CHAPTER VI : SUMMARY AND CONCLUSIONS

In this final chapter, we shall pull together the various strands of analysis presented in the course of this study, and examine the more significant developments affecting commodity marketing in recent years. First, we shall summarise the empirical evidence concerning the changes that have occurred in the level of terminal market trading and in commodity price volatility in recent years. Then, we shall analyse the sources of the growing trading activity on futures markets. Finally, we shall place the growth of terminal market trading within the broader context of the evolution of attitudes towards financial assets and the structure of commodity pricing systems.

1. COMMODITY PRICE VOLATILITY AND FUTURES TRADING : THE EMPIRICAL EVIDENCE

The evidence contained in the studies of individual commodity markets in Chapter II is not sufficiently uniform to enable one to derive totally unambiguous conclusions about the trend in commodity trading. However, one feature that is common to all the markets examined is a considerable increase in the volume of trading on terminal markets - both absolutely, and in relation to the quantity of the commodity produced. The total volume of trading recorded in futures contracts worldwide (including financial as well as commodity futures) grew over tenfold between the early 1960's and the late 1970's.

An important element of the growth in futures trading has been the introduction of new futures contracts, but old well-established contracts have also shared in the boom. Of the commodities studied in Chapter II, coffee holds the pride of place with a twenty-fold increase in futures trading, as a proportion of world production, between the early 1960's and late 1970's. Sugar, cocoa and copper all experienced a tenfold increase; and even the laggards, lead and zinc, saw the volume of futures trading more than double.

The growth in futures market turnover has generally occurred alongside an increase in the price volatility of commodities examined. But this is harder to establish than one might anticipate. The difficulty is to avoid the distortions caused to measures of price volatility by the shifts in exchange rates and variations in the pace of inflation that have beset the world economy since 1960. Accordingly, we have calculated the volatility of the real prices of the commodities, using the UN price index for world manufactured exports as a deflator.

With the same deflator applied to all six commodities reviewed in Chapter II, one discovers that three - cocoa, coffee and zinc - experienced a strong increase in the coefficient of variation of price between the 1960's and 1970's. The other three either saw the coefficient of variation remain unaltered between the two decades - as in the cases of sugar and copper- or recorded a slight decrease in the coefficient of variation, as occurred in the single case of lead.

The price data used to calculate the coefficients of variation were all annual averages. Therefore, the coefficients of variation do not enable one to draw conclusions about the changing pattern of price volatility in the short run, when speculative influences would be expected to have their strongest impact. However, it would appear from a closer analysis of monthly price movements among some of the commodities included in Chapter II that the tendency for price volatility to increase between the 1960's and 1970's would have been more pronounced if monthly, rather than annual, averages were used as the basis for calculation.

2. SOURCES OF FUTURES TRADING

The reasons behind the growth of terminal market trading are discussed mainly in Chapters III and IV. But Chapter II introduces one important factor in the growth of futures trading, namely the increase in the obstacles facing administered producer pricing systems in the last twenty years. In the case of copper, first the non-US producer price system collapsed after a short-lived attempt to stabilise prices in the early 1960's, and then the US producers finally abandoned their own distinct pricing system in the face of an unprecedented build-up of stocks in the competing free market sector. For zinc, the experience was somewhat similar, with the European producers finding it virtually impossible to maintain an independent administered price against the background of a very depressed free market. It is interesting to note that, among the metals, aluminium, too, shows signs of shifting increasingly from an administered producer price basis to one governed by terminal market prices, although the causes lie in a shift in the structure of production and consumption, rather than in competition to producers from free market stocks.

Sugar, like aluminium, has experienced changes in the pattern of production and marketing that have increased the importance of terminal market prices. The US market has become more open to imports during the 1970's, at roughly the same time that the entry of Britain into the EEC forced a large tonnage of Commonwealth cane sugar onto the free market.

