. With ever increasing demand for food, even a small percentage variation in the supply of these critical products can mean large absolute changes in output because average yields anticipated are now at much higher levels.

It has been argued that the large increases in surplus grain stocks which have accumulated in the U.S. during crop years 1975/76 and 1976/77, has laid to rest for the foreseeable future any substantial concern for world food security. Additionally, prospects for record world production of cereals in 1976/77 provided further optimism that stocks at the end of that crop year would be more than ample. In this regard it is interesting to note some very recent evidence:

The prospects of near-record world grain production in 1977 appear to have changed further in light of continuing assessments of the effects of adverse weather during the harvest and periods immediately preceding

12. FAO Commodity Review and Outlook 1972-1973 (Rome: FAO of the UN, 1973), pp. 24-25.

the harvest in some of the major wheat and coarse grain producing countries. In recent weeks the estimate of the 1977 crop outturn in the U.S.S.R. has been reduced to 19⁴ million metric tons -- 19 million tons below the Soviet's planned target of 213 million metric tons....with the start of the wheat harvesting season in the Southern Hemisphere, it also appears that final grain production in Australia and Argentina will be far below forecasts made earlier.... The 1977 total world wheat, coarse grain, and rice production is now forecast at 1,417 million metric tons, almost 19 million tons below the mid-October estimates and 2 percent less than the 1,444 million tons initially projected for the 1977/78 season in mid-July.

...When initial forecasts of 1977/78 world production for total wheat and coarse grains were published in early May, reflecting what then appeared to be prospects for above-trend yields, an aggregate stocks buildup of about 35 million tons was indicated, including about 10 of wheat and 25 of coarse grains. By mid-September, a sizeable coarse grain stock buildup still appeared likely, though by then the amount had fallen from 25 to 17 million tons; for wheat, however, changed crop prospects eliminated the prospective stock buildup entirely. Thus, despite the peak harvest season, world price movements at that time had begun to show a definitely stronger tone for wheat, though not for coarse grains. (Note: See Table 3).

Currently, the total of wheat and coarse grain stocks suggests a drawdown of over 4 million tons....¹³

Compared with the buildup of over 50 million tons for total wheat and coarse grains which occurred in 1976/77, a drawdown of 4 million tons does not appear at first glance to be particularly important. However, the Circular goes on to point out several background factors which accentuate the significance of the drawdown. These are:

13. USDA Foreign Agriculture Circular, Nov. 11, 1977, op. cit., pp. 3 and 6.

(1) aggregate yield data suggest that in global terms, 1977 has not been discernibly below average from the standpoint of weather.

(2) current utilization estimates currently total 17 million tons higher than those forecast last May.

(3) a rather disappointing grain crop in the USSR, which in terms of usable grain was apparently over 25 million tons short of the official plan; having occurred in spite of the good growing conditions believed to have prevailed in large sections of the USSR grain area, this raises new questions as to the ability of the USSR to achieve plan levels of production under average weather conditions.

(4) despite world grain prices having been generally higher at 1977-crop preplanting time than they are now, there apparently occurred a rather significant decline of roughly 4 million hectares in grains area, the first since the pre-1973 era of deliberate, government-fostered planting restraints.

(5) it can be seen that if world grain crop weather in 1977 had been poor to such an extent as appears to occur about once in ten years, the drawdown in global grain stocks during 1977/78 could have been on the order of perhaps 25 to 30 million tons.¹⁴

A final point worth mentioning here is that the USDA estimates that total USSR buying of foreign wheat and coarse grains on the world market in recent months may have reached as much as 23 million tons.

The points mentioned in the above quotation provide some cause for concern but there is another disturbing feature about current world grain stocks. What may have gone unnoticed is that the levels held by the US have increased markedly.

14. Ibid., p. 6.

Nearly 60 percent of the increase (in the world's total grain stocks) in the past two years has occurred in the United States where stocks rose from 27 to 61 million metric tons. Two years ago world wheat stocks were 62.5 million tons and the US held only 19 percent of them. Today world stocks total 100 million metric tons and the United States holds 30 percent. In the case of feed grains, world stocks totaled 51 million metric tons last year; the United States held approximately 34 percent. This year world stocks total nearly 69 million tons of which the US holds 44 percent.¹⁵

In this atmosphere of increasing reserves the U.S. has decided to implement a 20 percent set-aside in acreage on 1978 crop wheat and will probably set aside 10% of feed-grain land. This amounts to a total set-aside of 20.3 million acres¹⁶ which translates into about 28 MMT of withheld grain production.

The above developments are superimposed on traditional causes of high price instability such as the susceptibility of agricultural output to the vagaries of nature and low price and income elasticities of demand and supply of agricultural commodities in general. If the current situation persists it is likely that price instability will become even more of a problem in the future than it has been so far. At the same time, it must be noted that price instability is a complex phenomenon, reflecting a variety of short, medium, and long-term factors which affect different commodities in various ways. In the case of tree crops such as coffee, cocoa, tea and fruits (some of which are also non-storeable) price instability

15. World Food Security and Set-Aside Plans, White House Press Release (Washington DC: Office of the White House Press Secretary, Aug. 29, 1977), p. 2.

16. See Ibid., p. 5.

arises mainly from variations in output, although competition between exporters sometimes contributes also. On the other hand, price instability for food and feed commodities is mainly supply induced. The cyclical nature of production of commodities grown in trees (e.g. cocoa, coffee and several fruits), contributes further to instability as do discontinuities of investment brought on by cyclical movements in levels of economic activity which may cause lags in productive capacity (e.g. sugar). The problem is that fluctuations of output caused by these various cycles do not necessarily coincide either in direction or amplitude with fluctuations of demand.

The FAO Review provides an excellent summary, at the intuitive level, of the problems in price stability of agricultural commodities.

The high degree of price instability during the 1972-74 period was the outcome of the convergence of many...factors, including annual variations in production and supplies, exhaustion of stocks, cyclical movements in production and demand, structural imbalances between supply and consumption, and the resulting tendency to speculative ups and downs, further stimulated by monetary disturbances. The probability of another coincidence of all the short and medium-term elements occurring simultaneously may not be very high. Nevertheless, the world's food and agricultural system may, all the same, remain more vulnerable to instability than before.... Moreover, this diversity of causes of instability suggests that there is no single method for reducing its incidence and that international measures for price stabilization must be carefully calibrated to fit the technical and economic characteristics of different products. 17

17. Ibid., p. 25.

B. THE 1972 TO 1974 FOOD PRICE EXPLOSION

1. What Caused the Crisis?

The foregoing summary shows representative evidence of the many problems associated with the world food situation since 1972. What has not been explained, however, is the underlying causes of these rising prices which caused almost every nation in the world to experience high and troublesome inflationary pressures and, for some, a fundamental alteration in terms of trade. While this has not been an extraordinarily serious problem for North America and other developed countries, it has meant near disaster for poor countries forced to import most of their food grains. For example, wheat prices almost doubled from July to December, 1972, and world wheat stocks at the end of the 1973 crop year were the lowest since 1960 (See Table 7). Prices doubled again by December 1973 when the price soared above US \$5.00 per bushel and they rose even further in early 1974.¹⁸ The explanations put forth most often for this fundamental realignment of prices in the world market-place fall into five categories: (1) The weather, (2) the Russian Wheat Deal, (3) the influence of affluence, (4) the return of Malthus, and (5) the increase in price of crude oil.

(a) The Weather

Crop production throughout the world is dependent largely upon the weather, particularly the timing and amount of rainfall,

18. Price data from: USDA Foreign Agriculture Circular, Nov. 11, 1977, op. cit., p. 25.

since few crops utilize irrigation. Some regions of the world are subject to greater annual variations in temperature and rainfall than others. In particular two regions with large populations -- the USSR and Asia, -- are subject to wide year-to-year variations in rainfall and crop output. The USSR may experience dysfunctional temperature extremes and/or drought while Asia is dependent upon the monsoons.

Economists and climatologists generally differ in their views on the overall significance of weather to agriculture. Economists tend to view the weather as a probability function with a random distribution, while climatologists attribute to weather an identifiable series of cycles. Some of them (the climatologists) argue that the world had better than "normal" weather from the mid 'fifties to the early 'seventies which accounts for the food surpluses during that period. Regardless of the cause there is no question that the weather in 1972 was adverse over large areas with huge populations. Most of South and Southeast Asia suffered from inadequate monsoon rains. Both the USSR and sub-Saharan Africa had one of the most severe droughts in recent history. The net result was a decline in world grain production as shown in Table 6 (page 23). Reflecting the unfavourable weather the world output of grains declined some 40 million tons in the crop year 1972-73, or more than 3% from the previous year's high. But world declines in grain output are not new. In Hathaway's words:

19
TABLE SIX

World Production and Consumption of Wheat, Rice, and Coarse Grains, Marketing Years 1960-61 to 1974-75

Millions of metric tons

Market- ing year	Wheat		Rice produc- tion	Coarse grains ^b		Total	
	Produc- tion	Consump- tion		Produc- tion	Consump- tion	Produc- tion	Consump- tion
1960-61	240.4	237.3	236.5	408.4	398.8	885.3	872.6
1961-62	226.5	238.3	240.9	389.7	404.5	857.1	883.7
1962-63	256.3	250.9	243.0	406.6	408.7	905.9	902.6
1963-64	236.9	245.4	248.9	416.2	412.8	902.0	907.1
1964-65	273.4	262.3	259.9	415.5	421.7	948.8	943.9
1965-66	262.7	281.5	250.4	432.6	449.1	945.7	981.0
1966-67	303.5	280.7	248.1	461.4	459.0	1,013.0	987.8
1967-68	292.8	289.6	275.3	485.0	475.0	1,053.1	1,039.9
1968-69	325.0	300.4	281.0	489.5	486.7	1,095.5	1,068.1
1969-70	306.1	315.8	280.8	512.4	515.7	1,099.3	1,112.3
1970-71	309.4	328.6	298.2	507.6	522.9	1,115.2	1,149.7
1971-72	341.5	342.3	299.4	561.3	544.0	1,202.2	1,185.7
1972-73 ^c	333.8	358.2	285.7	545.5	565.0	1,165.0	1,208.9
1973-74 ^d	367.0	358.0	309.5	598.5	594.5	1,275.0	1,262.0
1974-75 ^d	375.2	365.5	305.0	621.6	605.1	1,301.8	1,275.6

a. Rice consumption is assumed to be approximately equal to rice production, since few countries maintain appreciable stocks and world trade in rice averages about 5 percent of annual production.

b. Coarse grains are rye, barley, oats, corn, and sorghum.

c. Preliminary.

d. Estimate.

Total world grain output had also dropped more than 3 percent from 1960-61 to 1961-62 and by a slight amount from 1964-65 to 1965-66. In these years, as in 1972-73, the declines occurred in the face of mounting demand, and disappearance continued to rise.

World wheat production in 1972-73 declined 7.7 million tons from the previous year, with 5.7 million tons of the decline outside the United States. (See Table 7). Even so, world wheat production in 1972-73

19. Source: Hathaway, op.cit., p. 84, (His sources include FAO publications, Foreign Agriculture Circular (various), Agricultural Statistics 1967 and USDA projections).

was 24 million tons, or 8 percent, above the 1970-71 level. In several years during the last decade world wheat production took larger absolute and percentage drops than the decline from 1971-72 to 1972-73.

World coarse grain production likewise fell in the 1972-73 crop year by about 16 million tons (3 percent) from the previous year, with half the decline accounted for by U.S. production controls. (See Table 8). Even so, world production was 38 million tons (7 percent) above the 1970-71 level. On the other hand, the 1972-73 drop followed almost a decade of steadily rising world production, interrupted only by the U.S. corn blight in 1970 and held down in part by U.S. production controls.

World rice production also declined in 1972-73 by about 14 million tons, or 5 percent of the previous year's output (See Table 9). But again, world production was still the highest except for the two preceding crop years, although the longer-term growth for this staple has been much slower than that for either wheat or coarse grains. Moreover, world rice output had fallen 12 million tons, or 5 percent between 1964 and 1966.²⁰

Thus, viewed from the perspective of the past fifteen years, the 1972-73 weather was bad for crop production. Similar declines occurred throughout the period for wheat and rice but not for coarse grains, and 1972-73 marked the first time in the 'sixties or 'seventies that the output of all three grains dropped in the same year. Still, bad weather is bound to occur in some years, and is accounted for in medium and long-term expectations -- blaming the weather for the unprecedented rise in food prices in 1972-73 implies that current production should bear the full burden of meeting demand with no assistance from reserve stocks.

20. Ibid., p. 84-85.

TABLE SEVEN

World and U.S. Production, Stocks, Exports, and Consumption of Wheat, Marketing Years 1960-61 to 1974-75

Millions of metric tons, or percentage where indicated

Marketing year	Production			Stocks ^a			Exports			World consumption ^b	World stocks as percentage of preceding year's consumption	U.S. stocks as percentage of world stocks
	World	United States	Other	World	United States	Other	World	United States	Other			
1960-61	240.4	36.9	203.5	68.1	35.8	32.3	43.9	18.0	25.9	237.3	...	52.6
1961-62	226.5	33.5	193.0	71.2	38.4	32.8	47.1	19.6	27.5	238.3	30.0	53.9
1962-63	256.3	29.7	226.6	59.4	36.0	23.4	45.8	17.5	28.3	250.9	24.9	60.6
1963-64	236.9	31.2	205.7	64.8	32.5	32.3	58.4	23.3	35.1	245.4	25.8	50.2
1964-65	273.4	34.9	238.5	56.3	24.5	31.8	54.5	19.7	34.8	262.3	22.9	43.5
1965-66	262.7	35.8	226.9	67.4	22.2	45.2	61.3	23.6	37.7	281.5	25.7	32.9
1966-67	303.5	35.7	267.8	48.6	14.6	34.0	57.3	20.3	37.0	280.7	17.3	30.0
1967-68	292.8	41.4	251.4	71.4	11.6	59.8	53.2	20.7	32.5	289.6	25.4	16.2
1968-69	325.0	42.9	282.1	74.6	14.7	59.9	50.0	14.8	35.2	300.4	25.8	19.7
1969-70	306.1	39.7	266.4	99.2	22.3	76.9	55.5	16.5	39.0	315.8	33.0	22.5
1970-71	309.4	36.8	272.6	89.5	24.1	65.4	56.2	20.1	36.1	328.6	28.3	26.9
1971-72	341.5	44.0	297.5	70.3	19.9	50.4	56.0	17.2	38.8	342.3	21.4	28.3
1972-73 ^c	333.8	42.0	291.8	69.5	23.5	46.0	72.9	32.1	40.8	358.2	20.3	33.8
1973-74 ^d	367.0	46.6	320.4	45.1	11.9	33.2	73.9	32.7	41.2	258.0	12.6	26.4
1974-75 ^d	375.2	56.4	318.8	54.1 ^e	4.9	49.2	72.7	27.2	45.5	365.5	15.1	9.1

Sources: Foreign Agriculture Circular (March 1974), and Agricultural Statistics, 1967.

a. As of the beginning of the marketing year. World stock data do not include several countries such as the USSR, part of Eastern Europe, and the People's Republic of China, for which stock data are not available, but the aggregated stocks levels have been adjusted for estimated year-to-year changes in USSR stocks.

b. For countries for which stock data are not available or adjustments have not been made, a constant stock level is assumed.

c. Preliminary.

d. Estimate.

e. Includes an estimated 17 million tons accumulated in the USSR during the 1973-74 season, after allowance for normal waste and spoilage.

TABLE EIGHT

World and U.S. Production, Stocks, Exports, and Consumption of Coarse Grains, Marketing Years 1960-61 to 1974-75^a

Millions of metric tons, or percentage where indicated

Marketing year	Production			Stocks ^b			Exports			World consumption ^c	World stocks as percentage of preceding year's consumption	U.S. stocks as percentage of world stocks
	World	United States	Other	World	United States	Other	World	United States	Other			
1960-61	408.4	n.a.	n.a.	88.0	n.a.	n.a.	26.2	n.a.	n.a.	398.8	n.a.	n.a.
1961-62	389.7	126.8	262.9	97.6	77.1	20.5	34.1	15.7	18.4	404.5	24.5	79.0
1962-63	406.6	128.5	278.1	82.8	65.5	17.3	32.5	15.2	17.3	408.7	20.5	79.1
1963-64	416.2	139.5	276.7	80.7	58.4	22.3	36.2	17.0	19.2	412.8	19.7	72.4
1964-65	415.5	121.7	293.8	84.1	62.9	21.2	38.0	19.6	18.4	421.7	20.4	74.8
1965-66	432.6	142.8	289.8	77.9	49.7	28.2	47.7	26.4	21.3	449.1	18.5	63.8
1966-67	461.4	143.0	318.4	61.4	38.2	23.2	43.5	20.0	23.5	459.0	13.7	62.2
1967-68	485.0	159.7	325.3	63.8	33.7	30.1	44.4	21.1	23.3	475.0	13.9	52.8
1968-69	489.5	153.2	336.3	73.8	43.8	30.0	39.8	16.7	23.1	486.7	15.5	59.3
1969-70	512.4	158.4	354.0	76.6	45.3	31.3	47.0	19.2	27.8	515.7	15.7	59.1
1970-71	507.6	143.9	363.7	73.3	43.9	29.4	52.6	18.7	33.9	522.9	14.2	59.9
1971-72	561.3	188.4	372.9	58.0	30.0	28.0	56.1	24.8	31.3	544.0	11.1	51.7
1972-73 ^d	545.5	181.3	364.2	75.3	43.9	31.4	67.8	39.2	28.6	565.0	13.8	58.3
1973-74 ^e	598.5	185.9	412.6	55.8	29.3	26.5	70.1	38.0	32.1	594.5	9.9	52.5
1974-75 ^e	621.6	212.1	409.5	59.8 ^f	22.2	37.6	73.2	37.7	35.5	605.1	10.1	37.1

Source: Foreign Agriculture Circular (March 1974).

a. Coarse grains are rye, barley, oats, corn, and sorghum. Rye is not included in U.S. data shown here.

b. As of the beginning of the marketing year. Also see Table 6, note a.

c. See Table 6, note b.

d. Preliminary.

e. Estimate.

f. Includes an estimated 8 million tons accumulated in the USSR during the 1973-74 season, after allowance for normal waste and spoilage.

n.a. Not available.

23
TABLE NINE

World Rice Area Harvested, Yield, Production, and Trade,
Crop Years 1963-64 to 1974-75

Crop year ^a	Area (thousands of hectares)	Yield ^b (quintals per hectare)	Production ^b (thousands of metric tons)	World trade ^c (thousands of metric tons)
1963-64	120,801	20.6	248,906	7,202
1964-65	124,531	20.9	259,910	7,510
1965-66	123,390	20.3	250,392	7,898
1966-67	126,154	19.7	248,127	7,366
1967-68	128,122	21.5	275,282	6,908
1968-69	129,846	21.6	281,009	6,453
1969-70	130,404	21.5	280,783	6,579
1970-71	129,657	23.0	298,190	7,285
1971-72	133,502	22.5	299,435	7,700
1972-73 ^d	128,833	22.2	285,681	7,300
1973-74 ^e	134,403	23.6	309,500	7,400
1974-75 ^f	134,000	22.8	305,000	...

