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THE PROS AND CONS OF FUTURES TRADING FOR WOOLGROWERS*

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The purpose of this report is to discuss the advantages and disadvantages accruing to woolgrowers of *using* the Sydney Greasy Wool Futures Market. No reference will be made to the general advisability of having such a market. The discussion proceeds on the basis that a Futures Market has now been established and the question to be examined is how far growers can use it to advantage.

The report will proceed in three stages. The first section will discuss under what conditions a woolgrower is likely to find futures trading of value. This will be followed by a hypothetical example of how a grower would use the market. It will be shown that the usefulness of futures depends on the degree of correspondence between movements in auction prices and movements in futures prices. The second section examines how close this correspondence is likely to be in practice. The third section discusses the mechanics of using the market—in other words, the technical points about futures which a grower needs to consider, how he would go about trading in futures, and the costs involved.

1. THE USE OF THE MARKET—A HYPOTHETICAL EXAMPLE

Under the auction system a woolgrower is precluded from offering his clip for sale when prices seem satisfactory to him. After shearing, wool is sent to the broker's store, where each grower has to wait his turn until his wool comes up for sale. While he may delay selling if the market happens to be low, it is usually not possible for a grower to specify a date when his wool should be offered or re-offered. During the period between shearing and the disposal of the clip, wool prices may change markedly. Such changes sometimes cause great hardship and may also make the planning of farm operations and expenditure on improvements for the coming year difficult. The interval between shearing and the auctioning of a grower's clip varies, but will usually be three months or more. During this period the grower owns a large quantity of wool and will watch movements of wool prices without being able to do anything about them. In

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theory the futures market provides the grower with a means of ensuring a definite price for his clip if at any time during this period he would regard the then ruling *futures* price as satisfactory. If the grower regards the price say, at shearing, as satisfactory, he could enter into a futures contract which, ideally, would guarantee him this price when his wool came up for auction. In other words, the grower would forsake any possible gains from a subsequent rise in wool prices in exchange for protection against a fall in wool prices below ruling futures levels.

It may be desirable to give an example of how a futures transaction would neutralize any changes in prices which take place *after* the grower has entered into such a transaction.¹ Suppose a grower has a clip of 10,000 lb. of greasy Merino wool (say 33 bales of 303 lb. each) which he has shorn in September and expects to be auctioned in December. Let us also suppose that at the time of shearing the price of 64's average Merino wool is quoted by the Australian Wool Bureau at 120d. per lb. clean, that January or March futures are quoted at 120d. per lb. clean, and that the grower's clip yields 60 per cent—in other words that he owns the greasy equivalent of 6,000 lb. of clean wool.

If a grower sells two January (or March) futures contracts he undertakes to deliver the greasy equivalent of 6,000 *clean* lb. of 64's average style wool in January (or March), for which he would then receive 120d. per lb. (or £3,000 for two contracts). Let us say that in December, when he sells his wool, the price of 64's average Merino wool has fallen by 10 per cent to 108d. In this case he will obtain £2,700 for his wool at the auction sale. But at the same time he will buy back his futures contracts—which over this same period will also have fallen by the same amount. He will therefore be able to buy back his futures contract for a smaller amount—namely, £2,700—than the amount at which he originally sold the contract and will receive the *balance* of £300 from his futures broker on completion of the futures transaction. He will therefore have succeeded in obtaining that price for his wool which corresponded to the price ruling at the time of shearing. (A deduction of £27 for brokerage and clearing house fees for two futures contracts has not been included in this calculation. It would therefore be more accurate to say that the grower receives £2,973.) Conversely, if prices had risen by 10 per cent above September levels, the grower would receive £3,300 for his wool at auction, but he would lose £300 when he bought his futures back. (In addition he would have to pay brokerage).