The growing proportion of commodity trading being conducted on the basis of prices determined on futures markets has inevitably given rise to an increase in the amount of terminal market trading being undertaken by producers, consumers and merchants for 'legitimate' trade reasons. The facilities provided by a terminal market for hedging price risks constitute the major single attraction for trade interests, and have undoubtedly played a large part in raising the number of futures transactions completed by such interests. Although it is impossible to quantify the rate of growth in trade hedging, it is evident that the proportion of physical commodity trade that involves some degree of terminal market hedging has risen significantly over the past two decades. Producers and consumers have become more sophisticated about the opportunites offered by terminal markets, at the same time as the dangers of price instability have become more fully appreciated.

The increased liquidity and sophistication of terminal markets have also succeeded in attracting a rising volume of non-hedging 'legitimate' trade business into futures transactions. The ability of such markets to act as an efficient market of last resort has been an element in the growth of non-hedging business; but the most important single non-hedging reason for legitimate trade interests boosting their involvement in futures trading has been a greater recognition of the scope offered by terminal markets for assistance towards the financing of commodity stocks during a period when futures quotations are **higher** than the price of products available for immediate delivery.

Significant though the increase in 'legitimate' trade business on terminal markets has been, it has been overshadowed by the upsurge in non-trade dealings and in the speculative (i.e. 'non-legitimate') uses of these markets by trade interests. At one extreme, one has the rapid growth that has been observed in the involvement in commodity markets by investment funds, and other financial institutions, holding stocks of commodities for investment purposes. One way in which this arises is totally non-speculative, and consists of the intervention of banks in the so-called 'cash and carry' financing of surplus commodity stocks, under which banks merely use the terminal markets to earn the contango in the manner described in

Chapter IV. As we explain there, the sums of money tied up in commodities in 'cash and carry' business can be very considerable, approaching $1,000 million for copper alone after 1974. The other, more speculative way in which investment funds have become drawn into commodity trading has been in the purchase and stocking of commodities as a long time investment. An informed estimate has stated that the value of the funds tied up in such funds in Europe has increased twentyfold since 1973 alone.

At the other extreme, one has traders whose interests are purely short-term and speculative. For such people, terminal markets offer three great attractions : the liquidity that they provide; the possibility of speculating on margin, with a very high rate of gearing; and the opportunity to speculate just as easily on falls as on increases in prices. The greater the volatility of prices, the greater is the scope for making money from terminal markets. Hence, the increase in volatility that has occurred since the 1960's will have increased the interest in speculating in commodities.

While it is possible to cite particular individual examples of the impact of speculation, such as the recent well-publicised case of the silver market (described in Chapter V), it is much harder to produce an analysis of the repercussions of speculative trading over a longer period. However, we believe that the detailed analysis, presented in Chapter III, of the interactions between the LME copper market and foreign exchange speculation has demonstrated two very important facts, which can provide a basis for generalising about the manner in which foreign exchange uncertainties have affected terminal markets. The first, derived from an examination of copper price movements at the time of the 1967 sterling devaluation, is the evidence that exchange rate speculation definitely does affect the level of commodity prices, at least temporarily. The second, yielded by a study of LME turnover during the 1970's, is that the volume of futures trading is closely correlated with the degree of foreign exchange uncertainty, particularly relating to sterling. Combining these two facts, it is reasonable to deduce that foreign exchange speculation has affected commodity prices throughout the 1960's and 1970's. Furthermore, we would argue that the changeover from a fixed exchange rate regime in the 1960's to a system of floating rates in the 1970's, by increasing exchange rate uncertainty, has tended to increase the amount of speculative trading undertaken on commodity futures markets.

The only information that is published giving a measure of analysis of the origins of terminal market trading is that provided by the US regulatory agency, the CFTC. Unfortunately, the data is not available on a consistent basis for more than a few years, and most of the commodities for which there exist several years of comparative statistics are agricultural products, whose futures markets cater for a limited domestic US clientele. Virtually the only commodity for which data extend back to 1970, and which might be considered to attract a sizeable amount of non-US trading, is soyabeans. The details of the trading motives of those dealing on the Chicago Board of Trade are presented in Table 6.1.