23. Source: Foreign Agriculture Circular, FG 12-73 (October 26, 1973) p. 15, and FG 6-74 (March 1974), p. 9. The area and yield figures for 1973-75, and the production figures for 1974-75, are USDA projections.

a. Trade data are for calendar years, whereas production data are for the worldwide crop-harvest year. Years shown refer to year of harvest in the Northern Hemisphere. Harvests of Northern Hemisphere countries are combined with those of the Southern Hemisphere, which follow immediately; thus, for example, the crop harvested in the Northern Hemisphere in 1973 is combined with estimates for the Southern Hemisphere harvest that began late in 1973 and ended early in 1974; the corresponding trade data are for calendar year 1973.

b. Rough paddy basis.

c. Milled basis.

d. Preliminary.

e. Estimate.

f. Projected.

Ibid., page 88.

(b) The Russian Wheat Deal

Much has been written on the sale of wheat to the USSR in 1972. Critics have called it everything from bad business practices to dishonest, and defenders everything from good business to detente. Because of her vast area the USSR experiences large variations in weather and thus in grain output, however, in the past the Russians coped mainly with shortages caused by bad crops through the use of reserves or by liquidating livestock herds. That is not to say that they have not imported significant amounts of grain in the past. (See Table 10). In 1972 the USSR entered the international grain markets in a sudden, secretive and massive way to make up for their poor crop. They turned to the US as their major supplier and before the US Government or exporters knew what was happening the Russians had contracted to import 15 million tons of wheat and 6 million tons of feed grains.²⁴ It is clear that the Russians bought a great deal of wheat in 1972 and this huge purchase must have had some effect in the world market. However, it must be noted that while total USSR wheat imports increased by 11.5 million tons from 1971-72 to 1972-73, total world imports increased 17 million tons and US exports by 15 million tons. (See Table 7). Therefore, USSR imports account for only 2/3 of the increase in world wheat trade in 1972. Most of that increase came from the US but

24. Ibid.

25
TABLE TEN

Soviet Trade in Wheat and Feed Grains, Crop Years 1963-64
to 1974-75

Millions of metric tons

Crop year	Wheat		Feed grains ^a	
	Exports	Imports	Exports	Imports
1963-64	2.7	9.7	1.3	0.1
1964-65	2.2	2.2	1.4	*
1965-66	2.6	8.5	2.2	*
1966-67	4.4	3.1	0.5	0.2
1967-68	5.3	1.5	0.7	0.4
1968-69	5.8	0.2	0.9	0.5
1969-70	6.4	1.1	0.9	0.1
1970-71	7.2	0.5	0.9	0.3
1971-72	5.8	3.4	0.7	4.3
1972-73 ^p	1.3	14.9	0.2	5.6
1973-74 ^b	5.0	4.1	0.5	5.0
1974-75 ^b	6.0	2.0	0.5	2.5

* Less than 50,000 tons.

^p Preliminary.

^a. Feed grains are corn, sorghum, barley, and oats.

^b. Estimate.

25. Source: USDA: Foreign Agriculture Circular March, 1974
(Washington DC: Foreign Agricultural Service, 1974), pp. 10-11.

that was because the US had the grain on the market and was willing to sell it at subsidized prices, well below the then prevailing world price.²⁶ This meant that other countries were not able to purchase American wheat at the subsidized price level but it can hardly be said to have had any other effect on world prices at that time.

In the case of feed grains, Russian imports were modest and could not have had a marked effect on prices. As shown in Table 10 the USSR was a net exporter of these grains for several years and although she became a net importer in 1971-72 and 1972-73, these shifts are not a major proportion of the rise in total world exports of coarse grains in those years. (See Table 8).

26. Schnittker provides some details:

The U.S. Department of Agriculture did not appreciate the significance of...developments in world grain production despite widespread public and private reports, beginning in February of 1972, of serious crop difficulties in the USSR. This failure led to a period of bizarre export pricing in July and August of 1972 after Russian grain purchases had begun. With wheat sales to the USSR reported near 10 million tons by early August, with total wheat exports authoritatively projected at 1.1 billion bushels or more, and with other exporters known to have been virtually out of the market for months because of large sales or short crops, USDA continued until September 22 a subsidy policy that priced wheat for export at levels that had been established in the buyer's market prevailing during the previous year. This policy probably added slightly to the physical volume of wheat exports, and contributed somewhat to increases in US prices. The principal effect of the subsidy policy, however, was to waste some \$300 million in public funds, and to lose about the same amount in badly needed export earnings.

Source: John A. Schnittker "The 1972-73 Food Price Spiral", Brookings Papers on Economic Activity 1973(2), (Washington DC: The Brookings Institution, 1973), p. 500.

It is conceivable that Russian purchases may have pushed US and world wheat prices up, to some degree, in that they scooped up the American surplus which was selling at bargain prices, however, they could not have had a significant influence in the case of feed grains. The explanation of the grain price increases cannot be attributed solely to the alleged Russian villain.

(c) The Influence of Affluence

The relationship between changes in income and changes in per-capita food consumption is described in terms of the income elasticity of demand.

For food as a whole, the per-capita income elasticity of demand is low in developed countries which means that as income is increased, very little more is spent on food. While the elasticity measure is functional and easy to work with, the low overall elasticity for food masks the fact that as people get more income the nature of their diet changes. In the poorer, under-developed countries the first transition is from such foods as beans and root crops to grain consumed directly as real income begins to increase. As people become more affluent they demand a higher proportion of their calories from animal proteins -- particularly poultry, eggs and red meats.

In terms of overall food elasticity measures this trend is not critical, but it is very important in terms of the demand for grain. Table Eleven shows the change in per-capita consumption of meat and eggs in some major developed countries since 1948. It can be noted from Table Eleven that per-capita

TABLE ELEVEN

Per Capita Consumption of Meat and Eggs, Selected
Developed Countries, 1948-50 and 1969-70

Grams per capita per day

Country	Meat		Eggs	
	1948-50	1969-70	1948-50	1969-70
United States	224	302	59	50
Australia	300	300	32	35
Federal Republic Of Germany	80	200	14	42
Italy	42	131	16	26
Japan	5	41	2	39
Spain	39	120	13	30
USSR	n.a.	106 ^a	n.a.	19 ^a

28. Source: FAO, Agricultural Adjustment in Developed Countries, prepared for the Seventeenth FAO Conference, C73/16 (Rome: FAO of the UN, 1973), p. 121.

consumption of meats in the United States has risen by 35% over the twenty year period; consumption more than doubled in Germany and increased eight-fold in Japan.

This dietary improvement is encouraging in terms of welfare, but it puts tremendous strain on the world's grain-producing resources. In the developing countries of Asia, Africa, and Latin America, the per-capita availability of grain is only about 400 pounds per year. Nearly all of this must be consumed directly to meet minimal energy needs. In North America, by contrast, the average person consumes nearly one ton of grain per year. Of this about 200 pounds is consumed directly in the form of bread, breakfast cereals etc., and most of the remainder is consumed indirectly in the form of meat, milk, and eggs. The sociability of North Americans takes its toll as well as about 35 pounds of grain per-capita is consumed in the form of domestically produced alcoholic beverages, mainly beer and hard spirits. Table Twelve shows representative data on grain consumption.

Thus the average North American ten years ago required four to five times the agricultural resources needed by an East Indian or a Chinese person.

This ratio is not likely to widen appreciably. The lower limit on the consumption range is established by the survival level; if consumption drops much below 400 pounds of grain per year, survival is in question. At the other extreme, the physical capacity of the human stomach limits the average person's claims on agricultural resources.²⁷

27. Brown, op. cit., pp. 39-40.

29
TABLE TWELVE

Annual Per Capita Grain Consumption in
Selected Nations, 1964-66 Average

	Grain Consumed Directly (pounds)	Grain Consumed Indirectly (pounds)	Total Grain Consumed (pounds)	Grain Consumed as Multiple of Indian Consumption
Canada	202	1,791	1,993	5
United States	200	1,441	1,641	5
U.S.S.R.	344	883	1,227	4
United Kingdom	169	856	1,025	3
Argentina	223	625	848	2
West Germany	160	588	748	2
Mexico	305	242	547	2
Japan	320	211	531	2
China	312	118	430	1
India	288	60	348	1

29. Source: FAO, Food Balance Sheets, 1964-66 Average, and US Department of Agriculture. Ibid., p. 40.

The growing consumption of livestock products is perhaps the single most pronounced change in dietary habits as per-capita incomes rise. This phenomenon may be assessed by observing the changes in demand for feed or coarse grains since 1964. Table Thirteen shows the evidence.

The important story told by Table Thirteen is as follows: During the period per-capita disappearance of coarse grains increased 18.3% in all developed countries, 17.6% in the US and 52.1% in Japan. In both Eastern Europe and the USSR, per-capita disappearance rose approximately 25% as these countries increased livestock feeding and animal product consumption. It is also noteworthy that the less developed countries as a group did not expand in this respect from which it may be deduced that they had not reached a general state of affluence by 1973 which would have permitted them to buy and use more feed grains for conversion to animal protein.

It appears from Table Thirteen that affluence does not spur greatly the demand for wheat in developed countries. Disappearance rose more sharply, however, in Eastern Europe and the USSR, where much more wheat is fed to animals than in the other developed countries. One encouraging aspect is that for less developed countries as a group, wheat consumption, although remaining low, rose approximately 20% per-capita during the period.

The evidence presented in Table Thirteen becomes more meaningful as it is translated into per-capita, high quality

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TABLE THIRTEEN

Per Capita Disappearance of Grain in Selected Countries and Areas, 1964-66^a and 1972-73

Grain amounts in kilograms per person per year

Country or area	Wheat			Coarse grains ^b			Total grains ^c		
	1964-66	1972-73	Percent-age change	1964-66	1972-73	Percent-age change	1964-66	1972-73	Percent-age change
United States	99	102	3.0	631	742	17.6	735	850	15.6
European Economic Community ^d	151	169	11.9	255	286	12.2	410	458	11.7
Other Western Europe	127	132	3.9	223	301	35.0	356	439	23.3
Japan	49	52	6.1	73	111	52.1	242	275	13.6
USSR	345	398	15.4	258	320	24.0	606	724	19.5
Eastern Europe	219	273	24.7	370	464	25.4	592	741	25.2
All developed countries ^e	118	127	7.6	345	408	18.3	484	555	14.7
All less developed countries	41	49	19.5	65	63	-3.1	166	177	6.6

a. Average for three-year period 1964-65 through 1966-67.

b. Coarse grains are rye, barley, oats, corn, and sorghum.

c. Includes rice, not shown separately.

d. Nine countries--Belgium, Denmark, France, West Germany, Ireland, Italy, Luxembourg, Netherlands, and United Kingdom.

e. Not limited to those listed shown separately here.

30. Source: Hathaway, op. cit., p. 92, (Note: He lists his source as "USDA, World Agricultural Situation, Dec., 1973, p. 23.").

individual food consumption. In Brown's words:

Consumption of livestock products varies widely among countries. In the United States, Argentina and Australia the average person consumes close to 250 pounds of meat annually, or about five pounds a week. In France, Canada, and West Germany, per-capita meat consumption is about 200 pounds per year. Citizens of the United Kingdom consume 170 pounds of meat per year. At the opposite end of the scale are the low-income countries, most of them in tropical or subtropical regions, in which the average person consumes less than 20 pounds of meat per year. There is a middle group of countries, including the Soviet Union, Sweden, and Spain, in which meat consumption is about 100 pounds per year. Where incomes permit, per-capita consumption of meat appears to increase until it reaches somewhere between 200 and 250 pounds per year, after which it may stabilize.³¹

In the countries where large quantities of meat is consumed there is a wide diversity in the types of meat favoured. However, whether one country favours pork as against another country's preference for beef -- all interspersed with varying levels of milk, cheese, eggs and poultry -- the end result is much the same. There is no escaping the fact that it takes three to four times the calories in feed grains to produce equivalent calories in poultry, meat, and eggs, and six to seven times the amount to produce equivalent calories in grain-fed beef. It should be noted, however, that many parts of the world are too dry to grow grain but are adequate for pasture and that other plant by-products may be used as food instead of grain. (e.g. the cow and the buffalo can digest cellulosic material

31. Brown, op. cit., pp. 42-43.

that man cannot utilize). These forms of protein production have not yet been exploited fully.

An explosion in grain prices occurred also with rice, the staple food for most of Asia. Normally, very little rice is traded (See Table Nine); the two largest exporters are the US and Thailand. In any case, the increase in rice prices was most likely the result of the poor crop in 1972, however, it should be noted that the drop in world rice output called for heavier exports of wheat and coarse grains as substitutes and this put more pressure on the prices of those commodities.

In summary, the source of the much expanded demand for wheat, coarse grains, and to some extent rice, is rising affluence which supports the demand for better diet. Generally, that demand seems to manifest itself in direct proportion to a nation's state of economic development. In the less developed countries it takes the form of demand for more grain for direct consumption; the developed countries demand more feed grains for conversion to animal-based protein.

(d) The Return of Malthus

Another point of view, as to what caused the 1972-73 explosion in food prices, invokes the Malthusian Theory that population tends to outrun food supply. From the beginning of agricultural activity until quite recently, nearly all of the growth in demand for food stemmed from population growth, since everyone except a select few lived at the subsistence level.

According to the Malthusian argument food supply cannot keep up with growing population and demand, despite the promise of the "Green Revolution". In order to avoid wide-spread famine, the poorer countries have been turning to the developed countries for increasing amounts of food grains to maintain subsistence thus raising world demand beyond supply capacity. Part of this problem is that LDC's have been induced to take land out of local food production to produce

...exotic foods which typically are not grown in the developed countries. These include coffee, tea, chocolate, peanuts, bananas, pineapples, etc. To get these products some...corporations...have taken control of land in less developed countries; in other cases farmers in these countries are offered a sufficient reward to induce them to take their land out of food production for their own country and use it to grow crops for (developed countries). The prices paid these farmers for their crops have not been particularly high. In most cases we have been able to play off farmers in one country against farmers in another country. For the poorest half of population this has meant a further reduction in the availability of food.³²

The concept of exponential population growth and linear increases in food production is familiar to most. The current world population growth rate of nearly 2% per-annum, which brings a doubling every thirty-five years, is unprecedented. In 1972, world population increased by 71 million and the annual addition to the world population occurs primarily in Asia. Table Fourteen shows representative data. Assuming constant per-capita

32. Henry Rempel, Our Role as Businessmen, Farmers, Educators and Consumers in the World Food Crisis, undated speech, p. 6.

food consumption levels, population growth translates directly into increased demand for food. Where population increases 3% yearly, as it does today in several countries, it multiplies nineteen-fold in a century. This means that food supplies likewise must be expanded nineteen-fold in the same time period.

The large increases in food supply will have to be found somewhere if people and not Malthusians are to prevail. It seems clear that, owing to increases in domestic consumption and sometimes fickle attitudes toward aid, the less developed world should not rely too heavily on the North American "bread-basket" to fill completely any significant and recurring grain shortages. This means that LDC's in the years ahead will have to produce themselves much of their increased requirements for cereals. They can increase their production in two ways; by bringing more land into production or by using present arable land more efficiently.

The first alternative does not appear to be too promising.

The primary resource necessary for producing food is land. Recent studies indicate that there are, at most, about 3.2 billion hectares of land (7.86 billion acres) potentially suitable for agriculture on the earth. Approximately half of that land, the richest, most accessible half, is under cultivation today. The remaining land will require immense capital inputs to reach, clear, irrigate, or fertilize before it is ready to produce food. Recent costs of developing new land have ranged from \$215 to \$5,275 per hectare. Average cost for opening land in unsettled areas has been \$1,150 per hectare. According to an FAO report, (Provisional Indicative World Plan for

TABLE FOURTEEN³⁶

National Sources of World Population
Increase, 1972

	Millions
China	13.3
India	12.8
Indonesia	3.4
Brazil	2.8
U.S.S.R.	2.2
Bangladesh	1.9
Mexico	1.8
Pakistan	1.7
Japan	1.4
Nigeria	1.4
United States	1.3
Phillippines	1.3
Thailand	1.1
Iran	1.0
Turkey	1.0
Egypt	.7
Columbia	.7
Ethiopia	.7
Burma	.7
South Korea	.7
All other countries	<u>19.1</u>
Total	71.0

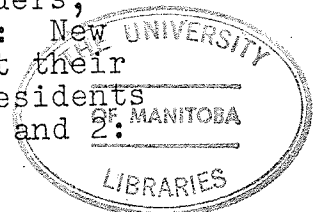
36. Source: U.S. Agency for International Development.
Brown, op. cit., p. 36.

Agricultural Development, Rome, FAO, 1970, 1:41) opening more land to cultivation is not economically feasible, even given the pressing need for food in the world today.³³

This leaves the second alternative -- that of more efficient use of land currently under cultivation. A major step in this direction was taken with the establishment of the so-called "Green Revolution" which occurred in the mid-'sixties. The Green Revolution was made possible by the innovation of new, high-yielding and hardy cereals (particularly wheat and rice) which increased production tremendously in many less developed areas of the world. An example of what can be achieved, not only by Green Revolution techniques but by close attention to more sophisticated and efficient farming in general, was shown in India.

In contrast to the near-stagnation of the decades before India achieved independence in 1947, agricultural production since planning began in the early 1950's has maintained a long-term growth trend of about 3.5% annually. India is thus among the countries in which agricultural growth has been ahead of the growth in population, although not so much ahead as we would have liked. At the beginning of the 1950's grain production was around 50 million -- 55 million metric tons; in the middle 1970's, it is in the neighbourhood of 105 million -- 110 million metric tons. ...In a matter of two decades, grain production in absolute terms has been doubled. In the early stages, most of the increase came about through the extension of cultivation, but as land became scarcer, reliance had to be placed on increasing productivity per hectare. The advent of new

33. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, The Limits to Growth (New York: New American Library, Inc., 1972), p. 58. Note: They list their sources for these data as: The World Food Problem, Presidents Science Advisory Panel on the World Food Supply, 2:423 and 2:460-69.



technology in the mid-1960's including high-yielding varieties of seeds and the massive application of fertilizer, along with a package of improved practices, has led to a significant transformation of agriculture in some parts of India, notably the northwest.³⁴

There is no question that the intensive agricultural techniques of the Green Revolution have provided great assistance to many areas of the less developed world. The main problem, however, is that the intensive cultivation requires high levels of energy supplies in the forms of fertilizer and fossil fuels -- the fuels being required to provide power for irrigation systems. The large increases in energy prices have removed some of the effectiveness of the Green Revolution in that producing cereals in this manner is now much more costly. Looking at the situation in another way, the Green Revolution bought some time but other initiatives must be taken quickly. In Gandhi's words:

In recent years, there has been a sharp increase in the consumption of chemical fertilizers and pesticides, in minor irrigation, in the spread of improved varieties of seeds, and in the provision of credit and marketing facilities. This tempo of progress must be sustained and extended to other parts of the country. In particular, attention is now being given to dryfarming techniques and to major irrigation schemes, along with intensive area development. The structure of production in rural society is of vital importance, and this is why land reforms are crucial to India's agricultural program.³⁵

The above quotation discusses India only, however, the concepts of necessary progress and land reform are applicable

34. Indira Gandhi, "A World Without Want", Brittanica Book of the Year, 1975, (London: Encyclopedia Brittanica Inc.) 1975, p. 13.

35. Ibid.

to all LDC's.

In summary, steady population increases and growth pressures on food demand brought on by affluence are currently interacting with the adverse effects of the energy shortage on food supplies. Agriculture throughout the world relies increasingly on high-energy technology (China being the major exception) and the level and cost of additional farm output everywhere is affected more and more by the cost and availability of petroleum, fertilizer and pesticides. It has become fashionable to criticize the Green Revolution by pointing out that per-capita food output has not improved very much in the countries where the new seeds are being used. But that is not the point; without the production boost made possible by the new seeds, there would quite likely have been a disastrous decline in per-capita food production in Asia.