As will become clear in the subsequent discussion, this is a rather simplified account of the calculations the grower has to make and of the transaction itself. The purpose of this oversimplification at this stage is to focus attention on two important features of a futures transaction. These are:

- (i) A futures transaction cannot be used to “sell” the grower's wool. Under the rules of the Sydney Greasy Wool Futures Exchange wool cannot be delivered to finalize a futures contract unless it has first been sold at auction. In other words, growers cannot use the Futures Market as an alternative method of disposing of their clip.

¹ This example has been adapted—with minor modifications—from a booklet published by the Sydney Greasy Wool Futures Exchange.

(This regulation is regarded as necessary for the efficient functioning of the Futures Market as the other operators in the market, such as manufacturers, merchants and speculators, do not necessarily want to contract to purchase the particular type of wool any individual grower has to offer. In most Futures Markets only a very small percentage of all contracts—normally less than 5 per cent—are finalized by delivery).

- (ii) The effectiveness of futures as an insurance for a woolgrower depends on the correspondence of movement between auction prices and futures prices. Obviously if futures prices had fallen by less than 10 per cent in the above example the grower would not have obtained his price of 120d. per lb. clean. (In the first part of the example the grower would have obtained less than £300 from the Futures Market; conversely, when prices were supposed to have risen, he would have lost less than £300 on the Futures Market.)

There are good reasons why auction prices of wool and wool futures prices should move in step. As long as there is a possibility of delivery, futures prices represent the market's estimate of the value of wool at the hypothetical delivery date. If this value should depart markedly from the existing auction prices, this will provide an incentive to processors to operate on whichever is the cheaper market at the moment. However, temporary influences can, and usually do, affect the degree of correspondence in the movement of these two sets of prices. It is only by an examination of the actual movements of prices in overseas Futures Markets over a period of years that one can gauge the likely correspondence in the movements of auction and futures prices.

2. THE CORRESPONDENCE BETWEEN AUCTION AND FUTURES PRICES

Three studies of the degree of correspondence between auction (or spot) prices and futures prices have been made in recent years. The first of these, by Gutman and Duffin of the Bureau of Agricultural Economics, Canberra, relates to the London Wool Top Futures Market for the period September, 1953, to May, 1955.² The second one, by Howell of the United States Department of Agriculture, relates to the New York Wool and Wool Top Futures Markets and covers the eight-year period 1947 to 1954.³ The last study was recently undertaken by the writer to provide more up-to-date information for this report. This study again uses data from the London Wool Top Futures Market for the period December, 1957, to March, 1960.

²G. O. Gutman and B. R. Duffin, "The London Wool Top Futures Market" *Quarterly Review of Agricultural Economics*, Bureau of Agricultural Economics, Canberra, Vol. VIII, No. 4 (October, 1955).

³L. D. Howell, "Price Risks for Wool and Wool Products and Means of Reducing Them", *Technical Bulletin*, No. 1163, United States Department of Agriculture, January, 1957.

The Gutman-Duffin study uses measures of price correspondence somewhat different from those used in the two subsequent examinations. As the Gutman-Duffin report is readily available in Australia to those interested in this subject, no attempt will be made here to explain their findings in detail. However, they summarize their results in the following words:—

“The discussion suggests that, during the 12 months or so since the middle of 1954, the [London Futures] Market has provided a fairly effective means of insurance against price fluctuations. The same was not the case during the initial period of its operation, perhaps due partly to ‘teething trouble’ and partly to the conditions prevalent on wool markets during the period.

“Merino wools can at present be hedged [*i.e.*, covered against price fluctuations] more safely than crossbred wools because of their close relation to 64’s B top prices. The erratic movements of crossbred prices (*vis-a-vis* Merino tops) over the period were, however, largely offset . . . [by unrelated movements in futures prices] . . ., with the result that hedges in crossbred wool (and products) were almost as successful as those in Merino wool and products.”

The results of the writer’s study and part of the results of Howell’s very detailed examination can be summarized in the form of a table giving the average change in auction (or spot) prices and futures prices over specified periods. The relevant information is given in Table 1.