The evidence of Table 6.1 is not as clearcut as one might have anticipated. The gradual decline in the proportion of business undertaken by large traders complicates the analysis somewhat, as do the sharp swings in the relative proportions of long and short positions held by speculators and traders. However, among the business transacted by the larger traders, the proportion accounted for by hedging, as opposed to speculative, buyers and sellers has tended to decline - from around 60 per cent in the early 1970's to near 50 per cent in the late 1970's.

Table 6.1 : Analysis of Trading in Soyabeans Futures on the Chicago Board of Trade

(Unit 1000 Bushels)

Averaged Monthend Commitments of Traders in All Futures Combined

By Fiscal Year

Fiscal Year	Average Monthend Open Interest	Reporting (Large) Traders: Speculative: Long or Short Only		Long and Short (Spreading)		Hedging		Total		Nonreporting (small) Traders Speculative & Hedging		Price $/tonne c.i.f. Rotterdam
		Long	Short	Long	Short	Long	Short	Long	Short	Long	Short	
1970	188,337	9,611	13,921	49,169	49,178	92,292	79,288	151,072	142,387	37,305	45,990	117
1974	255,975	8,593	13,851	61,045	60,841	136,798	115,158	206,850	189,850	49,539	66,125	227
1975	244,056	8,166	17,935	64,940	64.645	125,054	102,666	198,160	185,246	45,896	58,810	220
1976	373,004	17,451	10,961	137,442	136,907	128,911	149,385	283,804	297,253	89,200	75,751	231
1977	485,905	42,455	15,382	157,765	157,374	155,696	204,507	355,915	377,264	129,989	108,641	279
1978	510,221	28,651	12,301	122,881	123,197	169,006	196,258	320,598	331,755	189,623	178,466	268

Average Monthend percent of Open Interest Held by Each Group of Traders

1970	100.0%	5.1	7.4	26.1	26.1	49.0	42.1	80.2	75.6	19.8	24.4	
1974	100.0%	3.4	5.4	23.8	23.8	53.4	45.0	80.6	74.2	19.4	25.8	
1975	100.0%	3.4	7.3	26.6	26.5	51.2	42.1	81.2	75.9	18.8	24.1	
1976	100.0%	4.7	2.9	36.8	36.7	34.6	40.0	76.1	79.7	23.9	20.3	
1977	100.0%	8.7	3.2	32.5	32.4	32.0	42.1	73.2	77.6	26.8	22.4	
1978	100.0%	5.6	2.4	24.1	24.1	33.1	38.5	62.8	65.0	37.2	35.0	

Sources : CFTC,IFS

3. THE ROLE OF TERMINAL MARKETS

The first two sections of this chapter have focussed upon the empirical evidence that can be gleaned from a study of terminal markets over the past two decades. Briefly the main conclusions can be summarised as follows:

1. Turnover on terminal markets has grown very rapidly.
2. The volatility of commodity prices quoted on terminal markets has tended to increase between the 1960's and the 1970's.
3. The non-speculative use of terminal markets by trade interests, such as producers, consumers and merchants, has increased steadily, mainly for hedging, but also for stock financing reasons.
4. One factor in the growth in non-speculative trading has been the decline in administered producer pricing systems for certain major commodities.
5. The volume of speculative trading on terminal markets has risen substantially.
6. Investment in commodities by non-trade interests has grown very rapidly indeed since the early 1970's.
7. Foreign exchange uncertainty significantly affects both commodity prices and the volume of trading on terminal markets.

Many questions flow from these conclusions, but the four listed below are paramount, and we will attempt to answer these in the remainder of this section.

A. Has the growth in terminal market trading affected the long run trend price of commodities?

B. Has the growth in terminal market trading (particularly that from non-trade sources) been the cause of, or merely a response to greater price volatility?