The Green Revolution has not been a solution to the food problem, however, it has been a means of buying time during which governments might find some way to apply the brakes to population growth and to carry out necessary land reforms. There is no doubt that there are increasingly stringent problems associated with bringing more land into production, and obtaining reliable and adequate sources of good water. The cost of energy and fertilizer is not likely to be reduced and most areas have reached the point where applying large additional levels of fertilizer will produce only a very small increase in yield. The continued search for and innovation of new and more efficient agricultural techniques must be sustained; the

necessary technological advances have not yet been made for us to discount entirely Malthusian Theory.

(e) The Increased Price of Crude Oil

The argument that food prices escalated as a direct result of the sudden and massive increases in the price for petroleum products is made by those who don't have their dates straight.

Between late 1972 and the end of 1973, the world price of wheat tripled, and the price of rice followed. Soybean prices doubled in a twenty-four month period.

The sudden increase in wheat prices was followed in a matter of months by an equally dramatic rise in petroleum prices. From 1960 to 1972 the world price of a bushel of wheat and that of a barrel of oil were nearly equal, ranging from \$1.35 to slightly over \$2.00. A bushel of wheat could be traded for a barrel of oil in the world marketplace. In late 1973 the price of wheat soared past \$5.00. For a brief period a bushel of wheat could be exchanged for two barrels of oil. Then came the Christmas Eve, 1973, oil price increases by the oil-exporting countries - the second doubling in price within the year - and the price of oil soared above that of wheat....³⁷

While there is no doubt that costs of petroleum products and energy are now tremendously significant factors in world agricultural production, the booming prices of food commodities occurred well in advance of the first major increase in the price of oil. Therefore, the explanation of the explosion in grain prices must be sought elsewhere.

2. Analysis of the Causes of the Price Boom

Closer examination of the more popularly espoused causes of the extra-ordinary price increases of 1972-73 indicate that

37. Brown, op. cit., p. 4-5.

it is not possible to pick one key, overriding factor which was to blame. It was a combination of adverse factors and national self-interest, particularly in North America, which culminated in the runaway prices. First, and most important, was the long-run growth in demand for feed grains resulting from the spreading affluence in both the developed and developing world. The impact of this began to manifest itself in the late 'sixties but policy analyses in developed countries largely ignored it.

An apt example of this was Canada's LIFT (Lower Inventory for Tomorrow) program of 1970. Canadian grain producers increased wheat acreages and obtained high yields during the latter half of the 'sixties, however, as production in importing countries increased our wheat exports declined sharply.

This resulted in large stocks on farms and in commercial channels in late 1969 -- 850 million bushels by July 31.

...The domestic grain handling and storage facilities were clogged and unable to operate efficiently. Also, the lower wheat marketings resulted in acute cash shortages among prairie grain producers. This problem was particularly severe in Saskatchewan because of farmers' great reliance on wheat compared to other crops or livestock.

...Under these circumstances, the Honourable Otto E. Lang, Minister responsible for the Canadian Wheat Board, presented to the House of Commons on February 27, 1970, the program known as Lower Inventory for Tomorrow. The stated purpose of this program was to reduce wheat acreage and to encourage farmers to hold this land out of production of any crop

in 1970. (NOTE: Producers in the designated region who reduced wheat acreage below 1969 levels and increased summerfallow or perennial forage by the same amount received federal compensation payments of \$6.00 per acre for additions to summerfallow or \$10.00 per acre for additions to perennial forage acreage).³⁸

Sahi and Craddock go on to develop a model which predicted 1970 crop acreages in the absence of the LIFT program and they concluded that, on aggregate, the program was effective in reducing wheat acreage from a predicted 22.0 million to actual 12.0 million and that carryover stocks of wheat at the end of the 1970-71 crop year would have been 240 million bushels greater in the absence of the LIFT program.

It must be recognized, however, that decisions about domestic production will almost always be made on the basis of national self-interest. Even if Canadian officials had had the foresight to recognize an imminent world shortage of wheat, it is extremely doubtful that they would have encouraged all-out production at this time. The large stocks in existence in 1969 precluded, from both a political and practical standpoint, the accumulation of yet higher reserves.

From the point of view of the United States there was a preoccupation with the high carrying costs and market-depressing effects of high levels of reserve stocks. This resulted in a change from a policy of parity price support, which was conducive to building up stocks in storage, to a free market system where decisions about adequate stocks were made by private enterprise.

38. R.K. Sahi and W.J. Craddock, "Effect of LIFT on Land Use", Canadian Farm Economics, Vol. 6, number 5, December 1971, (Ottawa: Economics Branch, Canada Department of Agriculture, 1971), pp. 1-2.

The free market structure, of course, is an atmosphere where prices will fluctuate to clear excess stocks and this is probably one important reason why US reserves of this type were reduced significantly.

Another factor which contributed in a major way to the lower levels of American grain production was the withholding of acreage from cultivation. Table 2 shows some relevant evidence and Schnittker provides an unflattering assessment of US Government acreage restriction policy during the early 'seventies.

Chaotic decision making with respect to planning for 1973 harvest contributed to a psychology of scarcity which has dominated U.S. and world markets for grain and oilseeds for twelve months.

...First of all, on July 17, 1972 the administration announced a wheat program providing for maximum acreage set-aside for 1973 crop, authorizing additional set-asides for further payments beyond the statutory payment to wheat growers, and determining that barley acreage would again be limited in 1973. This decision, made only two weeks after the massive wheat sales to the U.S.S.R. had begun, should have been corrected in time to permit needed expansion of wheat plantings in the fall of 1972. Instead, it stood until January 1973, when decision making in farm program matters was assumed by the Executive Office of the President. No economic basis can be found for the failure to change the wheat program by September 1: it was clear by August that wheat exports would exceed 1,100 million bushels, that carryover stocks would be reduced to under 500 million bushels, and that crop losses were prevalent throughout the world. Current high wheat prices are one result.

Then on December 11, 1972, came announcement of a feed grain program designed to divert some 25 million acres from production,

and to produce a maximum 1973 corn crop of only 5.5 billion bushels. Had this decision stood, both corn and soybean production in 1973 might well have been so short as to push prices to higher levels than in 1972, even with generally good crops abroad. Fortunately, the program was amended on January 31 and again on March 27, to bring larger acreages into production. Although some potential output was lost as a result of the stop-start nature of farm program decisions, a record 1973 corn crop will be harvested, and the U.S. feed grain carryover will not be reduced as seriously as wheat was during the 1973-74 marketing year. The 1973 soybean crop will reach 1.6 billion bushels, large enough to hold prices below the record levels of early 1973.³⁹

But Schnittker missed the vital point. In the more or less perfectly competitive wheat producers' market, it will always pay producers to restrict output and force prices up, given inelastic demand. Therefore, from the sellers' point of view, the acreage restrictions were conducive to "good business". It must also be noted that from an analytic point of view it doesn't matter who made the extra profits -- the farmer or the grain companies. What is important is to recognize that there was very likely intense lobbying by grain seller interests to continue restrictions on production. This atmosphere would have been wholly consistent with US national interest in that the USDA was committed to a free enterprise grain system and the farmers and grain companies were striving for maximum profits.

The above comments show that North American Governments were making decisions about grain production consistent with

39. Schnittker, op. cit., pp. 502-503.

national interest, however, increasing levels of international food demand probably added significantly to the high prices. Ever-present population increases and the influence of affluence have continued to put pressure on the world's food production limits. The Green Revolution provided interim relief for some LDC's but much has yet to be done in the sense of more intensive cultivation of currently arable land.

Finally, it must be concluded that US wheat sales to Russia did not constitute a major cause of the price explosion in any part of the world, with the exception that once the USSR had bought up the bargain-priced excess, this source of supply was not available to other countries. However, the widespread abnormally bad weather in the 1972-73 crop year -- of which the Russian wheat deal was one manifestation -- did contribute to shortages in that world production of wheat, rice and coarse grains decreased simultaneously during that crop year.

Thus, all these adverse factors, coupled with a major shift in US policy toward free grain markets, combined to bring the world food situation to crisis proportion for the less developed world. Acreage restrictions in America were eliminated for the 1975-76 crop year but that action was probably taken more as a result of pressure brought on by high domestic prices than by government recognition of any looming world food shortage. Bumper crops in 1975 and 1976 have driven prices down⁴⁰ and a recent announcement by the USDA, that

40. Wheat prices (average of U.S. No. 2 Dark Northern Spring, 14% and U.S. No. 2 Hard Winter, 13½%), CIF Rotterdam, were: US \$4.81 per bushel in Dec. 1975, US \$3.68 per bushel in Dec. 1976, and U.S. \$3.07 per bushel in August, 1977. See USDA Foreign Agriculture Circular, Nov., 1977, op. cit., p. 25.

acreage will be restricted again in the 1978-79 crop year, shows that domestic supply management is the critical criterion in American agricultural policy -- not international demand. Withholding production should have the effect of raising prices once again, *ceteris paribus*, but if reduced US production is again concurrent with several other adverse agricultural factors, the result may be even higher prices and more severe shortages than occurred during 1972 to 1974.

It is concluded that all the factors discussed in this section, with the exception of oil price rises, contributed in some way to the very high price rises of grain throughout the period 1972 to 1974. What is most important, however, is to recognize the divergence of the aims of US agricultural policy and the requirement for continually higher levels of food in the rest of the world. American farmers cannot continue to produce at current price levels but increasing population and affluence provide steadily rising international demand. As well, the lower grain stocks which will undoubtedly continue to prevail as a result of US policy, means that there will be less excess available to distribute to the poor people who are outside the commercial market, either at reduced prices or in the form of gifts. It is these problems that will play the largest part in future food crises and we now turn to a discussion of some other likely consequences of price rises.

C. THE CONSEQUENCES OF THE PRICE BOOM

High food prices and shortages are an inconvenience for affluent societies and individuals -- the inconvenience manifesting itself in such paltry gestures as mixing a few soybeans with hamburger -- but they place poor nations in a dangerous predicament. When global food reserves are low, the capacity of the international food market to provide relief in response to emergencies such as droughts or crop failures is diminished greatly. As well, high prices may keep critically needed food out of the reach of poor nations and individuals. For the sizeable segment of mankind that spends up to 80% of its income on food, significant increases in price for wheat or rice cannot possibly be offset by increased spending. It can only drive a bare subsistence diet below the survival level.

Since World War II, the less developed countries (LDC's) of Asia, Africa and Latin America have been referred to collectively as the third world. Recently this term has lost its usefulness. Asia, Africa and Latin America are no longer unrelieved areas of mass poverty; development in the last thirty years in some areas has been quite dramatic, both relatively and materially. In Asia, countries such as China, Korea, Taiwan, Hong Kong, Singapore and Japan have progressed quite far. Several Latin American countries have achieved rather high average consumption levels although they are still plagued with grossly uneven distributions of income and wealth. The social and economic well-being of the 250 million people living in oil-exporting countries has improved tremendously

since the escalation in the price of oil.

This leaves about forty countries with 900 million people, or almost one-fourth of the world's population, in which average per-capita income is still less than US \$400 per year. This population is concentrated in the Indian sub-continent, in sub-Saharan Africa, and in pockets within Latin America. The countries in this category are labelled variously as the fourth world, the least developed countries, or the most seriously affected countries (MSA's). They not only have the lowest income but also are resource-poor. At any time of rapidly rising world energy and food prices they face acute crisis since many simply do not have anywhere near the amount of foreign exchange required to cover their import needs. Without assistance, they cannot afford enough energy, fertilizer or food, thus they face a substantial real decline in consumption which may fall below survival levels.

The problem is acute, and it is one that has been recognized and pondered at length, particularly since 1964. 1964 saw the United Nations Conference on Trade and Development (UNCTAD), held in Geneva from 23 March to 16 June with the participation of 120 states. The conference was memorable because it was the first time that such a large number of LDC's were able to present a united front to the developed world under the auspices of the U.N.

1. UNCTAD's Point of View

The principal components of the UNCTAD ideas, which served as the basis of the major recommendations of the first conference, were outlined in the most influential document with regard to the gathering -- "Towards a Trade Policy for Development" -- prepared by Raul Prebisch. Dr. Prebisch was formerly executive secretary of the United Nations Economic Commission for Latin America and he later became the first Secretary-General of UNCTAD. The report offers a succinct guide to the ethos of UNCTAD which will be summarized below.

Before proceeding, it must be emphasized that what follows is an extremely brief summary of a very complex situation which may be seen to be guilty of oversimplification and/or superficiality in some cases. Nevertheless, it was considered important to include some brief comments on UNCTAD so that some of their contentions could be contrasted with points of view and studies from the "other side" (i.e. the developed countries). Both groups offer impressive studies and voluminous literature in support of their side of the debate but it is clear that neither has won a convincing victory in the sense that one has swayed the other in any fundamental way. In other words, then, it is not within the scope of this paper to do more than touch on this very controversial area as it relates to the subject matter of the thesis. With these caveats in place the promised summary follows.

The United Nations development decade (the 1960's) set a goal of 5% annual growth rate for LDC's. Its attainment

depended critically on fundamental changes in aid so that LDC's could obtain the imports required to achieve this modest rate of development.

External market conditions were held largely responsible for the inability of LDC's to earn sufficient foreign exchange so they could import the necessary items to achieve the 5% growth rate. The "Prebisch Report" held that the principal adverse factor was the persistent and inherent long-term deterioration in the terms of trade of LDC's. This deterioration was held to be owing to several factors: the large increases in the volume of primary production as a result both of technical advance and of rapid increases in population in the producing countries; the relatively stagnant demand for the exports of primary products which reflects low income elasticity of demand for their exports, technical progress in developed countries which has led both to the development of substitutes for many of these exports and to economies in use; and, the monopolistic nature of the production of the manufactured goods imported by LDC's, in contrast to the more nearly perfect, competitive nature of the production of primary products which make up the bulk of LDC exports. As well, it was asserted that not only do the terms of trade of underdeveloped countries decline in the long run, but the share of these countries in the world trade of manufactured and processed goods is also declining.

Both the payments problems and the difficulties of development policy were said to be aggravated by wide fluctuations in export

earnings, superimposed on the already unfavourable long-term trend. Fluctuations in export proceeds obstruct the process of domestic development planning which is indispensable for economic growth. These declines are the result of decreases in demand from developed countries. The problems of LDC's are further aggravated by the barriers of developed countries against their manufactures. These restrictions not only make it more difficult to earn foreign exchange to pay for imports but also obstruct the growth of their manufacturing industries because the domestic markets of the LDC's are too small for modern, mass production manufacturing techniques.

The importance of external obstacles to development is the principal, explicit theme of most of the UNCTAD literature. There are also frequent suggestions that the past actions of developed countries are responsible largely for the current poverty of the LDC's which have been caused generally by various types of colonialism and imperialism, both economic and political.

The UNCTAD theme admits to some domestic factors having a bearing on economic development but they are not awarded the prominence of external acts by the developed world. The literature takes for granted that economic development depends largely on government action, and especially on comprehensive central planning, both in a domestic and international sense. Economic advance is not defined with great precision; the many criteria include: per-capita income, general living standards, the volume of manufacturing output, the size of the public sector and political independence. The one form of development

which is invariably high-lighted is the growth of manufacturing industries in LDC's which must be sponsored or operated by government, usually as part of an overall program of central planning for the countries involved.

The main policy proposal of UNCTAD is the expansion of inter-governmental foreign aid, which is regarded as absolutely necessary for an acceptable rate of development of LDC's. In addition to regular and routine flows of aid, other assistance in the form of compensatory finance needs to be provided, both to offset any deterioration in the terms of trade and also to compensate for any unforeseeable loss in foreign exchange which LDC governments could not reasonably have anticipated when forming their development plans. All these payments must be made to governments -- not to individual producers -- even when aid is to compensate for a fall in export prices. This stipulation is considered important for two reasons. First, if the payments were passed directly to individual producers the overall development plan would be disrupted; secondly, the incentives provided to producers could aggravate the deterioration in the terms of trade by encouraging an increase in production which would quite probably put further pressure on prices of exports.

Developed countries are urged to support international commodity agreements designed to raise or maintain prices of primary products so as to improve the terms of trade of underdeveloped countries, and to remove government imposed obstacles to exports -- especially of manufactures -- from

LDC's. They should not ask for reciprocity from LDC's, who should be allowed and encouraged to protect their manufacturing industries against competition from developed countries and to grant preferences to manufactures exports from other LDC's.

The Prebisch Report appealed particularly to his colleagues from other LDC's. By placing the major portion of the blame for the plight of the LDC's squarely on the developed world's shoulders, a heady atmosphere was created whereby it appeared to many that there might indeed be a reasonably straight-forward series of changes which could be made, in the form of international assistance, to spur development of the LDC's beyond their wildest dreams. All that was necessary was for the developed world to give up an infinitesimal portion of their great wealth either in the form of increased aid or elimination of domestic protectionism against exports from the underdeveloped world. Compensatory finance and commodity agreements rounded out the picture and the whole UNCTAD "package" was seen as a panacea to achieve the modest aims of the UN Development Decade.

Unfortunately, the UNCTAD theories do not stand up very well -- if at all -- to harsh empiricism. Critiques of the Prebisch Thesis abound.⁴¹ A complete critique of the UNCTAD proposals is beyond the scope and purpose of this paper, however, it is considered appropriate to high-light a few of the major criticisms -- especially the ones with regard to food.

41. See for example Harry G. Johnson, Economic Policies Toward Less Developed Countries. (Washington DC: The Brookings Institution, 1967), esp. pp. 25-43 and pp. 249-250. Sodersten, Bo., International Economics (New York: Harper and Row, 1970), esp. pp. 411-428. M. June Flanders, "Prebisch on Protectionism: An Evaluation" The Economic Journal, Vol. 74, June, 1964, (London: MacMillan Journals Ltd., 1964), pp. 305-26.

2. The Developed Worlds' Point of View

(a) Agricultural Demand

Perhaps the major complaint in the Prebisch Report is that of the persistent deterioration in the terms of trade of primary products which allegedly plagues the LDC's. Most UNCTAD literature discusses foreign trade problems in terms of import requirements on the one hand, and the ability to export or capacity to import on the other. The former is supposed to depend on the level of real income and the rate of development, and the latter on external markets. The unfavorable nature of these conditions is seen as the cause of inherent balance of payments problems. The analytical basis for the suggestion of a persistent deterioration in the terms of trade of LDC's is derived from the allegedly low income elasticity of demand for primary products, especially for food. It must be noted that a low income elasticity of demand does not by itself imply a deterioration in the terms of trade, provided that it is not negative. The implications of a low income elasticity of demand are frequently confused with those of a negative income elasticity of demand. Before one can be confident of the precise implications of elasticities, the concept must be investigated within the context of population growth and changes in per-capita income. In the rich countries, the increases in demand for agricultural products arising from population growth have been small and declining over the past twenty years. But in all but a few LDC's, despite family planning programs, population continues to grow at an appalling pace. (See Table 14).

The other critical element in demand is growth in per-capita income, which operates also through the income elasticity of demand for food. In the richer, developed countries the income elasticity of demand for protein from animal sources is positive. This implies positive elasticity for grain since food consumed in the form of animal products requires four to seven times as many calories of grain per person as are required to achieve the same human calorie intake from grain consumed directly.

In LDC's the income elasticity for food-grains is also positive.⁴² Thus, any real growth in per-capita income is translated into increased demand for grain and progressively into demand for higher quality protein from animal sources.