TABLE 1

Average Changes in Auction Prices and Futures Prices

Data	Average Change in Prices	
	Auction (or Spot)	Futures
<i>When Prices Increased—</i>		
U.S. 1947-54, 16-week period	+ 14·0 cents	+ 17·8 cents
London 1958-60, 3-month period	+ 12·5 pence (Aust.)	+ 5·0 pence (Aust.)
<i>When Prices Declined:</i>		
U.S. 1947-54, 16-week period	— 23·2 cents	— 16·8 cents
London 1958-60, 3-month period	— 7·7 pence (Aust.)	— 9·3 pence (Aust.)

Source for U.S. Data: Table 17—Wool Top Futures Section, p. 48, *U.S.D.A. Technical Bulletin*, No. 1163.

London Data: Not published elsewhere, the comparison relates to futures with a delivery date of 1 to 2 months beyond the period of comparison and Australian auction prices of average 64’s clean basis.

Thus in the period covered by Howell, the average 16-week price increase of Boston clean wool was 14 cents (for those periods during 1947-54 when prices increased). During the same periods the average rise in New York Wool Top Futures prices was 17.8 cents. When prices fell, the average drop was 23.2 cents (again for 16-week periods), whilst futures prices declined by an average of 16.8 cents.

An "average" grower operating consistently on these markets would therefore have lost more than his total gains when prices were rising. Although he would have escaped over 70 per cent of his losses when prices were declining, he would, on balance, have been somewhat worse off than if he had not entered into any futures transactions at all. (This is apart from the brokerage cost of futures, not taken into account above. However, the brokerage costs during this period were less than $\frac{1}{2}$ cent. per lb.) If price rises had been as frequent as price falls, the average net loss would have been 4.7 cents or 2.5 per cent of the average clean value of wool during these years.

The figures for the London market during the last 2 $\frac{1}{4}$ years show that an "average" grower would have benefited from futures trading. Thus, over this period the average auction price rise (for 3-month intervals) was 12.5 pence (Australian), whereas the average futures rise was only 5 pence (Australian). In other words, of the gain of 12 $\frac{1}{2}$ pence an average grower would have lost only 5 pence in the futures operation; on the other hand, he would have gained 9.3 pence on the average on futures trading when auction prices declined, even though the average price decline in the auction market was only 7.7 pence.

For reasons which would take us somewhat too far from our main interest here, one would expect that growers operating on a futures market would tend to lose more than they gained—in the long run. To put it differently, the experiences shown by the U.S. study are probably more typical than those revealed by the writer's examination. However, the basic purpose of trading in futures for growers is to limit their losses rather than to make money, on balance. Both studies show that, *on the average*, future prices tended to decline when auction prices did. In other words, growers would, by and large, have escaped part or all of their losses when auction prices fell during the period between shearing and the sale of the clip.

Averages of this kind, however, need not always apply in individual cases. To obtain an indication of the likelihood of a grower being able to cover himself on the futures market when he would have made large losses on the auction market, an examination was made of the behaviour of futures prices during those periods when auction prices fell substantially over a three-month period. (A "substantial" auction price fall was defined as 6d. or more in the case of the writer's data and 10 cents or more in the case of Howell's data.) The relevant figures are presented below in the form of a table.

There were seventeen occasions during 1958-60 when Australian wool prices declined by more than 6d. over a period of three months. A futures transaction at these times would have enabled a grower to gain more than he would have lost at auctions on ten of the seventeen occasions (or nine when brokerage costs are taken into account). In thirteen cases more than 75 per cent of the loss could have been recouped, and in sixteen out of seventeen cases more than 50 per cent. In the case of the U.S. data the experience is distinctly less favourable. In only seven out of thirteen cases would the grower have recouped more than 75 per cent of his losses, and in four out of the thirteen cases he would either have gained nothing or even lost on his futures transaction. It will be seen, therefore, that, in individual cases, little or no protection from price

declines may be obtained from the Futures Market. However, the more typical experience is that growers would have offset at least part of their losses on current prices by using futures.