C. Has the growth in terminal market trading improved the efficiency of commodity markets?

D. How is the further growth in terminal market trading likely to affect commodity marketing arrangements?

3.1 The Long-Run Trend Price of Commodities

At first sight, it might be considered self-evident that greater terminal market trading in a commodity ought to have no effect upon the long-run trend price. It might be agreed that a greater volume of terminal market trading in what are essentially paper contracts would have no impact whatever upon the actual physical demand for the commodity being traded. However, this overlooks the fact that the increase in terminal market trading has also generated a modest increase in the stocks of physical commodities held by speculators and others, who have allowed themselves to take delivery of futures contracts once they matured.

To the extent that a growing terminal market turnover has led to an ever greater demand for the commodity itself, it will have tended to raise the long run trend price. The magnitude of this price effect is probably not large, but it should be noted that the circumstances of the short-lived commodity price boom of late-1979 and early-1980 suggested that the effect cannot be entirely ignored. For example, the copper market found itself at the end of 1979 with a level of stocks which, in relation to the demand for copper, was, in historical terms, above normal. Yet, the copper price rose dramatically early in 1980 because it was felt that so much of the metal stockpile was held in firm hands, by people such as investors and speculators, that there was a real threat of a shortage of physical metal for consumers.

Against this, one must acknowledge that the growing importance of terminal markets has weakened the link between the magnitude of of supply surpluses for a commodity and the stocks held, and financed, by producers. For reasons explained more fully in section 3.4, a shift towards the use of terminal markets as a pricing basis seems likely to increase the tonnage of stocks accumulated during a recession, and, hence, to extend the duration of the recession. Whether this price-weakening factor outweighs the price-raising effect, described above, is not yet clear.

3.2 Terminal Market Trading and Commodity Price Volatility

The causal connection between the growth in terminal market turnover and commodity price volatility is one which works in both directions. The greater the price volatility, the stronger is the attraction of a commodity for speculators, who seek to profit from short term price movements. Therefore, the general increase in commodity price volatility over the past two decades has undoubtedly attracted a greater number of speculators to the terminal markets. Furthermore, greater price volatility makes the hedging of price uncertainty more important than ever, and, hence, boosts the volume of hedging undertaken by trade interests.

The causality also runs in the opposite direction, as Chapter V indicates. In addition to the widely acknowledged bandwagon effect that is common to most outbursts of speculation and the examples already given of foreign exchange induced speculation, the operational procedures of terminal markets act so as to exacerbate instability in the short run, as margin calls and stop-loss orders come into play. In the longer term, the impact of terminal market trading upon price volatility is less certain. On the one hand, those factors causing instability in the short run may be expected to have some repercussions over longer periods; but against this is the commonly presented view that the involvement of large numbers of speculators in a market increases the efficiency of the market, and thereby reduces price fluctuations. This view is considered in the next section.

3.3 Commodity Market Efficiency

In certain respects, the increase in terminal market trading has undoubtedly improved commodity market efficiency. By boosting the "density" of trading and adding to market liquidity, the market is inevitably able to function more smoothly, with negligible price movements required to buy or sell large tonnages of the commodity being traded. The growth of the involvement by financial institutions in financing commodity exchange stocks, through the so-called "cash and carry" transactions, has also helped to improve market efficiency by limiting the size of the contango - the spread between spot and forward quotations - to a maximum of that payable by a top quality borrower, able to obtain the most favourable terms on short term credit.

Against these benefits, there is only one potentially serious loss of market efficiency to be faced. This is the rise in the risk premium that may, by virtue of the increase in price volatility, be demanded on loans and investments in the production and consumption of the commodity in question. On balance, however, the gains appear most likely to outweigh the losses of efficiency.

3.4 Commodity Marketing Arrangements

The upsurge in terminal market trading has inevitably had some impact upon competing marketing systems. When commodity prices are weak, and an active futures market exists, terminal market quotations tend to be below the levels set under administered producer pricing arrangements, and so free market purchases grow at the expense of the volume sold at producer prices. When commodity prices are strong, however, and producer prices are are typically well below those ruling on the free market, there is a strong temptation for producers to break ranks and align their selling prices with free market quotations.