The final element on the demand side is the very low price elasticity of demand for food in both rich and poor countries. This means that a modest reduction in aggregate supplies will produce sharp price increases and vice-versa. The point here is that food is a strict necessity and thus has a very inelastic price structure.

The argument about price inelasticities is attractive when we speak about aggregates. However, a number of omissions in this theory are worth noting.

First, an inelastic demand for food does not necessarily imply that a single food item (or the country producing it) could not gain considerably in quantity demanded with any sizeable drop in price as that item becomes a more attractive substitute for other food. Second, some food items may be enough of a luxury item that price ...levels will be of

42. E.G. For India, FAO estimates the income elasticity for rice at 0.40, for wheat, 0.50, for coarse grains, 0.17 and for all grains, 0.25.

great influence on the amount consumed. (For example, beef as a substitute for cereals in the basic diet.) Third, elasticity of demand ... (is) believed to be greater if a longer time period is considered. This is the case even with food if the individual type of food is considered or if alternative sources or synthetics are reasonable prospects.⁴³

The basic premise holds, however, that the lower the price elasticity of demand, the greater will be the prospects of unstable price.

Price elasticities of demand for food and beverages are notoriously low. National custom rather than relative prices seems to determine whether people drink coffee or tea or eat maize, wheat, rice, barley or potatoes as their staple food.⁴⁴

To be fair, Law's remarks are more applicable to products grown in developed countries. MacBean implies correctly that food products from LDC's will suffer from the deleterious effects of low price elasticity of demand.

(b) Agricultural Supply

Another major factor put forward by UNCTAD, for the persistently deteriorating terms of trade, is the peculiarities of supply of primary commodities. Agriculture in the developed countries is mainly a capital-intensive, labour-saving, high-energy, high-technology industry. While some countries (e.g. Japan and China) operate smaller-scale farms with some degree of labour intensity, agriculture throughout the developed world relies heavily on technology. In the LDC's agriculture is

43. Law, op. cit., p. 4.

44. MacBean, Alasdair I., Export Instability and Economic Development, (London: George Allen and Unwin Ltd., 1966), p. 26.

primarily a labour-intensive, capital-poor, low-technology industry carried on largely by very small units which produce little marketable surplus beyond immediate family needs.

Notwithstanding the difference in inputs in the two areas, both the developed countries and LDC's suffer to some extent from the inelasticity of supply. Agriculture everywhere is subject to considerable variations in harvest levels due to weather, insects etc.; there are also production lags, sometimes of several years, as in coffee, tea, cocoa and fruit trees. As well, the factors of production have a very low degree of mobility. Once committed to agricultural production, resources are likely to remain there even though returns vary widely and may be quite low for long periods. Land is often best-suited to grow a particular crop, and capital, where it exists at all, is usually highly specialized; farm machinery has little alternative value outside of agriculture. This immobility of resources in the face of significant instability or sustained downward trend of prices for primary products presents a major problem in shifting to alternative uses. The problem is most acute in LDC's, where labour normally lacks adequate education and skill to be transferred quickly and where changes in technology may evolve very slowly and be extremely difficult to institute over a wide area.

Another principal reason for supply inelasticity is the pattern of low variable costs combined with high fixed costs. By way of illustration, in the field of agriculture the fixed costs of investment in farm and plantation ownership

are relatively large in comparison with the additional variable outlay involved in producing a given crop. The fixed costs, as viewed from a particular crop year for tree-grown products, include the cost of land, buildings, and equipment, as well as the cost of planting, cultivating, spraying, pruning etc., necessary to bring trees to the stage at which they can produce. The variable costs consist only of those necessary to harvest and market crops. In such a situation current output falls very little in response to a price decline, even if an inelastic demand situation would enable curtailment of output to increase total revenue. The marginal cost of harvesting the full crop is less than the marginal revenue received so there is no market constraint on production.⁴⁵

If it is true that price elasticity of demand is low for primary products produced in LDC's, an increase in supply will certainly bring about a more than proportionate fall in price and thus reduce total receipts below those obtainable from a smaller supply. The converse also applies, a smaller supply should result in higher receipts. However, producers in the LDC's are reluctant to limit output due to the typical market structure in agriculture. When there are many small producers, each fails to benefit by his own reduction of output unless his competitors do likewise. Quasi-cartels of this nature have been attempted but there is usually a lack of wide-spread communication which would enhance agreement to curtail production and individual planters generally attempt to produce more to gain singular advantage, thus destroying the possible benefit of a restriction in production. These factors heighten the effects of inelasticity of supply and thereby worsen price instability.

45. Law, op. cit., p. 5.

It is clear that inelasticity of supply is dysfunctional to LDC's development prospects at the present time. The industry is plagued with massive under-employment, low-productivity of human and capital resources, and antiquated technology. Problems of storage of fast deteriorating products are also significant. However, it is also clear that UNCTAD and others may have over--generalized and overstated their case. There is very little evidence, if any, to support a contention that any area of the world now has unmanageable surpluses which put such pressures on world markets as to lower inordinately revenue gained from those products. Certainly Brazil, in the past, has burned and destroyed huge quantities of coffee, and fruit growers have also been forced at times to destroy some of their output. Chronic agricultural surpluses in wheat and coarse grains were also prevalent and problematical in the developed world in the past twenty years but this was not the case between 1972 and 1975.

In sum, while difficulties exist, massive supplies of unmarketable food and totally inflexible resources seem to exist much more in theorist's minds than in the practical world. While UNCTAD has properly pointed out the problems associated with inelasticity of supply they may have considerably overemphasized the income effect.

3. Is There a Worsening Terms of Trade for LDC's?

UNCTAD contends that much of the trend toward worsening terms of trade for primary products (increasing amounts of product

necessary to buy the same amount of manufactured goods because of discrepancies in relative price movements) is due to the relatively slow growth in primary exports. This, it is held, is the inevitable result of technological progress in the developed world. The technological progress leads to increased production of synthetic substitutes at the same time that it leads to raw materials becoming a smaller percentage component of finished goods. New technology is usually propagated best in the developed world; additionally, subsidies and protectionism in advanced countries are cited as contributory factors for adverse movements in the terms of trade. The former contributes to surplus production with consequent downward pressure on world prices, and the latter results in the best markets being at least partially closed to the LDC's, further depressing prices over time.

This paper will not pursue much further the "Prebisch (and others) Thesis" of worsening terms of trade. It is clear from the many studies done that UNCTAD has oversimplified the problem and has not stated the case fairly.

Finally, there is some indication of statistical chicanery in UNCTAD's formulation of their constantly deteriorating terms of trade thesis. Bauer takes them to task.

How does the UN - UNCTAD literature substantiate the unfounded allegation that the terms of trade of underdeveloped countries or primary producers have persistently declined?

The easiest way to arrange statistics to show a long-term or systematic deterioration of the terms of trade is simply to omit the years over which they have been improved, a device frequently employed in

UN - UNCTAD discussions. The alleged secular decline in the terms of trade of underdeveloped countries was first widely publicised in UN literature on the basis of a series beginning with the 1870's and ending in 1938; in the Prebisch Report...it is derived from a series beginning with 1950 and terminating with 1961. Between 1938 and 1950 the commodity terms of trade of primary producers improved by almost two-fifths, even without any correction for the improvement in the quality of manufactures. It is easy to assert that the terms of trade of primary producers always decline if the years when they have risen are omitted.

...the choice of 1950 as a starting-point is also noteworthy. That was the first year of the Korean boom, when the prices of primary products rose greatly as a result of stockpiling. Thus a subsequent relative fall was to be expected; the period 1950-61 cannot be used legitimately as a basis for extrapolation, quite apart from the fact that it is much too short to serve as a basis for a discussion on long-term trends.

...In the UNCTAD literature any adverse movement in the terms of trade of (LDC's) is regarded as permanent or likely to herald a further deterioration, while any improvement is treated as temporary. By 1964...the prices of primary products had risen relative to manufactures since 1961; this movement is either ignored or mentioned as likely to be temporary only.

...Reading the UNCTAD literature (and indeed much of the contemporary literature in this field) one gets the impression that the prices of primary products always fall and never rise, so that it seems surprising that trade in primary products continues, and astonishing that its volume is currently at record levels.

In sum, the allegation of a long-run decline of the terms of trade of primary producers or of underdeveloped countries is untrue. The concepts used in the UNCTAD discussions are practically meaningless and the analysis is invalid. The empirical evidence summarized in the statistical series in the official

publications of the United Nations, such as the Statistical Year Book, shows these allegations to be the opposite of the truth.⁴⁶

Bauer and other critics have successfully pointed out inconsistencies in the UNCTAD contention that external market conditions were largely responsible for the inability of LDC's to earn sufficient foreign exchange to pay for necessary imports. Counter arguments are put forth that Prebisch is correct in some cases. For example it has been alleged that where LDC's increase productivity much of the benefit is passed on to the developed world in the form of downward price adjustments. As well, although the claim is difficult if not impossible to document, it has been asserted that the developed world have a subtle "suasion" power to limit adverse trading trends toward themselves.

Analysis of the two schools of thought will not be attempted here. No doubt both have considerable merit but, perhaps more importantly, recent evidence shows that the world food situation may be entering a new and more critical phase. This is the case especially for the MSA countries where development problems are most severe.

Despite a record 1975 cereal crop of 220 million tons (compared to 194 million tons in 1974 the general situation of the...MSA countries remains serious. With their heavy dependence on imported food, these countries must not only finance traditional imports, but also replenish pipeline stocks and build up food reserves. The cereal import requirements of the MSA countries in 1975/76 were estimated as slightly higher than in 1974/75.

46. P. T. Bauer, Dissent on Development, (Massachusetts: Harvard University Press, 1972), pp. 253-55.

FAO's latest assessment is 18.9 million tons, compared with actual imports of 18.8 million tons in 1974/75.

...The MSA countries' capability to finance their import requirements weakened in 1975. Preliminary estimates indicate that while the combined agricultural export earnings of the MSA countries increased in 1975 by approximately \$350 million, or by less than 4% as compared to 1974, their total agricultural imports increased by about 960 million. The net result was a further deterioration in their over-all agricultural trade balance.

The MSA countries' general balance of payments situation has steadily deteriorated since 1973. According to UNCTAD estimates, the current account deficit, which had jumped from \$3,900 million in 1973 to \$8,700 million in 1974, rose to \$12,700 million in 1975 and is expected to grow to \$13,000 million in 1976 and to as much as \$28,000 million in 1980. As the MSA countries' external public debt continues to grow, debt service charges are increasing, siphoning off a growing proportion of their foreign exchange earnings. On the other hand, the external aid received by low income countries, most of which are included in the MSA list, is relatively much lower than that provided to higher income developing countries: for instance, in 1971-73 countries with a per caput GDP of less than \$200, which account for 72% of the developing world's population, received little more than one third of the total official development assistance channelled to the developing countries as a whole. Unless this share is increased and the total volume of financial assistance and food aid is expanded, the MSA countries will continue to find the world market and meet their basic import requirements.⁴⁷

Whether Prebisch and other UNCTAD proponents were right or wrong in the past, the statistics presented in the above quotation show clearly that the current payments deficit situation for MSA's is serious indeed. It must also be re-emphasized that the discussion here is centred on the world

47. FAO, Monthly Bulletin of Agricultural Economics and Statistics, Vol. 25, No. 7/8, July/August, 1976, op. cit., p. 8.

commercial market for food. If the financial position of MSA's continues to deteriorate, and world food prices should rise significantly again, many of these countries will be priced out of this market and become dependent almost totally on food aid. Evidence presented earlier in the paper shows that there are worrisome prospects (from the point of view of poor countries) for higher food prices in the near future. We now turn to a consideration of proposed solutions to this problem.

D. WHAT ARE THE PROPOSED SOLUTIONS OR ALTERNATIVES?

While there may be fairly wide-spread agreement that financial problems exist in the trade of some commodities, the area of agreement on how to solve them is much smaller. An examination of various approaches follows.

1. Compensatory Finance

In addition to routine forms of aid, UNCTAD proposes officially "Compensatory Finance" to offset losses by LDC's from deterioration in their terms of trade by compensating them for a decline in export receipts below their reasonable expectations with regard to development plans.

The discussions are usually confined to commodity terms of trade when, in fact, it is the concept of factorial terms of trade which is relevant to discussion of the effects of changes in the terms of trade on incomes, living-standards, welfare

and development.⁴⁸ As well, the thrust of this argument envisages only deterioration in terms of trade which raises the following questions. Just what exactly is it that has to be compensated for, whom should it be paid to, and at what level or levels should it be established? If the compensation

48. Some definitions are required:

- a) Commodity terms of Trade - Relation between changes in export and import prices.
- b) Single Factoral Terms of Trade(S); Commodity terms of trade (N) multiplied by an export commodity productivity index(Z_x); that is, commodity terms of trade corrected for changes in productivity in producing exports. This may be expressed as $S = N \cdot Z_x$; a rise in S is a favourable movement in the sense that a greater quantity of imports can be obtained per unit of factor-input used in the production of exportables.
- c) Double Factoral Terms of Trade (D); Commodity terms of trade multiplied by a composite export and import commodity productivity index (Z_x/Z_m , where Z_m is an import productivity index), that is, commodity terms of trade corrected for changes in productivity in producing imports as well as exports. This may be expressed as $D = N \cdot Z_x/Z_m$; a rise in D shows that one unit of home factors embodied in exports now exchanges for more units of the foreign factors embodied in imports.

D will diverge from S when there is change in the factor cost of producing imports, but this has no welfare significance for the importing country, even though it indicates a change in productivity in the other country from which commodities are imported. What matters to the importing country is whether it receives more goods per unit of its "exported factor-input". (an improvement in S) - not whether these imports contain more or less foreign inputs than before.

See Jacob Viner, Studies in the Theory of International Trade, (New York: Harper and Brothers, 1937), pp. 558-561.
W.W. Rostow, "The Terms of Trade in Theory and in Practice", The Economic History Review, Second Series, Vo. 3, (London: Cambridge University Press, 1950), pp. 4-5. Meier, Gerald M. The International Economics of Development: Theory and Policy, (New York: Harper and Row, 1968), p. 44.

is to be based on reductions in export receipts one can see quickly that there is scope for unlimited manipulation. By judicious changes in the period reviewed or in the commodities included in the computation of the terms of trade it is always possible to claim a deterioration. Who would audit the "books" and under what rules would they operate? Further difficulties are also apparent. First of all, if price compensation of some sort is to be passed on directly to producers, considerable problems of cost inefficiency in resource allocation would be expected; price compensation, it would appear, would be available regardless of crop levels and international demand.

If compensation were to go to the governments of the LDC rather than the producers, further problems would soon arise. The question would be how to allocate the compensation by the government.

Perhaps the most difficult concept in compensatory finance is the idea of off-setting a reduction in foreign exchange receipts below the reasonable expectations of the LDC's involved. The idea of reasonable expectation is inherently ambiguous and a decline in foreign-exchange can always be brought about by government policy, e.g. by inflationary monetary or fiscal policies which might discourage exports and encourage imports as well as promoting an outflow of capital. The larger and more ambitious is the development plan in a particular country, the more likely export earnings are to decline below "reasonable expectations". The UNCTAD proposals nowhere consider

the accumulation of reserves in good times nor do they attempt to quantify in any way "reasonable expectations".

While compensatory finance was staunchly advocated by UNCTAD in the beginning it has become clear to almost everyone that the concept is all but unworkable in any practical way. The main problem is that compensatory finance is linked closely to changes in foreign exchange earnings and to the terms of trade. As such, the MSA's who have few or no external contracts and perhaps non-existent development plans, would not qualify for this type of aid. If aid is appropriate there are better grounds or criteria for distributing it such as general living--standards, per-capita income, or overall government policy and effectiveness in the recipient countries. Obviously there would be many value judgement problems inherent in this approach as well, however, compensatory finance schemes as they are envisaged by UNCTAD, would benefit most the more developed of the LDC's rather than the MSA's where the basic problems of malnutrition and generally miserable living conditions are most acute and severe. A more sophisticated and perhaps more efficient method of resource transfer has been espoused by the International Monetary Fund. For the past twenty years there has been a substantial stream of literature on the desirability and the need for using the international monetary system to effect resource transfers among countries via a "link" proposal. From the LDC's point of view a "link" between development and monetary reserve asset creation is

required because...

The present international economic situation is inequitable, asymmetrical, and self-perpetuating. SDR's are not distributed according to need, but with reference to a formula which gives inadequate weight to population size, nonmonetized GNP (e.g. work done within the household), and other factors of importance to developing countries. ...The "link" proposal is a clear improvement over the present system from an equity viewpoint and is equally good in terms of efficiency. The underlying assumption (which is not always borne out by experience) is that LDC's are not reserve accumulators, i.e., that they will spend most of the extra international reserves made available to them and that these will at a second stage become available as liquidity for the developed nations and the global system.⁴⁹

Proposals such as the "link" to SDR's show some promise but it is not at all clear that the benefits of increased levels of international liquidity will always find their way to the poorest people in MSA's.

2. International Commodity Agreements (ICA's)

Another major UNCTAD proposal, and one that is still advocated by not only UNCTAD but the FAO, is the promotion of commodity agreements to stabilize, maintain and raise the export prices of primary products. There has been some limited success with ICA's over the years and, since the price explosion of 1972 to 1974, increased emphasis (by the UN) has been placed on the possibility of utilizing ICA's as a means of transfer of resources in the form of higher export earnings between the developed world and LDC's.

49. Lawrence A. Veit, "Development and the International Monetary System", International Development Review, 1974(3), (New York: Society for International Development, 1974), p. 25.

This close linkage of the problems of trade with those of development has now become a major issue in international commodity discussions, as a result of which international commodity problems are now viewed in a wider setting embracing questions of the flows of total resources to developing countries. These new ideas, with potentially far-reaching implications for the future institutional arrangements in international trade, have been closely related to the strengthening of the financial power of the oil-rich countries, and to a number of political initiatives taken by the developing countries in the last two years or so....⁵⁰

Since ICA's are being reconsidered as possible palliatives to the food problems of LDC's, and in particular MSA's, it is worthwhile to review the history of these agreements and analyse their future viability.

(a) History of Food ICA's

Agreements among producers to regulate the international markets for some primary commodities began to appear with some regularity toward the end of the nineteenth century. These agreements were not of the ilk of manipulative attempts to distort prices, in order to derive short-run, "robber-baron" gains; rather, they were intended to exert a longer-run influence on the pattern of trade so that producers might receive a sustained flow of income. The first ICA's were created by private producers in the face of declining prices for their products; there was no attempt to suggest that such agreements were to benefit consumers. Though most of these schemes were short-lived they planted the ICA "seed", the plant of which, although subject to

50. FAO Commodity Review and Outlook 1974-75, op. cit., p. 26.

widely fluctuating growth cycles, has not yet died out. By 1907 there was a large-scale attempt by a national government to control the price of a major commodity -- the Brazilian Coffee Valorization Scheme which attempted to regulate exports.⁵¹

The limited activity in these early forms of ICA's was viewed generally as uneconomic and impractical, however, factors arose during and after World War I which were to make controls seem more necessary, desirable and practicable.

First, regarding desirability, war had made severe economic dislocations. Production was greatly diminished in some countries and enormously stimulated in others, as exemplified by sugar in Cuba and wheat in Canada. ...There was an apparent increase in both the need and willingness for government to handle matters. Producers of... agricultural goods...brought increased pressure on their governments. In consuming nations pressure was brought, especially by local producers, for subsidies and self--sufficiency.