TABLE 2

Gain on Futures Trading When Current Prices Declined (By 6d. or More or by 10 Cents or More respectively)

Gain on Futures as Per Cent. of Loss on Current Price	London 1958-60 No.	U.S. 1947-54 No.
More than 100 Per Cent of Loss	10 (9)	4
75 Per Cent—100 Per Cent	3 (4)	3
50 Per Cent—75 Per Cent	3 (2)	1
Less than 50 Per Cent	1 (2)	1
Substantially Zero*	3
Loss on Futures	1
Total Number of Comparisons	17	13

* Less than 1 cent either way.

Both comparisons relate to periods of three months. For the U.S. the comparison is between spot prices of wool and wool futures. (Data from Table No. 38, Appendix, *Technical Bulletin*, No. 1163.) For London the comparison is between Australian auction prices of 64's average and London Wool Top Futures.

The figures in brackets for London 1958-60 take brokerage costs into account—at the level fixed by the Sydney Greasy Wool Futures Exchange.

TABLE 3

Losses on Futures Trading When Current Prices Rose (By 6d. or More or By 10 Cents or More respectively)

Loss on Futures as Per Cent. of Gain on Current Price	London 1958-60 No.	U.S. 1947-54 No.
More than 100 Per Cent of Gain	8
75 Per Cent—100 Per Cent	2 (2)	3
50 Per Cent—75 Per Cent	7 (9)	1
Less than 50 Per Cent	5 (3)	2
Total Number of Comparisons	14	14

For explanation and sources see footnotes to Table 2.

It may be asked why this discrepancy exists between the 1947-54 data and the later figures—and, perhaps more importantly, whether there is any way in which growers can know before entering into a futures transaction how effective the protection of a sale of futures contracts is likely to be. To a limited extent, it is possible to estimate in advance whether a futures transaction is likely to be effective in limiting losses. When prices of futures contracts are unusually high in relation to current wool prices,

conditions are relatively favourable for the sale of futures. Under such conditions, it is reasonable to expect that prices of futures contracts would advance less or decline more than current prices.⁴ One reason why "futures insurance" would have worked better during 1958-60 in London than during 1947-54 in the U.S. is that futures prices were relatively higher (as compared with current prices) during this latter period.