The dilemma facing those producers who have so far resisted the enticements of terminal markets, as an alternative means of pricing and marketing their output, is a difficult one. On the one hand, terminal markets provide facilities for hedging price risks; they also act as a market of last resort, and offer scope for reducing the costs of stock financing. Moreover, government intervention to control administered commodity prices during times of inflation has tended to reduce producers' ability to benefit from upturns in the market: by switching to a rival terminal market pricing basis, producers escape government controls and would be entitled to expect, on the evidence of historical data, a significant increase in the average price received for their product over the business cycle.

On the other hand, the adoption of a terminal market pricing basis deprives commodity producers of much of their power to influence short and medium term movements in price. As we have seen, an acceptance of terminal market prices also implies an acceptance of the destabilisation of prices in the short term by foreign exchange speculation, by practices such as stop-loss trading, and by shifts in the portfolio preferences of financial institutions. In effect, the acceptance of terminal markets as a basis of trading implies an acceptance of the new found role of commodities as a financial instrument, offering benefits in the form of liquidity and the prospect of capital gain, but reducing the importance of underlying real factors - e.g. supply and demand.

Other disadvantages of terminal market pricing systems are less readily appreciated, and take some time to emerge. The most important is the way in which terminal markets, by absorbing and financing surplus stocks from the market, remove a good deal of the pressure upon producers to reduce output during a downturn in demand. When demand weakens, a producer operating an administered price system experiences a build-up of his stocks. If the weakness persists, producers burdened with large and growing stocks, which they have to finance themselves, eventually act to halt the increase in stocks by reducing production. Thus, a producer pricing system adds the pressure of stock financing to the problem of low prices at times of weakness, and ensures a fairly prompt response by producers to a downturn in demand.

By contrast, the pressures brought to bear upon producers using terminal market prices during a period of weakness are restricted to those caused directly by low prices. An increase in producer stocks is much less of a factor, because producers can deliver surplus stocks onto a terminal market. Accordingly, the accumulation of stocks during a recession tends to be much greater under a terminal market pricing basis than under a producer pricing system, and the duration of the recession is extended correspondingly. In the case of copper, the growth of a terminal market pricing basis was undoubtedly a very important factor behind the increase in LME stocks after the 1974/5 recession, to a level over five times greater than that experienced in any previous; and these stocks overshadowed and depressed the LME price until 1979.

The bias towards excessive stock accumulation is not the only way in which terminal markets are suspected of working against the interests of producers. Terminal markets are also believed to make it harder for producers to work in concert to stabilise prices. Defending a floor price is no harder in a terminal market than in any other, since there is only a finite surplus stock of the commodity to be bought and taken off the market.

The problem of futures trading is that such trading makes it much harder to defend a ceiling price. If a commodity's price looks capable of breaking through a price ceiling, there is a virtually limitless amount of money that can be mobilised by speculators (whose buying power is increased by the use of margins in futures trading) to defeat the attempts of producers to keep the price within reasonable bounds.

The picture that emerges can, therefore, be seen to be a confusing one. Terminal markets, with a combination of the stick and the carrot, are certain to make further inroads into areas now dominated by administered producer pricing systems, but by allowing this to happen, producers are renouncing much of their ability to influence and control prices. What is potentially more serious from their point of view is the apparent tendency of a pricing system based upon terminal markets to deepen and prolong a downturn in commodity prices.

Against this, one must acknowledge the benefits that an increasing use of terminal markets (together with the concommitant growth in speculative trading) bring to producers and consumers, in the form of hedging facilities and ready access to stock financing opportunities. Whether the long run interests of producers and consumers are best served by the shift from the combination of advantages and disadvantages embodied in administered producer pricing systems to the combination contained in a terminal market basis of pricing is, unfortunately, still unclear.