Simultaneously, the question of practicability gained prominence. Governments had, during the war, intervened in several areas of economic life. They had controlled the production of munitions, operated rails and shipping, and rationed food and raw materials at controlled prices. Many of these activities had previously been considered unwarranted market interferences and virtually impossible administratively. From the purely economic viewpoint much of the actions had been inefficient and at great costs. But they were done and, with experience, done better and more cheaply.⁵²

51. Brazil at that time supplied approximately 80% of the world exports of coffee and was faced with large surplus supplies. The scheme was not an international cartel although it was financed by several European Banks. This plan and others like it which followed had limited success - the success in some cases being more apparent than real since the weather tended to complement their efforts. See J. W. F. Rowe, Primary Commodities in International Trade, (London: Cambridge University Press, 1965), p. 122, and Law, op. cit., p. 36.

52. Law, op. cit., p. 37.

During the inter-war years more and more governments entered the commodity cartel system, and their argument for doing so was that national economic dependence upon a particular commodity could result in political instability if prices fell too rapidly. Thus the ICA's shifted economic decision making from self-regulating markets to the political forum. Different degrees of success or failure were achieved. Only one generalization is possible, i.e. almost all the schemes were producer dominated whether they were private cartels or government sanctioned.

The economic collapse which occurred during the depression re-emphasized the need to take some action. Massive price drops coupled with large surpluses caused the collapse of almost all existing control programs. Where there had been little or no surplus capacity in 1929, the problem now appeared. Where surpluses had already been present in 1929, the situation rapidly became desperate. Cartel and governmental control activity had obviously not been entirely successful, however, the feasibility of further control activity was not denied -- it was felt to be a problem of administration.

Thus old schemes were revived, revised and extended, and new schemes were set on foot. Practical difficulties of organization were in some cases responsible for considerable delay in establishing or re-establishing control schemes, but one followed another, until all those industries which had experimented with artificial control before 1929 had renewed these experiments, usually on a greater scale, and new control schemes (were) established.... Thus artificial control (was) applied almost as a panacea for the troubles (of the depression), irrespective of the very different circumstances of

different industries: in particular no distinction seems to have been drawn between industries which were "in trouble" before the world trade depression began and those whose troubles have been due solely to the depression and the resulting fall in demand....⁵³

With World War II there was a strengthening of demand and the introduction of more urgent military and political considerations. During the hostilities most trade agreements ceased to function or were suspended and by the end of the war the same problems were present again -- trade disruption, economic nationalism and a continuing technological revolution. Considerable shortages occurred in several commodities from 1946 to 1948 and much of the interest in ICA's now came from the consumer side amid memories of post-World War I shortages and price instability. The shortages were relatively short-lived and during 1948 to 1950, when there appeared to be some threat of imminent surpluses, study group effort was intensified. The International Wheat Agreement which was reached in 1949 established maximum and minimum prices as well as multilateral contracts that set quotas for importers to buy when price reached the floor and exporters to sell when price reached the ceiling.

The Korean conflict caused abnormal demands which brought about shortages from 1950 to 1952 and record prices for several commodities were reached in 1951. This experience shifted discussion sharply toward methods of achieving price

53. J. W. F. Rowe, Markets and Men, (London: Cambridge University Press, 1936), pp. 18-19.

stability. However, by 1952 shortages were becoming less acute and some of the overexpansion which occurred as a result of the conflict began to bring downward pressure on prices and renewed interest in controls by producers. The wheat agreement was still in force and a sugar agreement was reached in 1953 which included all major importers and exporters except Brazil and Peru; price ceilings and floors were established and were to be protected by quota assignments.

A rather long period followed of very stable conditions for primary food commodities. Desultory discussions proceeded among the various study groups but no significant or fundamental changes in agreements were reached. During the late 'fifties and early 'sixties LDC's began to articulate more precisely their contention that economic development was being stymied by too low prices for their commodity exports and by the time of the first meeting of UNCTAD (1964) ICA's of all forms, but especially of the price-boosting type, were being viewed by LDC spokesmen (Prebisch being the foremost of these) as panaceas for virtually all ailments of all commodities. This issue has been studied thoroughly and conflicting views abound, however, the new forum of UNCTAD remained intact and LDC's have never conceded that ICA's in some form would not aid significantly their overall economic development.

The price explosion in commodities of 1972 to 1974 has heightened the interest of the entire world for finding some method of achieving stability in food markets and it now seems that a fundamental change has taken place in the world's demand

and supply of primary commodities. Food prices were particularly hard hit and obtaining adequate food is the most critical issue for all countries. We will turn now to the different types of ICA's which have been attempted or are envisaged and then analyse their viability for the future.

(b) Types of ICA's

The term "International-Commodity-Agreement" does not lend readily to precise definition. Generalization about control activity can be dangerous or, at the least, ambiguous since there is a variety of procedures and combinations which can be used. In any event definition is required and important and the following working definition is used in this paper:

"An International Commodity Agreement is an association of the governments of more than two countries for the purpose of regulating the marketing of some primary product in the interests of exporters and importers."

The most frequently used types of agreement are: multilateral contracts, buffer stocks, and restrictions and quotas. Any particular agreement may use one type in isolation or any combination and they are often used in conjunction with price floors and ceilings.

(i) Multilateral Contracts: The most widely used commodity control is the medium to long-term contract stipulating price and/or quantity. It may take several forms, i.e.: one major importer and several exporting countries; several importers and several exporting nations; and, several exporters with no importer voice. Food agreements are typically of the second type (several importers and several exporters) and they have

discernible advantages and disadvantages.

A disadvantage is that residual variation in demand and supply becomes concentrated in the free (noncontract) markets and makes them less stable. In other words, the contracts may cloud the issues of trend and stability which might otherwise be discernible in the absence of the ICA's.

Benefits of these types of agreements are that they don't interfere particularly with market operations and resource allocation nor do they restrict output. Additionally, small-holders who often are lower-cost producers may enter the market freely.

In sum this form of ICA is a more economically defensible approach than many others. Given realistic prices near some long-run equilibrium, as well as ceilings and floors narrow enough to provide stability but wide enough to allow the market to prevent excessive accumulations or shortages, a multilateral contract should have a good chance of success.

(ii) Buffer Stocks: Buffer stocks may be used by themselves, with contract arrangements or with quota restrictions. Basically there are three methods of using buffer stocks as ICA's:

1. They are used in an auxiliary capacity in conjunction with quantity regulations. The primary purpose of the stock is to provide defense against sudden price fluctuation.
2. They can stand alone in an unregulated commodity. This requires a larger stock, more aggressively used. If effective, it should lessen pressure by producers for unilateral government

or for international restriction agreements.

3. They can be used with other forms of ICA to mitigate general business cycle influences.⁵⁴

A number of difficulties may be quickly perceived. For example, even if goals and price policies are set in advance, price supports on consumption items might cause consumption to shrink during a recession as well as permanent shifts away from the supported item. Additionally, the size of the buffer stock must be decided. Producers have little interest in entering control schemes when prices are high and they can't afford it when prices are low, therefore, the problem of establishing the initial stock is considerable. Finally, problems of storage and apportioning the financial burden arise. If governments bear the brunt there will be constant pressure by producers to increase stocks.

There is good reason to believe that a buffer stock, properly designed and managed, could assist in stabilizing a market in the short-term. However, this form of ICA is not particularly well suited to long-term stability problems. If too rigid a price range is attempted, either the fund or stock will become exhausted. A moving average of past prices as a basis for support might ameliorate this problem to some degree, however, political pressure from marginal producers or producer domination has usually sounded the death-knell for these schemes. If this type of ICA is ever to become viable for extended periods it

54. Law, op. cit., p. 72.

will have to be administered by a bank of last resort, such as the IMF, which might have the resources and the will to withstand political pressure.

(iii) Restrictions and Quotas

Adjusting output and exports through quotas or restrictions has been a very commonly used form of ICA. If supply can be curtailed when prices fall and expanded when they rise the result should be a more even price trend.

To be effective in increasing export income, the restriction agreement must include all important actual and potential producers. If it does not, the producers outside the agreement will expand their output to take advantage of the higher prices. Another problem is how to allocate the agreed upon levels of export volume among participating members. A frequently used method is to share out quotas in accordance with historical production or export volume which works to the disadvantage of new, low-cost producers. If the agreement succeeds in maintaining the quota distribution, it will probably result in a less efficient global production structure over time, since the growth of the low-cost producers will be restricted. As well,

Empirical evidence suggests that distribution of quotas according to pre-agreement export figures is difficult to maintain in the longer run. Either the new producers will refuse to join, or they will break away from the agreement at a later stage.⁵⁵

55. Marian Radetzki, "International Commodity Agreements and National Benefit", International Development Review 1974/1, (New York: Society for International Development, 1974), p. 17.

At the national level, a major problem caused by export restrictions is that of adjusting output down to a level complementary to the export quota. In the United States particularly, there is evidence that domestic quotas and associated price support schemes for wheat have enhanced yield. During the period 1950 to 1953 the average seeded acreage and yield of wheat were approximately 77,000,000 and 14 bushels per acre respectively while the averages of 1954 to 1957 were 58,000,000 and 17.⁵⁶ Additionally:

In respect to the United States (wheat) surplus there is need for more recognition...of the fact that the period of high prices after the war and their brief renewal in the Korean War period led to an expansion of output which would have created a difficult adjustment problem even in the absence of price supports in the United States. With the rapid recovery of European agricultural production and the persistence in many countries of agricultural protectionism some reduction in wheat output on this continent became inevitable. The quotas imposed in the United States have helped produce some of this required reduction but their effectiveness has been limited by the way they have been administered. Moreover, the continuation of high support prices encourages the use of the best land for wheat production and the application of fertilizers and weed killers, all steps that increase the average yield per acre.⁵⁷

Although restrictions have brought about some laudable advances in agricultural techniques, the process is long; in the short term quotas and restrictions are indefensible because they entail restricting the world's output when so many

56. Source: Hugh G. J. Aitken, John J. Deutsch, W. A. MacKintosh, Clarence L. Barber, Maurice Lamontagne, Irving Brecher, Eugene Forsey, The American Impact on Canada, (London: Cambridge University Press, 1959), Table 16, p. 164.

57. Clarence L. Barber, "The Impact of United States Farm Policy on Canadian Agriculture: in Ibid., pp. 83-84.

are poor. They are wrong also because freezing production in an inefficient pattern is an unjustifiable misallocation of the world's scarce resources. The provisions may be dysfunctional in a strictly financial sense since high prices enhance the search for and probability of development of substitutes.

Rarely are economists so close to unanimous agreement as they are in proclaiming these procedures to show the least promise for enhancing the world's food distribution. Empirical evidence and theoretical dissertations provide substantial evidence that this type of ICA interferes most with the market mechanism and efficiency. From an economic viewpoint, then, it seems surprising that this oldest, most used and most highly criticized ICA scheme is the most long-lasting and persistent. The contentious issue revolves around considerations of the short and long term. In the long-run, quotas might provide some benefit by shifting toward lower cost producers. However, governments must cater to short-run interests and problems if they are to fulfil their main objective -- to remain in office. From the political point of view, the true goals of this type of control activity are clear -- the protection of domestic producers and national interest, irrespective of world demand conditions.

(c) Evaluation of Experience

Performance under ICA controls has provided limited encouragement as to their future success. ICA's are now in existence for very few agricultural products and most of these

can be said to be in some form of continual evolvement. A brief analysis of past and present efforts in coffee, sugar and wheat are illustrative and follow, prior to a theoretical analysis of the general viability of ICA's.

(i) Coffee: In coffee, control activity has been at best a mixed success. In addition to the usual farming hazards, coffee is subject to a production cycle of about twenty years duration. New trees require about five years from planting to initial production; top output occurs at about eight years and gradually decreasing yields may be obtained for a further ten to twenty years.

Although the first international conference on coffee prices was held in 1902, it was not until 1962 that a formal world-wide agreement among both exporters and importers was arranged. Brazil, which produces approximately 30% of world output, has always been in the forefront for coffee agreements and her efforts in 1907 and 1917 made some progress toward price stabilization (cause and effect are difficult to distinguish here since the weather complemented the control mechanism). Surpluses began to recur during World War I; low prices returned and the Coffee Valorization Plan was reinstated.⁵⁸ Brazil started buying coffee in 1921; domestic production was maintained and expansion took place in other Latin American countries. The result was large stocks of coffee accumulated in Brazil.

58. The Valorization Plan was an agreement by the three Brazilian producing states to buy up surplus coffee and thus maintain price levels.

In 1931, the price dropped to eight cents per pound compared with twenty-five cents in 1925. The Brazilian government adopted stern measures, burning over ten billion pounds of coffee beans during the 1931 - 44 period. Concurrently, Brazil's share of the market declined, and the share of the African producers expanded.⁵⁹

Law is more specific:

While efforts (for price stabilization and maintenance) had been viewed by coffee growers as beneficial and desirable, the huge stock overhang that developed in the late 1920's was a detriment both to the control and the industry. Great riches and expansion of the industry were stimulated just when curtailment and diversification were needed. The costs included great debts, catastrophic wage levels, lack of diversification, enormous overcapacity, and violent economic and political dislocations. Consumer resentment built and output more than doubled.⁶⁰

Other attempts were made with limited success to form equitable and manageable International Coffee Agreements until 1962 when a five year agreement was reached, under the auspices of the UN, by major exporters and importers. This agreement was wider in scope than any previous coffee arrangements but it had no price adjustment provisions. Basically the scheme was to promote consumption while trying to enhance both production methods and the incomes of coffee growers by keeping prices at an equitable level. The Agreement tried to maintain 1962 price levels by means of annual and quarterly export quotas for member exporting countries. Imports by members from non-members were to be limited to the same level as for the three-year period prior to the Agreement.

59. William E. Haviland, International Commodity Agreements, (Ottawa: Private Planning Association of Canada, 1963), p. 14.

60. Law, op. cit., p. 83.

In sum the coffee Agreement stabilized prices for a time and helped to balance supply and demand. With some minor modification the arrangement was renewed in 1968 but subsequent disputes over soluble coffee and unilateral actions by some producers brought about its demise; since 1972 world trade has been free of any restrictions.

Although the 1968 agreement was abandoned as far as trade was concerned in 1972 it was not due formally to expire until 1973. In fact the agreement was extended at that time, in a severely modified form, largely to preserve the International Coffee Organization as a statistical centre and provide a forum for negotiations for a new agreement.⁶¹

61. Waters makes an interesting case that one of the principle reasons why ICA's continue to flourish in the face of significant evidence that they are not viable economically, is due to self-interest of international bureaucrats. e.g.

"The livelihood and well-being of the international bureaucrats depends upon the demand for their services. Therefore they seek defiantly every possible fiduciary role for themselves. ICA's transfer to international administrators the right to arbitrate and administer on behalf of the producer and consumer nations, and this is a valuable right which carries with it identifiable non-pecuniary rewards. Anyone who has observed the international bureaucrats' environment, when travelling or at his permanent office, must be impressed by the conditions under which he lives and works; particularly when these conditions are compared with those of his domestic counterpart. It is interesting to note how permanent are the Permanent Secretariats of ICA's, once they are established. The tea council stood for a decade after its *raison d'etre* had disappeared, and the magnificent building of the International Coffee Organization, beside the Thames in London, is still a bustle of activity despite the collapse of the ICA which created it in the first place. Hence the hortative support of ICA's by the employees of the so called World Bodies."

See Alan Rufus Waters, "The Economic Reason for International Commodity Agreements". *Kyklos*, Vol. 27, 1974, (Basel Switzerland: Srancke A. Francke A.G., 1974), p. 786.

A general downward trend in prices followed the peak of mid-1974⁶² until the heavy frost which occurred in Brazil in 1975. They rose rapidly, however, when the very extensive damage became known; production in crop year 1976/77 was expected to be between 450,000 and 600,000 tons compared with average production in the previous five years of 1,340,000 tons. As well, production in 1977/78 and 1978/79 will also be affected to a lesser degree.

World coffee prices, as measured by the ICO composite index, more than doubled during 1976, rising from 94.97 US cents/lb. in January to 206.82 cents/lb. in December. There was a further sharp increase during the first four months of 1977, to a maximum of approximately 340 US cents/lb. in mid April, followed by a slight decline through mid May.⁶³

At the end of November 1975, the 62-member International Coffee Council approved a new International Coffee Agreement which, subject to the necessary ratification by member governments will operate for six years from October 1976. This agreement is the most ambitious yet as far as potential effects on prices and medium term supply and demand are concerned.

So far, 17 countries have signed the Agreement, including the two major producers - Brazil and Columbia - and four major importing countries -- the United States, the Federal Republic of Germany, France and the United Kingdom. ...The Agreement provides for the introduction of export quotas in the event of the ICO composite indicator price falling and remaining for 20 days below the ceiling of a price range established by the Council or (in the absence of a decision to establish a price range) if the average of the indicator prices for ...coffees should fall and remain for 20 days below the average of these prices in calendar year 1975.⁶⁴

62. The ICO composite indicator price reached an average of U.S. 73.74 cents per lb. in May, 1974 which was 20% higher than a year earlier. See FAO Commodity Review and Outlook, 1974-75, op. cit., p. 152.

63. FAO Commodity Review and Outlook, 1976-1977, (Rome: FAO of the UN, 1977), p. 21.

The agreement has good potential for some stabilization of the international coffee market and for protection of producers' income. Certainly prices have remained fairly high and stable since 1975. Whether or not this is attributable mainly to the commodity agreement or to the fairly long-term effects of reduced supply, owing to the frost in 1975, is difficult to say. The test of this agreement, to maintain fairly stable incomes for producers, will come when coffee plantations return to full production.

(ii) Sugar: The history of difficulty and international control efforts in sugar extends back over one hundred years. In 1864 the UK, France, the Netherlands and Belgium entered into a ten-year agreement intended to do away with beet sugar production bonuses and export subsidies. This was the first of several failures to achieve these objectives. These efforts were followed by the Brussels Sugar Convention of 1902 to 1918 which consisted of various European sugar producers who attempted with little success to deal with the conflict between low-cost cane sugar from tropical countries and high-cost beet sugar in temperate countries by providing for the gradual removal of bonuses on sugar beet production, subsidies on exports, import tariffs, and colonial preferences.

As with a number of commodities, extensive problems began as a result of World War I. By the 1920's production had increased

64. Ibid., p. 86.

through response to chronic wartime shortages (e.g. Cuba increased her crop from $2\frac{1}{2}$ to 4 million tons during the war) and when European fields returned to production prices dropped drastically; price in December 1921 was one-tenth the level of May 1920. Surpluses were abundant throughout the remainder of the twenties and fears of dumping along with severe price instability set the stage for the "Chadbourne Plan" of 1931 when the chief exporters (principally Cuba and Java) agreed to restrict exports and gradually reduce stocks over a five-year period in an effort to check the decline in prices. The plan was heralded as a watershed for a new, prosperous era in the sugar industry, however, the optimism was short-lived as prices continued downward through 1935. Members lost ground to non-members, prices remained depressed, and the Chadbourne Agreement collapsed.

In 1937 the first International Sugar Agreement of both producing and importing countries was formed. This scheme included the US, Britain and much of Europe and stipulated quotas for exporters and an agreement whereby importers were to limit their domestic production. The two Sugar Agreements (1931 and 1937) were not completely successful since prices continued to decline throughout the period. However, as Rowe points out, they were of some benefit:

...during the second half of 1938 the world began to stock up for fear of war, prices rose as stocks in producers' hands declined, and by June 1939 the London price was over 8S. ...With the outbreak of war, the international agreement naturally became void. How the scheme might have fared, if there

had been no war, is idle speculation, but at least it can be said that both the 1931 and the 1937 agreements were on the right lines as remedies for most difficult situations. Both made things better rather than worse.⁶⁵

The 1937 agreement became the basis of the present Sugar Agreement which was negotiated at the UN Sugar Conference of 1953 and amended and refined in 1956 and 1958. Objectives of the agreement were much the same as those for the coffee scheme of 1962 i.e. to promote consumption while trying to enhance and stabilize the incomes of producers by keeping prices at an equitable level. Member importers agreed to limit their imports from non-members and exporters were committed to production controls in the form of export quotas which changed at different price levels. The significant point is that above a certain price, quotas became inoperative.