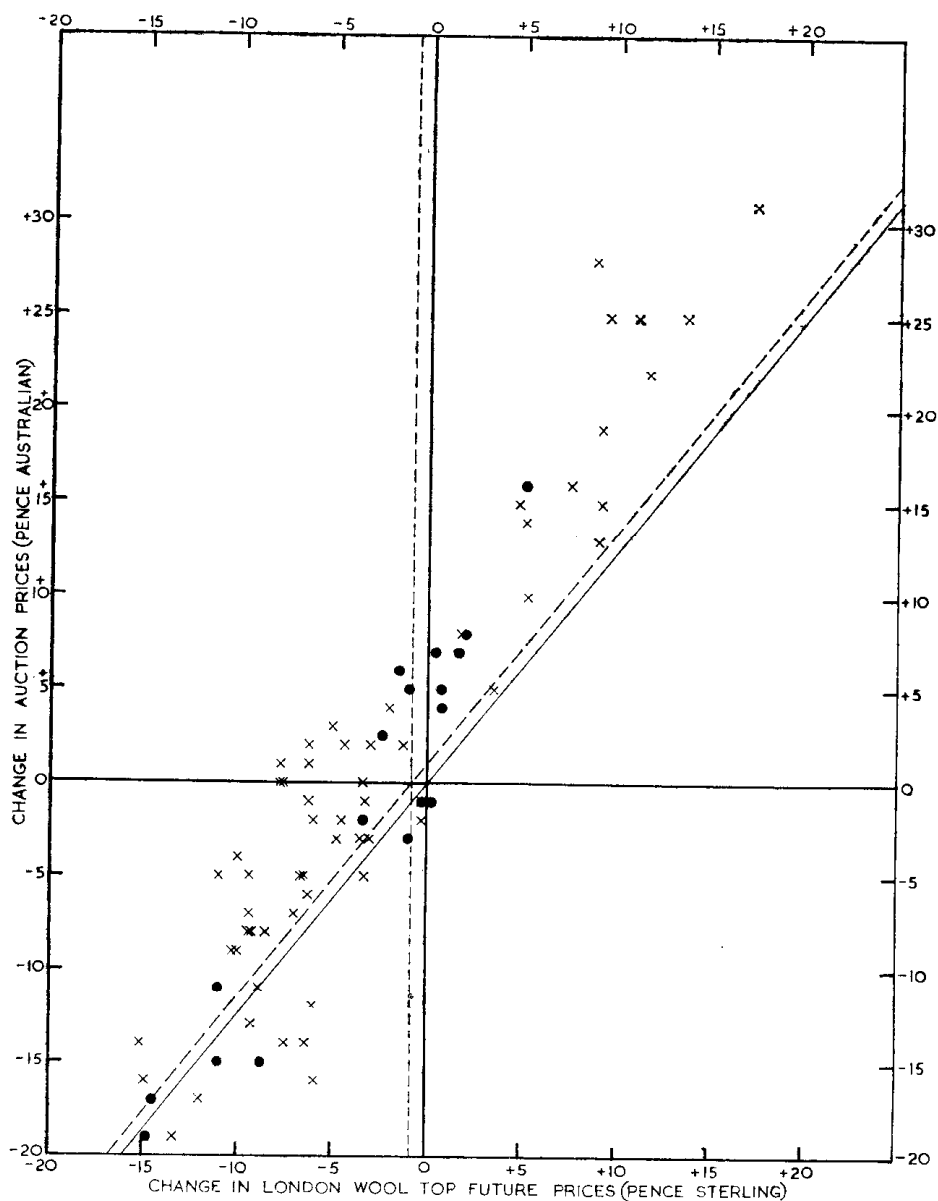


Fig. 1: Comparison of Changes in Auction and Futures Prices.

⁴ But in such a case, when the market expects wool prices to rise growers might not be particularly interested in protection against lower prices.

Before concluding this examination of the movement between these two sets of prices, it may be of interest to present figures showing the losses on futures trading when current prices rose. The relevant information is given in Table 3.

Alternatively the effect of futures trading can be represented by means of graphs. In Fig. 1 changes in futures prices in London during 1958-60 are plotted against changes in Australian Auction prices. For instance the cross in the most north-easterly position in Fig. 1 represents the two price changes during the three months following January 22nd, 1959. During the week of January 22nd, 1959, the Australian Wool Bureau's quotation for average 64's was 85 pence (Australian). During the week ended April 23rd 1959, the corresponding price quotation was 116 pence. Over this three months period—when 64's average auction prices rose by 31 pence (Australian)—the price of July London Wool Top Futures rose from $89\frac{3}{8}$ pence (sterling) to $106\frac{5}{8}$ pence—i.e. a rise of $17\frac{1}{4}$ pence (sterling). Similarly other crosses represent the two price changes for other three months periods December, 1957, and March, 1960. The dots in Fig. 1 relate to five months comparisons. (Such comparisons were made for those periods where—because of the intermittent wool selling season—three monthly comparisons were not available.)

If futures were a perfect insurance against changes in auction prices all the crosses and dots would lie on one line. If the per lb. movement in wool top futures were equal to the per lb. movement in auction prices all crosses and dots would lie on the thin diagonal line in Fig. 1. An inspection of Fig. 1 shows that while there is a considerable scatter of crosses and dots, changes in futures and auction prices are generally in the same direction, thus enabling a grower to obtain some protection against price changes if he should want to use futures.

The number of crosses and dots in different quarters of the graph provide a method of comparing gains and losses on futures with gains and losses resulting from changes in auction prices. For the whole period there are a total of fifty-nine three-monthly and eighteen five-monthly comparisons. Of these, eleven crosses and three dots lie in or on the first quarter—i.e. where there was a rise in auction prices coupled with a fall in futures prices. In other words there were eleven occasions when a seller of futures could have gained both from the rise in auction prices and the fall in futures prices. On fifteen occasions (three-monthly comparisons) he would have lost on futures markets while he gained on auction markets, whilst on thirty-three occasions he would have gained on futures markets whilst losing on auction markets. These comparisons are given in more detail in Fig. 2. The upper figure in each quarter in Fig. 2 relates to three-monthly comparisons and the lower one to five-monthly periods. The figures given in brackets give the same comparison in each case after taking brokerage costs into account (at the levels charged by the Sydney Greasy Wool Exchange). Brokerage costs are represented graphically in Figs. 1 and 2 by the two dotted lines.

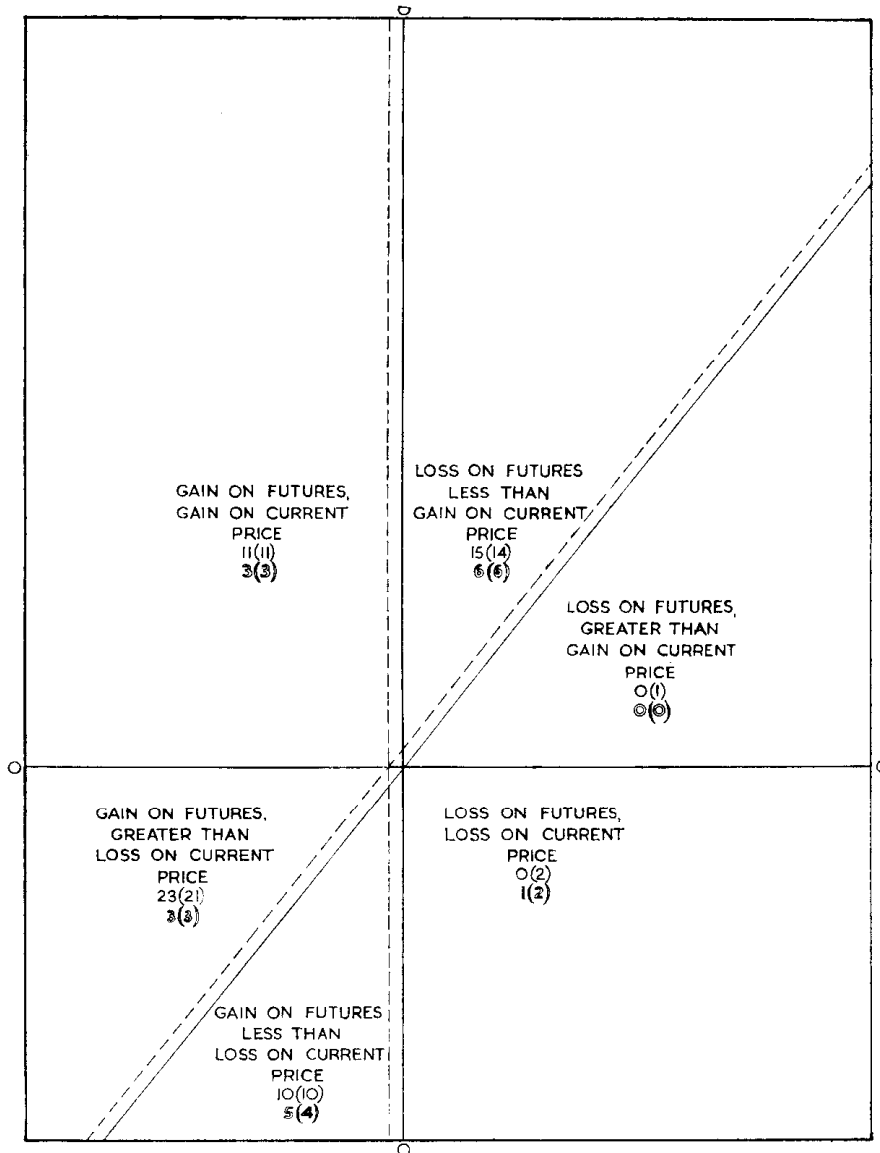


Fig. 2: Comparison of Changes in Auction and Futures Prices.