The International Sugar Agreement may have reduced the fluctuations in the price of sugar but the price has remained volatile. The main reasons for this phenomenon are two fold. The first problem is that very little of the world's production of sugar is traded internationally. Secondly, the largest importer -- the US -- greatly reduced Cuba's preferential import quota in 1960 due to political differences. There followed a period of great uncertainty as to where the US allocations would go and Cuban production became very erratic. Finally, Cuba in 1961 demanded that her contract with communist nations be added to her basic quota and this brought an end to the agreement as other exporters refused, owing to perceived difficulties in

65. Rowe, (1965), op. cit., p. 148.

monitoring Cuba's exports.

There followed a period of little or no control, with surpluses and low prices, and a new agreement was reached in 1968. The new International Sugar Agreement which came provisionally into force for five years on 1 January 1969 is:

an export quota agreement like its predecessor. It assumes the continuity and stability of the existing special arrangements which govern about half of world trade, and excludes them from its quota provisions. It is intended to regulate supplies in the residual or free market sector of international trade which has been very unstable since the quota provisions of the 1958 agreement lapsed in 1961 and which has suffered from persistent surpluses and extremely low prices during the past few years.⁶⁶

Considerable increases in output and consumption have been achieved since the enactment of the new Agreement, however, the year 1974 brought shortages and expectations of increasing shortages caused by the very low carryover stocks and the poor 1974/75 beet crops, particularly in the Northern hemisphere.

World market prices reached an all-time peak of U.S. cents 64 per lb. toward the end of November 1974, more than six times the price a year earlier. All available sugar was exported and the volume of world trade remained high at about the 1973 record level of 23 million tons, but its total value roughly doubled to U.S. \$8,700 million. The reversal of the price rise was brought about by consumer resistance and the consequent cessation of import buying. Demand from primary distributors fell sharply as consumers, including industrial consumers, began to draw down their accumulated stocks.... Meanwhile the decline in world market prices had been reinforced by forecasts of large increases in beet planting and the possibility of very large beet crops in 1975/76. By the beginning of May 1975, world market

66. FAO Commodity Review and Outlook 1968-1969, (Rome: FAO of the UN, 1969), p. 175.

prices had fallen to below 20 cents per lb.⁶⁷

Sugar has been and remains one of the most unstable commodities to be traded internationally and there is little reason to hope for any significant increase in stability in this market in the future. The US is currently taking initiatives to liberalize trade relations with Cuba and in the meantime has banned the use of artificial sweeteners in their country. Other sugar substitutes such as corn-derivative sweeteners are being developed and used more and more, however, LDC's and MSA's can be expected to demand more sugar if and when their standard of living and income increases. All these things will have a bearing on the future stability of the international sugar market but the efficacy of International Commodity Agreements to enhance stability of sugar producers' incomes is very uncertain.

(iii) Wheat: Wheat is the most important food traded on international markets since it is such an essential foodstuff. Most governments take a close interest in its production and distribution and trading agreements for wheat have generally been of the multilateral contract type with several importers and several exporters.

International efforts to stabilize wheat marketing originated with the first International Wheat Agreement (IWA) of 1933. The price of wheat had fallen to around fifty cents per bushel and the IWA, which consisted of exporters and importers, aimed at raising depressed prices by reducing

67. FAO Commodity Review and Outlook 1974-1975, op. cit., p. 118.

production. Exporters were to accept quotas, and control (i.e. limit) production so as to meet their quotas, plus domestic requirements and a small reserve. Importers were to limit their production, increase domestic consumption and reduce their import duties when prices rose to a specified level. As with other initial attempts at international trade agreements, the IWA soon collapsed. The collapse was brought about by a bumper crop and serious disagreement over export quotas and acreage reduction.

Although the IWA ended, the International Wheat Advisory Committee continued.⁶⁸ Negotiations by this body for a new Agreement were underway when World War II began. During the war and early post-war years a second agreement was reached in the form of a Wheat Protocol (1942). It included only the four major exporting countries (Canada, Argentina, Australia, and the US) and the United Kingdom as the major importer.

A post-war International Wheat Agreement was negotiated in 1949. In the history of commodity control this agreement was unique in that it was negotiated when prices were very high (i.e. the price rose as high as \$3.25 U.S. per bushel in 1947). The major motivation for the agreement was the fear that severe depression might recur and the current prices might only be temporary. Prices were high for a short while after the 1949 agreement, however, the 'fifties saw increasing surpluses and downward pressures on prices. The surplus stocks occurred despite expanding sales in the Far East and Eastern

68. Self-perpetuating bureaucracy again. See Waters, op. cit., fn 61.

Europe and were caused mainly by price-supported increases in production in North America and Western Europe. The total volume of world trade in wheat was more than twice pre-World War II levels, however, the problem of unsatisfied demand in LDC's persisted.

The 1949 Wheat Agreement has been reviewed, renewed and/or renegotiated every three or four years. As befits the importance of this commodity the objectives of the IWA are more development oriented than any other ICA. The objectives are:

- a) to assure supplies of wheat and wheat-flour to importing countries and markets for wheat and wheat-flour to exporting countries at equitable and stable prices;
- b) to promote the expansion of the international trade in wheat and wheat-flour and to secure the freest possible flow of this trade in the interests of both exporting and importing countries, and thus contribute to the development of countries, the economies of which depend on commercial sales of wheat;
- c) to overcome the serious hardship caused to producers and consumers by burdensome surpluses and critical shortages of wheat;
- d) to encourage the use and consumption of wheat and wheat-flour generally, and in particular in developing countries, so as to improve health and nutrition in those countries and thus to assist in their development; and
- e) in general to further international cooperation in connection with world wheat problems, recognizing the relationship of trade in wheat to the economic stability of markets for other agricultural products.⁶⁹

The agreement also differed from most earlier controls in that consumers were represented, there were no production restrictions, there was a flexible price range and a specified

69. Haviland, op. cit., p. 10-11.

ceiling. These items should have helped to avoid some of the pitfalls of other schemes, however, although the main objectives of the IWA were to maintain stable and fair prices as well as equitable shares of the market, there were no commitments to control of production. This meant that price ranges set at the beginning were to bracket price levels which equated market supply and demand during the three years or so of the Agreement. This forward range pricing proved to be inequitable to North American wheat producers.

During the first three years of the agreement, world prices averaged from 13 to 45 cents a bushel above the maximum prices under the agreement and the Canadian wheat producer absorbed this loss. In contrast, in the United States this difference between world market and Wheat Agreement prices was absorbed by a subsidy from the federal treasury, the farmers receiving either the full free market price or the support price if the latter was higher.⁷⁰

At the time of renewal in 1953, world stocks were high and growing⁷¹ and prices were falling.⁷² Despite this, and perhaps because of prices received during the first years of the agreement, exporters wanted increases in both the ceiling and floor prices. They were attained but at the cost of reduced participation of importers.

...The United Kingdom refused to sign the 1953 renewal. She was followed by other major importers, reducing the coverage from 60 percent of world trade in 1949 to 25 percent by 1956.⁷³

70. Barber, op. cit., p. 76.

71. For example, stocks rose to 8.5 million bushels in the leading exporting countries in 1951 and, as of March 31, 1958 there were still 451 million bushels of wheat on Canadian farms. See Law, op. cit., p. 55, and Barber, op. cit., p. 77.

Therefore, the Agreement did not bring about equality between output and consumption at reasonable and fair prices. In fact it tolerated and encouraged the sale of North American wheat at below the average world price for the first three years. The IWA also failed in its aim to reduce surpluses and the easing of carryovers did not occur until the 'sixties when it was assisted by major purchases by a country outside the Agreement -- Mainland China.

Nothing of great significance occurred within the IWA throughout the rest of the 'sixties. US and Canadian domestic policies maintained reasonably stable prices in North America and these rather than the IWA were the main elements of stability. US surpluses were quietly disposed of to LDC's under Public Law 480 (Food for Peace) which permitted the sale of America's surplus foodstuffs at low prices to poor countries for payment in local currencies. This program relieved hunger but it added to another problem; while cheap and plentiful supplies were available there was no impetus for LDC's to solve their own agricultural problems. In fact,

Long-term food-aid agreements...effectively postponed any meaningful decisions by recipient governments to improve agriculture. In some countries, food aid was actually aggravating the problem of hunger by depressing the prices of wheat and rice to the point where it was unprofitable for local farmers to use fertilizer.⁷⁴

72. Average monthly prices reached a high of just over U.S. \$2.40 per bushel in 1951 and had dropped to about U.S. \$2.00 per bushel in 1953. See: UNCTAD, Vol. III, Commodity Trade, (New York: United Nations, 1964), p. 134.

73. Law, op. cit., p. 55.

74. Lester R. Brown and Gail W. Finsterbusch, Man and His Environment: Food, (New York: Harper and Row, 1972), p. 126.

Finally, sales to Russia and China continued (although Russia was technically a member of the IWA as an exporter) and roughly 40 percent of exports were occurring outside the agreement during most of the sixties. This raises the obvious questions about the contribution and necessity of the Agreement.

In July 1971 yet another IWA was negotiated with the same principal objectives but with no firm price stipulations. Three bumper crops followed in North America but the factors mentioned earlier in the paper combined to push the price to over \$5.00 per bushel by August, 1973. In the face of good crops in 1975 and 1976 and, with almost all readily available acreage in production, prices are moderating. The US domestic price has moved from \$3.90 in the first quarter of 1975 to \$2.65 per bushel in the fourth quarter of 1976.⁷⁵

The future for wheat prices is gloomy from everyone's point of view. North American farmers cannot afford to grow and sell wheat at the current, low world price levels. This situation has driven US policy makers to apply acreage restrictions in the 1977-78 crop year in the hope that reduced supply will increase producers' profits to a viable level. The reduction in output is almost sure to achieve higher prices but it will also mean that less wheat will be available for aid, and world reserves will again decline. If serious lags occur in production in other areas of the world, concurrently with US restrictions, acute shortages and very large price increases will probably

75. Source: Business Week, April 18, 1977, (New York: McGraw--Hill, 1977), p. 111. See also, prices CIF Rotterdam for these two times were U.S. \$4.80 and \$3.68 per bushel. Source: Foreign Agriculture Circular, Nov. 1977, op. cit., p. 25.

result, as they did between 1972 and 1974. This would mean further reductions in aid for those people outside the commercial market and unsustainable pressures on foreign exchange capacities of those countries which are barely able to afford needed wheat imports at moderate prices.

In summary, although wheat prices were reasonably stable between 1954 and 1971, it is unfair to attribute this mainly to IWA's. The principle elements of stability were North American domestic policies (particularly those of the US) and sales outside the agreement. These were also the primary influences in establishing the price level. The exact amount of influence of the IWA's on either stability or price level is difficult to determine, however, neither was affected in a fundamental way. Finally, it is noted that with wheat no case has ever been proffered for price-boosting in the interests of aid. The preponderance of output and consumption is in developed countries.

(d) Analysis of the Results of Control Activity in Coffee, Sugar and Wheat

Control activity for coffee has been, at best, a mixed success. Early Brazilian efforts in 1907 and 1917 did make some progress toward price stabilization but weather factors helped somewhat in this. Coffee growers saw the schemes as beneficial and desirable, however, the huge surplus that developed in the late 'twenties as a result of the "permanent defence" of coffee, was a detriment both to the control and the industry. Great expansion of the industry occurred when

curtailment and diversification were needed. The costs included large debts, very high wage levels, enormous overcapacity and violent economic and political upheavels. Consumer resentment built and non-Brazilian output more than doubled.

Post-World War II efforts at coffee control have been largely ineffective owing to a failure to support quotas or prevent increased African output. There is some hope that the 1975 agreement will provide some needed stabilization to this market but softening prices could easily recur when production returns to normal.

Early sugar control also had much difficulty. The Chadbourne Plan failed to raise prices but some surplus reduction was accomplished. The 1931 and 1937 Agreements accomplished little and efforts since World War II have had very little favourable impact. The main problem with this commodity is that so little of world production is traded on the international market. This gives scope for diverse bilateral schemes which can make the trading price very erratic. In sum it is clear that formal agreements have not reduced significantly the problems in this industry. There is no solid evidence that ISA's have resulted in more income stability than would have been attained through bilateral trading.

Notwithstanding the lofty goals of the International Wheat Agreements, the world market has been dominated almost completely by North America since World War II. Canada and the US provided wheat to international markets at below prevailing world prices for the first three years of the Agreement but have

adhered closely to national interest since 1953.

Unmanageable surpluses in the US have been reduced by acreage restrictions or shunted off via PL480 which has mitigated hunger but has done nothing to foster development in recipient countries. The very large growth in annual production which has occurred in the US over the past twenty years (See Table 7) bodes well for hungry countries, however, acreage restrictions for crop year 1977-78 have been announced recently by the USDA and this must ultimately exacerbate the problem of low world reserves of food.

There is no convincing evidence that IWA's have enhanced significantly the stability of producers' incomes, international trade or LDC development. The agreements are dominated by North American grain interests who will, in all likelihood, continue to follow the dictates of their own national interest.

Generally, results of past and present international efforts, for the three commodities discussed above, have not been encouraging. Only the most optimistic would think that past experience could offer more than very restrained hope for future efforts. And it must be borne in mind that these three ICA's have been among the most successful, if survival is the criterion. With all the honest effort by such groups as UNCTAD and the FAO there are currently only seven ICA's in existence⁷⁶ although there have been control efforts of various types in at least twenty other commodities.⁷⁷ Finally, if the ICA's had been

76. See FAO Commodity Review and Outlook 1975-76, op. cit., p. 16.

77. See Law, op. cit., p. 69.

even moderately successful, one would assume that most of the inherent difficulties and problems with the agreements would have been solved by now. However, all three of the agreements being discussed are now being reviewed yearly with hopes for changes each time. Claims of increased international harmony and cooperation brought about by ICA's are not supported by evidence.

(e) Potential of ICA's to Alleviate World Food Distress

The above discussion of the history and results of ICA experience shows that, regardless of the desirability of goals of control activity, not all has gone smoothly with these schemes. Not only have they failed to iron out cycles in international trade but they have had very limited success in enhancing development. Analysis of their potential to alleviate world food distress in the future requires an investigation of stated and implied objectives of the controls.

A very considerable range of real and potential objectives of food ICA's may be determined, however, there is fairly broad agreement that they should have three main aims:

- a) to enhance development of the world economy (particularly in LDC's) by increasing production and consumption;
- b) to preserve reasonable stability of prices around the current long term trend; and,
- c) to establish and preserve reasonably appropriate and stable incomes for primary producers.

Such aims do not seem unreasonable given that rational people are willing to negotiate in a spirit of altruism. In fact there is general agreement that these are indeed worthy goals and that the past functioning of the economic system has fallen far short of realising these objectives. It is the practical aspects of how the agreements are to achieve these aims which causes the problems. As Rowe puts it:

Some parties (advocate) direct government control..., others that governments should only play a supporting role. Some (press) the desirability of substantial representation of consumers on the governing bodies as a necessary and effective safeguard against exploitation by producers. Others (view) this as desirable in the interests of producers themselves. Still other (have) reservations as to its probable efficacy in practice for either purpose. Some (pin) their faith on quantitative control of production, others on control by buffer stocks, and still others (advocate) both. There is almost every shade of opinion on almost every aspect of the problem, and the situation cannot be adequately summarised.⁷⁸

More specifically, there is serious ambiguity as to what those who advocate ICA's wish to stabilize. Some items suggested as requirements for stabilization may be appropriate for different countries at different times. For example, the goals might be the stability of prices, foreign exchange earnings, quantities produced, producers' incomes, balance of payments situations of LDC's, world trading mechanisms (including the jobs of bureaucrats), terms of trade, business cycles, or political systems. Additionally, stability criteria for one country may imply or beget instability in others.

78. Rowe, (1965), op. cit., p. 157.

The first aim, of enhancing development through the vehicle of ICA's, has long been considered essential by LDC spokesmen. The following example shows that this aim has not been achieved by the existence of international control efforts in wheat. Table 13 shows that wheat consumption in LDC's has not increased significantly in the past decade. While the table shows an encouraging 19.5% increase in wheat disappearance in LDC's between 1964-66 and 1972-73, the nominal amounts tell the true story -- an increase of from 41-49 kilograms per person per year in LDC's in the two periods compared to 118-127 kilograms in developed countries.

From the production point of view the picture is equally bleak.

Total food production in the non-industrialised regions of the world has risen at about the same rate as the population (between 1958 and 1970). Thus food production per-capita has remained nearly constant, at a low level.⁷⁹

The above example shows representative evidence that IWA's have not increased production, consumption or enhanced development in LDC's.

Maintaining price stability through ICA's has proven to be just as elusive as fostering development. In theory, given extensive knowledge and appropriate policy it should be possible to stabilize prices. In practise, however, it is doubtful that control scheme managers have greater knowledge than do speculators

79. Donella H. Meadows, et. al., op. cit., p. 49. (Note: their source is listed as FAO The State of Food and Agriculture, 1970).

and dealers. In fact, it is suspected that typical beaureau-
cratic lethargy would place the managers at a disadvantage
vis-à-vis profit motivated individuals and companies. In
any event, discussion of control activity for the three
commodities discussed in this paper shows scanty evidence that
ICA's have improved price stability at any level.

It must also be noted that a price increase is often the
most important or real goal sought in the application of
Agreements. Throughout recent history pressure for the institution
of ICA's or cartels has almost always been highest during periods
of large surpluses and low prices. What has happened usually
is that interest groups (i.e. producers) have attempted to
identify what they think is the proper long-run trend for prices
of a particular commodity and have forced current prices upward.
Euphemisms normally employed for this price fixing are: fair
price, reasonably remunerative prices, prices which ensure a
reasonable standard of living, or, price required for minimum
development requirements. When any of these terms are employed
in the context of ICA's, it is certain that producers consider
current equilibrium prices to be unsatisfactory and attempts
will be made to lift them.

The typical results to be expected are:
consumer resentment, faster search for
substitutes, cheating among signatories,
expansion of output outside the agreement,
constant struggle to keep total output
or trade down and individual nations
shares up, and retardation of needed
adjustment and reallocation. It is
these problems which have caused most past
control effort to fail.⁸⁰

80. Law, op. cit., p. 77-78.

In sum, although ICA's have sometimes been successful in raising prices temporarily they have invariably failed to establish long-run price stability.