3. THE MECHANICS OF USING THE FUTURES MARKET

Before discussing how a grower would actually undertake a futures transaction certain technical problems should be mentioned. These are:

- (i) The unit for futures contracts is relatively large. A single contract is for 3,000 lb. of clean wool or roughly 5,000 lb. of greasy wool. A single grower cannot deal in smaller fractions than 5,000 lb. of greasy wool. (It should be mentioned, though, that the unit in overseas markets—geared mainly to the needs of processors—is considerably larger.)
- (ii) A grower who is thinking of using futures will obviously want to express the futures price at which he is considering selling in terms of the only price of direct economic significance to him—namely, the average greasy price he is prepared to accept for his

clip. To arrive at this greasy price from the futures price really involves two estimates—the clean yield of the clip and its average quality. Growers receive so much per lb. of greasy wool and in most cases would not know whether their different lines would average at the price of 60's wool or 64's. Nor would they know the clean yields of their clips. An efficient Futures Broker should be able to give them a reasonably reliable estimate on the basis of realizations in previous years (if the exact week of the previous sales is known). Alternatively, growers can make the necessary calculations themselves. The following example may be useful as an illustration. Table 4 gives the average greasy prices obtained from a Merino flock by a grower in the Canberra district during the last four years, the date of sale of each clip and the Australian Wool Bureau's 64's average clean quotation for that week.

TABLE 4
Greasy Prices Realized by a Merino Clip in Comparison with Australian Wool Bureau Clean Quotations

Date of Sale	Average Greasy Price	AWB 64's Average Quotation	Column 2 as Per Cent of Column 3
	Pence	Pence	Per Cent
8 March, 1960	65	109	59.7
9 March, 1959	56	91	61.5
13 February, 1958	71	127	55.6
5 April, 1957	94	162	58.2

As shown in the last column of Table 4, the average greasy price for his particular clip fluctuated between 58 and 61½ per cent of the 64's average clean quotation for the relevant weeks (excepting the financial year 1957-58, which was a drought year in the district when the shorter staple of the fleece and a smaller than average clean yield probably affected the figures). This grower could probably count on obtaining, on the average, between 58 per cent and 61½ per cent of a given futures price in non-drought years. The point to be stressed here is that this gap between greasy and futures prices introduces another possible source of error into the grower's calculations.

- (iii) The degree of insurance obtainable by growers will depend on the type of wool they produce. The market is geared to an average 64's quality. As the prices of some of the coarser wools will not always bear the same relation to prices of average 64's, the degree of insurance obtainable by producers of crossbred wools is reduced. On the other hand, both Howell's and Gutman's data suggest that the degree of insurance actually obtained by producers of coarser wools differed little from that obtained by producers of finer wools.
- (iv) In the simplified example used in the first section, it was assumed that the current average 64's auction price was equal to the quoted futures price. Usually there will be some discrepancy between

these two prices and more often than not the futures price will be below rather than above the present auction price. Under these conditions, the price which the grower can expect to approximate if he uses futures is the futures price and not the auction price.

- (v) In the example used above it was suggested that the grower should sell a January or March Future rather than a December Future, even though he expects to sell his clip (and buy back his future) in December. There are two reasons for preferring a later Future. Firstly, there is always a chance that wool sales will be delayed. Secondly, the movement of futures prices in the delivery month (i.e., for December Futures, December is the delivery month) is sometimes erratic and may be unduly influenced by strictly temporary supply conditions for deliverable types, which may not be reflected in auction prices.
- (vi) A grower need not, of course, wait until shearing time to sell futures. Possibly he may find prices attractive before shearing time and may want to undertake a futures transaction earlier. However, in this case he will incur certain additional risks as he will not know precisely how big his clip is going to be. On the other hand, if he intends to cover himself on the Futures Market for only part of his clip, it may be advisable to watch futures prices at an earlier time.