Another major question is whether ICA's of the traditional type are the most effective method of effecting transfers of resources between developed and developing countries in all circumstances or whether control schemes may not sometimes be dysfunctional to LDC's and MSA's. There is a strong temptation in the UN to attempt to handle both the problem of price instability in commodity markets and that of resource transfer between the developed world and LDC's through the mechanism of ICA's, since if price stabilization could be achieved at a sufficiently high level, both purposes could be served simultaneously. It must be noted that a large percentage of food, in the form of wheat and coarse grains, is produced by and traded among developed nations. However, within the commercial market for these commodities a significant perverse income effect in LDC's may be produced through agreements deliberately operated as a resource transfer technique. This would occur because the resource transfer obtained through the ICA would benefit the exporters rather than the developing importers. In addition, it is likely that these perverse effects would be magnified, in that developed exporters of food are likely to be able to increase supplies more quickly and efficiently than LDC's in response to prices stabilized at a high level. Finally it is clear that those who will fare the worst, vis-à-vis any scheme to maintain

grain prices above what they would otherwise be, must be the MSA countries. These lands are poor in all resources and the increased pressure on their meagre foreign exchange capacity which can be caused by any increase in "necessity-of-life" imports can do nothing but hinder their progress. The FAO sums it up:

In face of these difficulties, there are no easy general solutions for meeting the twin needs of price stability in commodity markets and of larger export earnings for developing countries. While each of these two policy objectives is of paramount importance to the world community, must be pursued vigorously, and in some cases can perhaps be achieved through the operation of the same policy instruments such as commodity arrangements, a greater suppleness of approach is required, if progress is to be made in either direction. Price stabilization agreements are essential for their own sake, and they can no doubt be useful as a vehicle for income transfers in some cases. But they are not the quickest or the most efficient way of transferring resources from the developed to the developing countries. They are not selective enough to assure assistance where and when it is most needed. They may on the contrary benefit mainly the rich developed or richer among developing countries if these happen to be the largest exporters of the product concerned. They do not always get to the core of the commodity problems of many developing countries, which may lie in fields other than trade. And they are not complete substitutes for direct resource transfers between the affluent countries and those in need of development resources.⁸¹

The failures in the past of ICA's to preserve reasonable stability of prices and incomes has been documented in pages 100--103 and need not be repeated here. Past controls for coffee

81. FAO Commodity Review and Outlook, 1974-75, op. cit., p. 28.

were somewhat successful in protecting producers and recent efforts may protect incomes to some degree -- the effectiveness of the agreement will be better measured when production returns to normal. The sugar market has the potential for extreme volatility with any small change in supply and pricing in the wheat market continues to be dominated mainly by North American domestic policies.

In all three of the commodity agreements being discussed there is no serious attempt to impose price ceilings, which bodes well for LDC producers in that their incomes should increase in times of shortage. However, for the majority of the LDC's, who must import wheat, this absence of a ceiling price has the potential for a devastating effect on their foreign exchange and over-all well being if severe shortages occur in the future.

The situation is serious. Many of the development hopes and much of the efforts of the less developed world have been pinned on the possibility of somehow making ICA's work to their benefit. The evidence presented shows that the agreements don't enhance development in any fundamental way and it must therefore be concluded that ICA's in their present form, and by themselves, have little potential to augment world economic development or to alleviate world food distress. If LDC's and MSA's are to extricate themselves from their increasingly serious foreign exchange, development and food shortage positions, a severely modified form of international food transfer will have to be instituted.

E. FUTURE PROSPECTS FOR IMPROVING INTERNATIONAL FOOD DISTRIBUTION

Recent events in world food commodity markets have led the international community to re-examine approaches to the problems of price instability and buffer stocks. Concurrently there has been increasing acceptance of the need to improve progressively the conditions of access to international markets and to ameliorate the adverse marketing structures for export products of developing countries.

Thus, increasing pressures have been brought to bear for the adoption of concrete measures and programmes for dealing with fluctuations of commodity prices and with the slow growth of earnings from primary commodities. They reflect the growing realization that the existing imbalance between the rich and poor countries of the world is economically unsustainable, leads to growing crisis of confidence between these two groups, and must be resolved in the long-run interest of both developed and developing countries.⁸²

Within the UN, the main statements of the objectives for, and approaches to a new infra-structure for the trade problems of LDC's is contained in two Resolutions, i.e. a "Declaration" and a "Programme of Action" within the "Establishment of a New International Economic Order", adopted by the Sixth Special Session of the General Assembly in the spring of 1974. It is hoped, by LDC's at least, that these Resolutions will exert a major influence on the work of the Seventh Special Session of the General Assembly which is to be devoted to development and international economic cooperation.

82. FAO Committee on Commodity Problems, Fiftieth Session, (Rome: FAO of the UN, 1975), p. 3.

Unfortunately for the MSA countries it is not at all clear that the good intentions and efforts of the UN will be able to alleviate in any significant sense their basic economic problems. The inherent problems are inadequate export earnings for internal development and, because of their limited foreign exchange, the spectre of possible wide-spread starvation given a world food shortage. UN sponsored bodies such as the FAO and UNCTAD are able to identify the problems with precision but lack the political influence to compel the world community to take fundamental and concrete initiatives which might improve conditions meaningfully for MSA's. Professor Helleiner outlines the problem.

...The recession and oil crisis produced a ...15 percent average fall in the terms of trade for a World Bank sample of 40 non-oil countries. Non-oil exporting less developed countries (LDC's) consequently experienced a two percent real drop in the purchasing power of exports in 1974, despite continued increases in volume. But the fate of the poorest of these countries is much more serious still. Their terms of trade fell faster, and their access to credit was weaker. Thus they were forced to cut imports -- by six per cent for the 25 least developed in 1974. Worse, the World Bank forecasts further trade deterioration for the poorest countries by 1980 -- to levels 20 per cent below those of mid-1974.

This unfortunate scenario results primarily from the unfavorable bundle of products which the poorest countries export. With a very few exceptions, the exports of the poorest are concentrated in food, beverages and crude materials. Fuels, non-ferrous metals and manufactures -- areas in which market prospects are brightest -- are conspicuous by their absence.

The very weakness of their economic prospects, of course, makes these countries less creditworthy. ...It goes without saying that the poorest states are also technically least equipped to deal with the new risks and uncertainties in the world economy -- fluctuating exchange rates, volatile commodity markets and rapidly changing institutions. If the projection of slower growth for the world economy as a whole and increased instability and uncertainty in its functioning is correct, then the implications for the world's poorest countries are serious indeed.⁸³

1. Is a New World Order Required?

It is this type of gloomy prognosis which leads some groups to conclude that the current international economic order is not viable and must be scrapped entirely to make way for a new and more egalitarian world society. One such study was produced by Canada's International Development Research Centre⁸⁴ and it is illustrative of the more radical approaches to the alleviation of world economic distress. The authors of this work contend that the major concerns facing society are not physical but sociopolitical; the problems are based on the uneven distribution of power, both between nations and within nations.

The result is oppression and alienation, largely founded on exploitation. The deterioration of the physical environment is not an inevitable consequence of human progress, but the result of social organization based largely on destructive values.

(Herrera's) conceptual model of the "ideal" society is based on the premise that it is only through radical changes in the world's

83. Gerald K. Helleiner, "The Poorest of the Poor: The Problems of the Least Developed Countries", Cooperation Canada #25/1976, (Ottawa: Canadian International Development Agency, 1976), pp. 4-5.

social and international organization that man can finally be freed from underdevelopment and oppression. What is proposed is a shift toward a society that is essentially socialist, based on equality and full participation of all its members in the decisions affecting them; consumption and economic growth are regulated in such a way as to attain a society that is intrinsically compatible with its environment.⁸⁵

The authors go on to develop a model whereby they attempt to show that a radical reshaping of the world's political and economic structures could provide an adequate standard of living for all within a generation. They conclude that the fate of man depends ultimately not on physical barriers but on social and political factors that people can and must modify.

This particular study, as with others like it, would depend critically for its success on a tremendous world-wide surge of altruism and an almost complete abrogation of political sovereignty. This condition is unlikely to prevail in the foreseeable future since it would necessitate the most powerful developed countries giving up a substantial amount of current consumption as well as exposing their military flanks to other major powers who might be less than fully committed members of the cartel.

Short of a terrible world crisis, as might be caused by general crop failure for a few consecutive years, it is unlikely that any major changes such as those envisaged by Herrera et. al.

84. Amilcar O. Herrera, et. al. Catastrophe or New Society? A Latin American World Model, (Ottawa: International Development Research Centre, 1976).

85. Ibid., p. 8.

will occur in the international production and transfer of food. As such, if anything is to be done to improve the lot of MSA's it will be up to present UN groups and domestic agencies to use ingenuity within current framework to effect the changes. A discussion follows of how the UN is trying to amend present institutions in a beneficial way for MSA's.

2. How Might Improvements Be Made Within the Current System?

First of all it is re-emphasized that the inherent problems are two-fold: MSA's require development assistance so they may become more self sufficient and thus less dependent on costly food imports and, secondly, some form of emergency food aid must be available very quickly if those populations are to avoid starvation during periods of crop failure. It is clear that current food commodity agreements have been unable to provide necessary resource transfer or an emergency relief stock of food as UNCTAD and other UN bodies hoped they could. However, UN agencies have recently been taking a much more practical view of how deep-rooted are the concepts of sovereignty and nationalism and are trying to work within what will most likely be the standard political climate in the foreseeable future. For example, the World Food Conference (held in Rome, 5-16th November 1974) adopted a number of recommendations concerning food production, security and aid, intended to form an overall strategy for resolving the world food problem. The Conference endorsed the "International Undertaking on World Food Security" (hereafter referred to as the Undertaking) which

provides for international cooperation in establishing a world-wide network of national food reserves. It urged all governments to adopt this Undertaking and to make it operational as soon as possible. In addition, it was resolved that a Global Information and Early Warning System on Food and Agriculture should be set up to which governments would report current agriculture information as well as forecasts of relevant items.

Up to the end of May 1975, 46 governments had adopted the objectives, policies and guidelines contained within the Undertaking. (China and Thailand will not participate). The implementation of the Undertaking will require:

...cooperative action by governments concerned on each of its four main elements:
(a) adoption of appropriate national stock policies in accordance with agreed guidelines;
(b) intergovernmental consultations on the adequacy of stocks; (c) assistance to developing countries to enable them to implement effectively their stock and production programmes; and (d) participation in the Food Information and Early Warning System.⁸⁶

Most countries have now taken action to encourage expansion of production and various aspects of the problems of stocks are under examination. The United States Government in February 1975 held an ad-hoc meeting of major grain producing, consuming and trading countries in London to discuss the question of international grain reserves. At the same time the FAO convened a consultation on national cereal stock policies relating to world food security which expressed the

86. FAO Commodity Review and Outlook 1974-75, op. cit., p. 31.

view that an effective international agreement on cereals (with price and stock provisions) should help provide special treatment for developing countries, keeping in mind their limited financial capacity. Perhaps most important is the follow-up provision. I.e. The FAO hosted an intergovernmental ad-hoc Consultation on World Food Security in May 1975 to review the implementation of the Undertaking and to consider further steps which might be appropriate.

Finally, in response to the provisions of the Undertaking concerning special assistance to developing countries, the FAO has extended its food security programme in cooperation with a number of other international organizations such as the World Food Programme the World Bank and Regional Banks. This programme advises developing countries on appropriate national food stock policies within the context of their main food security problems. It also aims to assist countries in mobilizing the necessary technical, financial and food aid required. The FAO plans to extend the scale of its operations in the future and also to invite the active participation of other agencies and governments who have indicated their willingness to assist developing countries in mobilizing resources. For example, the International Wheat Council has established a working group to consider the question of replacing the International Wheat Agreement and the GATT administration has also set up a sub-group on grains to deal with related aspects.

Some might see the Undertaking as just another ineffectual attempt which will do little to alleviate the distress of MSA's.

Whatever the results it seems clear that the FAO is on the right track with regard to facing up to political reality. As the FAO Review puts it:

With the endorsement of the International Undertaking on World Food Security, governments, for the first time in thirty years, have accepted a proposal in favour of world food reserves. ...The new attitude is due, in the main, to the sense of urgency generated by the severe food crisis of the past few years and to the virtual disappearance of the major exporters' carryover stocks. (NOTE: The Review being quoted was written in 1975). But it is also due to the fact that the proposals for an International Undertaking, unlike previous attempts in the field of emergency planning, recognized the limits to which governments were willing to go in accepting commitments affecting their sovereignty.

The first lesson to be learned from the failures of the imaginative and well-meaning efforts of the past thirty years is that nations are not ready for internationally controlled supply schemes. However satisfying to the logical mind, global schemes based upon some degree of surrender of national sovereignty and interests have so often failed to clear even the first hurdles of international negotiation that a less ambitious approach was clearly essential.⁸⁷

The Undertaking, then, is grounded firmly on national policies, national control of production and stocks, and national financing with some degree of international cooperation. It differs from most other international instruments in that it embodies a pledge by governments to achieve stated objectives without making this conditional upon further meetings or feasibility studies which, in the past, have bogged down most initiatives on world food problems. The experts are now asked to say how, not whether, necessary results can be achieved.

87. Ibid., p. 37.

Specialized bodies are therefore at work on the practical implementation of the scheme. They are confronted with the same difficulties which have dogged the attempts of their predecessors since 1943. But the ground has been cleared. They are working in the context of an agreed global strategy defined by the World Food Conference; streamlined machinery has been set up in the field of information, coordinating procedures are being established within FAO, the WFP and the World Bank and, above all, the need for a higher degree of world food security is a recognized element of the New International Economic Order expected to emerge from the Second UN Development Decade.⁸⁸

In sum the FAO's position is as follows. First of all, they feel that individual government policies to achieve a better alignment between production and effective demand are likely to result in the running down of working stocks of basic food commodities to levels too low to cope with emergencies. Policies in the US during 1972 to 1974 and the recent USDA announcement setting acreage restrictions for 1978 illustrate this tendency. Therefore, identified emergency food reserves are necessary at the world level. Secondly, world consumption of food is now such that stabilization stocks over and above normal carryovers are required; in times of crisis the market mechanism cannot be relied upon since effective demand in the developed countries could not be restrained sufficiently and quickly enough to free the necessary food for emergency relief. Third, emergency reserves are necessary and stabilization stocks desirable, however, control of these reserves is a large problem area. International control of the stocks would have the following advantages:

88. Ibid.

- a) impartial and better informed approach by an international authority;
- b) minimum influence of unilateral political considerations;
- c) speed of intervention of an unfettered agent;
- d) ability to counterbalance uncoordinated national actions; and,
- e) freedom from speculative interests.

The final and most powerful advantage is seen to be that the size of a central reserve would, because of its greater flexibility, be significantly smaller than the total of a network of national reserves.

Here again the FAO is facing up to reality. They believe that centrally controlled reserves would be desirable, however, many governments have strong apprehensions regarding the feasibility and advisability of entrusting an international or intergovernmental authority with direct and final responsibility in the field of stockholding and management because of the unknown but potentially important repercussions on markets and prices. This reluctance has proved insuperable so often in the past that it is unrealistic to build any proposal on the assumption that governments will change their attitude in this respect.

The latest expression of governments' dislike of the concept of an internationally held food reserve was the rejection of the very modest suggestion of the Secretariat of the World Food Conference for a 500,000 ton prelocated pool of cereals to be placed at the disposal of the WFP to cope adequately with limited emergency situations.⁸⁹

89. Ibid., p. 45.

An alternative to internationally managed reserves is the international coordination of national actions for stocks which would be based on prior agreement of objectives and a joint assessment of circumstances. Some flexibility would be lost under this type of arrangement and shifting criteria would complicate working out the scale of contributions, however, given deep rooted sovereignty and nationalistic feelings, this type of arrangement may be a reasonable compromise. This is the atmosphere recognized in the Undertaking:

The International Undertaking includes no clause whatsoever regarding "international" reserves as such. That does not mean that opportunities for international action are minimized. Indeed, governments have ample scope for active cooperation in two respects: (1) The Undertaking recognized explicitly that the special difficulties of a number of developing countries in maintaining national stocks at desirable minimum levels place an added responsibility on the rest of the international community; subscribing governments are to take this into account in fixing their stock targets or objectives and, where possible to earmark stocks or funds for meeting international emergency requirements; and (2) international assistance is acknowledged to play an important role in providing food aid and finance for the maintenance of stocks, in particular, emergency stocks in developing countries.⁹⁰

The fourth problem being faced up to by the FAO is that of sharing the burden of holding emergency reserves and stabilization stocks set up and maintained in the mutual interest of all nations. Many other theoretical schemes have been advanced but no viable solution has yet been discovered. Three proposals

90. Ibid., p. 46.

which have often been touted are the "needs" test, the "means" test and the "gains" test. With the needs test the countries most exposed to the risk of crop failures would carry the largest stocks. This would also locate reserves close to areas of highest potential need. With the means test the burden would be shared in proportion to GNP or to some other measure of national wealth. The gains test implies that the burden would fall primarily on exporting countries with the rationale that continuity of supply is in the interest of exporters both in the sense of humanitarianism and to enhance the good will of customers.

The Undertaking treats burden-sharing in a slightly different way. Each country must set the desired level of its stockholdings objectively, based on the scale of its import requirements in normal conditions and in emergencies. With contributions by exporters at a level which would ensure a regular flow of supplies at reasonable prices, the global burden would be shared automatically.

Many difficulties still exist. How should reserves be built up and released; how to help MSA's who are unable to finance reserves and stocks of the minimum desirable level; how to compensate exporting countries (who may be LDC's in some cases) when they forfeit the benefit of rising world prices in times of shortage; how to involve self-sufficient countries in burden sharing. These problems are both political and technical. Resolution of the difficulties will require painstaking negotiations and difficult compromises, however, the effort must be made if more people are to share in world food resources -- or at least not starve in periods of food crisis. Specialist

bodies of the UN and inter-governmental groups are at work on these aspects of world food security policy.

The Undertaking has provided a practical atmosphere for dealing with the problem of ensuring adequate stocks of food for MSA's in time of emergency. While much remains to be done it is considered that this type of arrangement has a much better chance for success than any commodity agreement scheme now in place or envisaged. What it has not been able to do is make much progress on the problem of inadequate export earnings of MSA's. There is no question that the problems of world food security and availability of foreign exchange are tied together; the ultimate solution to the difficulties being experienced by MSA's must lie with development. The focus of this paper has been on the problem of world food security in times of crisis and it is contended that the evidence shown proves that these periods will likely be more frequent in the future. The problems of export earnings, availability of foreign exchange and development issues are beyond the scope of this particular study; nevertheless, for comparison purposes, a slight widening of scope is considered pertinent in the form of a short discussion on how more stability might be introduced into the entire world economy. Nicholas Kaldor presents some possibilities:

The primary need is to strengthen the adjustment mechanism between the growth of supply and demand for primary products. This requires that governments (or international bodies) acting singly or in concert should be prepared to carry much larger stocks than private traders are willing to carry on their own; and be ready to intervene in markets in a price stabilizing manner.

...I remain convinced -- as I have been for a long time -- that the most promising line of action for introducing greater stability into the world economy would be to create international buffer stocks for all the main commodities, and to link the finance of these stocks directly to the issue of international currency, such as the SDR's, which could thus be backed by, and directly convertible into major commodities comprising foodstuffs, fibres and metals. Assuming these buffer stocks cover a sufficiently wide range of commodities, their very existence could provide a powerful self-regulating mechanism for promoting growth and stability in the world economy.

Assuming the system starts off in the right circumstances when commodity surpluses are about to develop, and the intervention of the buffer stock authorities serves to prevent a recession in commodities by accumulating stocks, they would have a far-reaching effect in influencing the rhythm of development. The value of the commodities bought by the authorities would represent a net addition, in terms of international currency, to the incomes of the producers. The addition to world investment would have a powerful multiplier effect -- it would increase the export demand for industrial goods which in turn would stimulate industrial investment; the process thereby set in train would tend to increase the rate of absorption of commodities until it comes into balance with the rate of production. If it went beyond this point, the mechanism would go into reverse -- the sale of commodities by the buffer stock authorities would cause a contraction of demand for industrial goods (for the incomes of primary producers would now fall short of consumers' outlay, and hence there would develop a net adverse balance on current account of the industrial countries); it would thereby again operate in the direction of restoring balance -- through a downward adjustment of the rate of absorption of commodities by the industrial countries to limits set by the availabilities of primary products. The system of buffer stocks would thus substitute the mechanism of income-stabilizing variations in stock accumulation for the crude mechanism of rising and falling commodity prices which latter...operates slowly and wastefully, and tends

to set up perverse and unnecessary cycles
in world industrial activity.⁹¹

In sum we have seen three different approaches to solving the ills of the MSA countries. There are those such as Herrera et. al. who would replace the entire world political and economic system on the basis that modification of the present system, no matter how fundamental, will not work. Others such as Kaldor see sweeping new initiatives required at the international level to introduce greater world economic stability which would be beneficial to LDC's as well as developed countries. Finally UN groups such as the FAO and UNCTAD continue to plod along, seeking endless small achievements in international fora by instituting minor refinements to the present system.

However satisfying theoretically, initiatives such as those suggested by Herrera and Kaldor are unlikely to gain much practical headway. Both disregard or, at least, fail to yield proper weight to the deep-rooted concepts of nationalism and sovereignty. Wary politicians and skeptical diplomats have rejected continually any scheme which encompasses a significant amount of international or even inter-governmental control of national resources. UN bodies have at last recognized that this stumbling-block is not likely to disappear in the foreseeable future and are therefore searching for practical solutions within the current world political and economic framework. It is granted that initiatives such as the Undertaking may do little for MSA's in the development sense but,

91. Nicholas Kaldor, "Inflation and Recession in the World Economy", The Economic Journal, #344, Vol. 86, December 1976, (London: MacMillan Journals Ltd. 1976), pp. 712-713.

hopefully, it will provide a more stream-lined vehicle for emergency food relief during times of crisis. That would be a major achievement indeed, since not much is likely to be developed by people who are starving.

F. CONCLUSION

The world food crisis of 1972 to 1974 caught everyone by surprise. Accelerating world inflation rates were exacerbated by wide-spread crop failures in 1972 when the production of wheat, coarse grains and rice fell simultaneously and significantly. Other problems were contiguous, such as the Russian wheat deal, the influence of affluence and ever increasing population; all these have played their part in increasing demand which has put more upward pressure on prices.

Prices of cereals have moderated since 1974 in the face of excellent world harvests in 1975 and 1976, however, current world stocks of food cannot be considered large when viewed within the perspective of ever increasing demand. Concurrently the plight of LDC's and MSA's, with regard to their capability to finance needed food imports, is worsening quickly and fundamentally. Another major crop failure, such as that which occurred in 1972, would probably lead to widespread starvation in much of the underdeveloped world, given the current state of preparedness for international food crises.

The key area upon which international organizations such as the UN in general and UNCTAD in particular are focusing, is development of LDC's and MSA's so that they might become more self-sufficient in every possible sense. However, the problem

of securing adequate food for the world's population is paramount since poorly fed or starving people cannot develop the intellectual capacity or muster the necessary energy to carry forth development plans.

UNCTAD has from their beginning in 1964 espoused International Commodity Agreements as panaceas for world food problems. Their contention is that adequate and centrally controlled food stocks, along with higher and reasonable prices for LDC exports of primary products, will enable the less developed world to progress quickly to a situation of relative well being vis-à-vis the developed world.

Whatever the merits of the UNCTAD position, with respect to international food transfer, they have not faced up to political reality. International Food Commodity Agreements over the years have done very little to foster development since they almost always break down in abnormal times of plenty or scarcity. Even if prices can be set and bracketed at levels consistent with reasonable and fair incomes for primary producers during normal periods, when crops are good those outside the agreement will sell below the ICA price and when they are poor consumer resentment of the higher prices will ultimately lead to substitution. Additionally, the deep-rooted concepts of nationalism and sovereignty have stymied repeatedly any attempt to establish an internationally controlled reserve of food for crisis periods.

Some theorists point to the overall failure of present institutions to solve the world's economic problems and put forth suggestions that the current world economic order must be abandoned completely and replaced with a new egalitarian system of governments and resource transfer mechanisms. Less extreme propositions are advocated by others, which call for fairly radical changes to present international institutions which might enhance world economic development. These proposals, however satisfying theoretically, are also guilty of ignoring political reality.

The FAO, with its Undertaking, is the only unit that appears to have much hope of success in making a meaningful start on the amelioration of the world's food problems for the less developed world. They have faced up to political reality by abandoning utopian notions of effective food ICA's and internationally managed reserves. While their proposal for emergency food relief does not have as much flexibility as centrally administered reserves would have, the scheme to provide food stocks for crises, through international coordination of national actions, is a good compromise. More importantly, the compromise is consistent with the way international economic and political problems are usually solved, if they are solved at all. Certainly if participation and interest in the proposal are the criteria the Undertaking has been successful up to now; the World Food Programme, the World Bank, the International Wheat Council, the GATT administration, Regional Banks and 46 governments have agreed to work together with the FAO on this scheme.

Many problems remain. The most vexing is the continued slow or non-existent economic development of most of the less developed world. The Undertaking does not attempt to deal with this problem except to provide for one of the very basic ingredients required to foster development -- adequate food. If the Undertaking is successful, however, the practical ethos behind the scheme, of facing up to the fact that sovereignty and nationalism will remain as overriding national concerns in the foreseeable future, may mean that other issues such as development assistance will be approached in a new way; one that would possibly have more success than past efforts.

Total world grain stocks are once again at fairly high levels, however, there is little reason for complacency. A significantly higher percentage of the reserves are now held by the US and they have decided to restrict acreage in crop year 1978/79. This decision is completely in keeping with American interests since their grainaries are full and US farmers cannot afford to continue producing grain at current prices. However, if we have another widespread crop failure, such as that which occurred in 1972, a major portion of the reserves will be depleted quickly. And they will be used up more rapidly than in the past because of inexorable population growth combined with the influence of affluence.

It must also be recognized that resources, technology and facilities to produce significantly greater amounts of food in the world do not exist at the present time, with the exception that arable land in less developed countries could be farmed more intensively. More efficient cultivation is a worthy goal but it is a slow process. Without a system in place to provide

emergency food relief, the almost inevitable result of poor crops in the next few years would be widespread starvation in MSA's.

Time is short. Emergency food supplies must be established soon so that people in the poorest countries do not starve. Heightened economic development of the less developed countries must continue to be a major concern but the problem of providing adequate and sustained supplies of food for the world's population must be solved first.

B I B L I O G R A P H Y

- Aitken, Hugh G. J.; et. al. THE AMERICAN ECONOMIC IMPACT ON CANADA. London: Cambridge University Press, 1959.
- Balassa, Bela. THE STRUCTURE OF PROTECTION IN DEVELOPING COUNTRIES. Baltimore: The Johns Hopkins Press, 1971.
- _____. THE THEORY OF ECONOMIC INTEGRATION. London: George Allen and Unwin Ltd., 1961.
- Bauer, P.T. DISSENT ON DEVELOPMENT. Massachusetts: Harvard University Press, 1972.
- Behrman, Jack N. TOWARD A NEW INTERNATIONAL ECONOMIC ORDER. Paris: The Atlantic Institute for International Affairs, 1974.
- Bergsten, C. Fred; et. al. RESHAPING THE INTERNATIONAL ECONOMIC ORDER. Washington DC: The Brookings Institution, 1972.
- Bijli, Shah M. DEVELOPING NATIONS AND THE UNCTAD. M. U. Market, Aligarh: International Book Traders, 1973.
- Caves, Richard E.; and Jones, Ronald W. WORLD TRADE AND PAYMENTS. Boston: Little, Brown and Co., 1973.
- Cochrane, Willard W. FEAST OR FAMINE: THE UNCERTAIN WORLD OF FOOD AND AGRICULTURE AND ITS POLICY IMPLICATIONS FOR THE U.S. Washington: National Planning Association, 1974.
- Corbet, Hugh; and Jackson, Robert. IN SEARCH OF A NEW WORLD ECONOMIC ORDER. New York: John Wiley and Sons, 1974.
- Cutajar, M. Z.; and Franks, Alison. THE LESS DEVELOPED COUNTRIES IN WORLD TRADE. London: The Overseas Development Institute Ltd., 1967.
- Floystad, Gunnar. FOREIGN TRADE, AID AND ECONOMIC GROWTH IN LESS DEVELOPED COUNTRIES. Oslo: Universitetsforlaget, 1968.
- Fried, Edward R.; et. al. REASSESSING NORTH-SOUTH ECONOMIC RELATIONS. Washington DC: The Brookings Institution, 1972.
- Gosovic, Branislav. UNCTAD: CONFLICT AND COMPROMISE. Netherlands: A. W. Sijthoff-Leiden, 1972.

- Harrar, J. George. PROSPECTS OF THE WORLD FOOD SUPPLY.
Washington DC: National Academy of Sciences, 1966.
- Haviland, William E. INTERNATIONAL COMMODITY AGREEMENTS.
Ottawa: Private Planning Association of Canada, 1963.
- Herrera, Amilcar O.; et. al. CATASTROPHE OR NEW SOCIETY? A
LATIN AMERICAN WORLD MODEL. Ottawa: International
Development Research Centre, 1976.
- Howe, James W.; et. al. THE U.S. AND THE DEVELOPING WORLD,
AGENDA FOR ACTION 1974. New York: Praeger Publishers,
1974.
- Johnson, Harry G. ECONOMIC POLICIES TOWARD LESS DEVELOPED
COUNTRIES. Washington DC: The Brookings Institution,
1967.
- Josling, Timothy. AN INTERNATIONAL GRAIN RESERVE POLICY.
London: British-North American Research Association,
1973.
- Law, Alton D. INTERNATIONAL COMMODITY AGREEMENTS. Massachusetts:
D. C. Heath and Co., 1975.
- Lerza, Catherine; and Jacobson, Michael. FOOD FOR PEOPLE NOT
FOR PROFIT. New York: Random House, Inc., 1975.
- MacBean, Alasdair L. EXPORT INSTABILITY AND ECONOMIC DEVELOPMENT.
London: George Allen and Unwin Ltd., 1966.
- Meadows, Dennis L.; et. al. DYNAMICS OF GROWTH IN A FINITE
WORLD. Massachusetts: Wright-Allen Press, Inc.,
1974.
- Meadows, Donella H.; et. al. THE LIMITS TO GROWTH. New York:
Universe Books, 1974.
- Radetzki, Marian. INTERNATIONAL COMMODITY MARKET ARRANGEMENTS.
London: C. Hurst and Co., 1970.
- Reuber, Grant L. CANADA'S INTEREST IN THE TRADE PROBLEMS OF LESS
DEVELOPED COUNTRIES. Ottawa: Private Planning
Association of Canada, 1964.
- Reuber, Grant L.; et. al. TRADE IN PRIMARY COMMODITIES, CONFLICT
OR COOPERATION? Washington DC: The Brookings
Institution, 1974.
- Ross, Douglas N. FOOD AND POPULATION: THE NEXT CRISIS.
Ottawa: The Conference Board in Canada, 1974.

Rowe, J. W. F. MARKETS AND MEN. London: Cambridge University Press, 1936.

PRIMARY COMMODITIES IN INTERNATIONAL TRADE. London: Cambridge University Press, 1965.

Shourie, H. D. UNCTAD - II, A STEP FORWARD. New Delhi: Indian Institute of Foreign Trade, 1968.

Slater, David W. WORLD TRADE AND ECONOMIC GROWTH: TRENDS AND PROSPECTS WITH APPLICATIONS TO CANADA. Toronto: University of Toronto Press, 1968.

Sodersten, Bo. INTERNATIONAL ECONOMICS. New York: Harper and Row, 1970.

Thoman, Richard S.; and Conkling, Edgar C. GEOGRAPHY OF INTERNATIONAL TRADE. New Jersey: Prentice-Hall Inc., 1967.

van Meerhaeghe, M. A. G. INTERNATIONAL ECONOMIC INSTITUTIONS: SECOND EDITION. London: The Camelot Press Ltd., 1971.

Viner, Jacob. STUDIES IN THE THEORY OF INTERNATIONAL TRADE. New York: Harper and Brothers, 1937.

JOURNAL ARTICLES AND OTHER REFERENCES

AGRICULTURAL STATISTICS 1976. Washington DC: Government Printing Office, 1976.

Burki, S. J. and Yuauuf, S. "Population: Exploring the Food -- Fertility Link". FINANCE AND DEVELOPMENT (Washington DC: The Secretary, International Monetary Fund), Volume 12, #4, December 1975.

Caufield, Monte E. Jr. and Hadd, John R. "Government Response to Commodity Shortages". THE ANNALS OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE. (Philadelphia: American Academy of Political and Social Science), Volume 420, July, 1975.

Cooper, Richard N. and Lawrence, Robert Z. "The 1972-75 Commodity Boom". BROOKINGS PAPERS ON ECONOMIC ACTIVITY. (Washington DC: The Brookings Institution), #3, 1975.

FAO PUBLICATIONS (all are published in Rome: by Food and Agricultural Organization of the United Nations).

"Agricultural Commodity Trade and Development -- Prospects, Problems and Policies". FAO COMMODITY POLICY STUDIES. #17, 1964.

"An Inquiry into the Problems of Agricultural Price Stabilization and Support Policies" 1960.

"Coffee", CERES. #49, Jan/Feb 1976.

FAO COMMODITY REVIEW AND OUTLOOK. 1968-1969, 1969-1970, 1970-1971, 1971-1972, 1972-1973, 1973-1974, 1974-1975, 1975-1976, 1976-1977.

"Food Aid and Other Forms of Utilization of Agricultural Surpluses" FAO COMMODITY POLICY STUDIES. #15, 1964.

"International Commodity Arrangements and Policies" FAO COMMODITY POLICY STUDIES. #16, 1964.

"Production and Trade", CERES. #52, Jul/Aug 1976.

"Recent Developments in the World Food and Agricultural Situation" MONTHLY BULLETIN OF AGRICULTURAL ECONOMICS AND STATISTICS. Volume 25, #7/8, July/Aug 1976.

"The Face of Poverty", CERES. #45, May/June 1975.

"The Stabilization of World Trade in Coarse Grains" FAO COMMODITY POLICY STUDIES. #14, 1963.

"Toward a Comprehensive Strategy for Agricultural Commodities: Some Possible Lines of Approach" COMMITTEE ON COMMODITY PROBLEMS. Fiftieth Session, Rome, 13-24 October 1975.

"World Economic Disorder", CERES. #49, Jan/Feb 1976.

"World Food and Agricultural Situation" MONTHLY BULLETIN OF AGRICULTURAL ECONOMICS AND STATISTICS. Volume 25, #5, May 1976 and #11, Nov 1976.

Flanders, M. June. "Prebisch on Protectionism: An Evaluation". THE ECONOMIC JOURNAL. (London: MacMillan Journals Ltd.), Volume 74, 1964.

Gandhi, Indira. "A World Without Want". BRITANNICA BOOK OF THE YEAR. (London: Encyclopedia Britannica, Inc.), 1975.

Gebb, Leslie H. and Lake, Anthony. "Washington Dateline: Less Food, More Politics". FOREIGN POLICY. (New York: National Affairs Inc.), #17, Winter 1974/75.

Grant, James P. "Food, Fertilizer, and the New Global Politics of Resource Scarcity". THE ANNALS OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE. (Philadelphia: American Academy of Political and Social Science), Volume 420, July 1975.

- Hathaway, Dale E. "Food Prices and Inflation". BROOKINGS PAPERS ON ECONOMIC ACTIVITY. (Washington DC: The Brookings Institution), #1, 1974.
- Helleiner, Gerald K. "The Poorest of the Poor: The Problems of the Least Developed Countries". COOPERATION CANADA. (Ottawa: Canadian International Development Agency, #25, 1976.
- Kaldor, Nicholas. "Inflation and Recession in the World Economy". (London: MacMillan Journals Ltd.), Volume 86, #34, Dec 1976.
- Law, Alton D. "International Commodity Agreements: Policies and Problems". JOURNAL OF ECONOMIC ISSUES. (Texas: The Association for Evolutionary Economics and the University of Texas), 1970-71.
- Lee, Everett S. "Population and Scarcity of Food". THE ANNALS OF THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE. (Philadelphia: American Academy of Political and Social Science), Volume 420, July 1975.
- Leff, Nathaniel H. "The New Economic Order - Bad Economics, Worse Politics". FOREIGN POLICY. (New York: National Affairs Inc.), #24, Fall, 1976.
- Lohar, J. S. "The Future Role of International Commodity Agreements". CANADIAN JOURNAL OF AGRICULTURAL ECONOMICS. (Ottawa: Mutual Press Ltd.), Volume 18, #3, November 1970.
- Mikesell, Raymond F. "International Commodity Stabilization Schemes and the Export Problems of Developing Countries". AMERICAN ECONOMIC REVIEW. (Princeton: American Economic Association), Volume 53, 1963.
- Radetzki, Marian. "International Commodity Agreements and National Benefit". INTERNATIONAL DEVELOPMENT REVIEW. (New York: Society for International Development), #1, 1974.
- Richter, Altschaffer J. H. "Agriculture and Food Supplies". BRITANNICA BOOK OF THE YEAR. (London: Encyclopedia Britannica, Inc.), 1976.
- Rostow, W. W. "The Terms of Trade in Theory and Practice". THE ECONOMIC HISTORY REVIEW. (London: Cambridge University Press), Volume 3, 1950.
- Sahi, R. K. and Craddock, W. J. "Estimating the Effects of Operation Lift on 1970 Prairie Land Utilization". CANADIAN FARM ECONOMICS. (Ottawa: Economics Branch, Canada Department of Agriculture), Volume 6, #5, December 1971.

- Schnittker, John A. "The 1972-73 Food Price Spiral". BROOKINGS PAPERS ON ECONOMIC ACTIVITY. (Washington DC: The Brookings Institution), #2, 1973.
- "Action Proposal, Grain Reserves Now". FOREIGN POLICY. (New York: National Affairs Inc.), #20, Fall 1975.
- Stern, Robert M. "World Market Instability in Primary Commodities". (Rome: Banca Nazionale Del Lavoro), Quarterly Review June 1976.
- Swerling, Boris C. "Problems of International Commodity Stabilization" AMERICAN ECONOMIC REVIEW. (Princeton: American Economic Association), Volume 53, 1963.
- THE STATISTICAL ABSTRACT OF THE UNITED STATES. Washington DC: US Department of Commerce, 1955, 1966, 1975, 1976.
- United States Department of Agriculture Publications:
AGRICULTURAL STATISTICS, 1976.
FOREIGN AGRICULTURE CIRCULAR, March, 1974 and Nov 1977.
- Veit, Lawrence A. "Development and the International Monetary System". THE INTERNATIONAL DEVELOPMENT REVIEW. (New York: Society for International Development), #3, 1974.
- Waters, Alan Rufus. "The Economic Reason for International Commodity Agreements". KYKLOS. (Basel: Srancke A., Francke A.G.), Volume 27, 1974.
- White House (The). "World Food Security and Set-Aside Plans". (Washington DC: Office of the White House Press Secretary), August 29, 1977.
- Yandle, C. A. "International Trade In Grains". FINANCE AND DEVELOPMENT. (Washington DC: The Secretary, International Monetary Fund), Volume II, #1, March, 1977.

PERIODICALS

- "A Bumper Crop of Controversy Over Farm Aid". BUSINESS WEEK. (New York: McGraw-Hill), April 18, 1977.