No reference has been made in any comment so far to the possibility that a grower might want to buy futures in the first instance rather than sell them. The reason for this avoidance is that there would seem to be little justification for a grower to purchase futures unless he wants to speculate on a rise in wool prices. While growers have the same opportunities as any other persons to speculate on the market, it should be realized clearly that in this case they increase their risks from price fluctuations, whereas, when they own a given amount of wool and undertake to sell a contract, they do this to reduce their risks.

Apart from the problems referred to above, the actual process of entering into a futures transaction for a woolgrower is relatively simple. Suppose a grower decides, after examining futures prices and relating them to his own equivalent greasy prices (probably with the help of his wool broker or his futures broker), that he wants to sell a certain number of futures contracts. In this case he will instruct either a Floor Member of the Sydney Greasy Wool Futures Exchange or an Associate Member of the Exchange (most wool-broking houses have become Associate Members) to sell a given number of futures contracts at a certain price. Once he enters into such a contract he will have to pay £12 brokerage per contract (i.e., £6 when he sells and another £6 when he buys his contract back again) and a clearing house fee of £1 10s. 0d. per contract (15s. 0d. when he sells and 15s. 0d. when he buys back). In addition, he has to lodge £100 per contract with his broker as a form of security that he will be able to fulfil his futures transaction if the futures price should move against him. (The clearing house pays interest on this money at the rate of 2 per cent per annum during the period it is lodged as deposit.) The last financial obligation incurred by the grower—and in many respects the one that seems, at least at first sight, the most forbidding—is that the broker will call on the grower to supply additional money (called “margin”)

during the course of the futures transaction if the price of futures moves against the grower. Thus, reverting to our first example, if a grower had sold two January Futures contracts in September, he would receive periodical requests for additional margin if futures prices rose after the sale of these contracts. For each penny rise in futures prices, the broker would call for £12 10s. 0d. *per contract*. In as far as this price rise is reflected on the auction market, the money paid to the broker is a reflection of the increase in the value of the grower's clip in store. Whereas in most other transactions payment is delayed until the whole transaction is completed, in futures trading the grower will be called on to pay out money almost as soon as the futures market moves against him.

When the grower buys back his future, his broker will forward an account plus the net balance owing to the grower. (This will consist of the deposit, plus interest, plus any movement in futures prices in favour of the grower, minus the broker's commission, clearing house charges, any movement in futures prices against the grower which has not already been paid by way of margin.)

4. CONCLUSION

It will be seen from the above discussion that a futures transaction is relatively complex. Furthermore, the method of payment is unfamiliar. In fact a cynic might argue that the necessity for a deposit and the calling up of "margins" was ideally designed to scare customers away from futures rather than convince them of the value of this technique.⁵ In addition, a futures transaction will not unconditionally guarantee a grower a certain price. But it has been shown above that a large proportion of any losses resulting from a price decline between the time futures are sold and the time wool is sold could have been avoided—especially in the past two years—by the use of futures.

One reason why this complex procedure is necessary is that price risks differ in kind from the normal types of risks, such as fire, which can be insured against. A Futures Market is—in essence—an organization bringing together persons who want to escape or reduce opposing price risks. A grower selling futures contracts incurs a risk which, by and large, offsets his risk that the value of the wool he owns will decline.

Another way of looking at futures is to regard them as providing the grower with additional flexibility as to the time at which he sells his clip. A number of growers will probably find this feature of value if they become accustomed to the use of futures.

⁵ Compulsory deposits and margin calls are standard features of Futures Markets in overseas countries, so that it is hardly surprising that the Sydney Exchange has followed this world-wide practice.