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FUTURES MARKET OPPORTUNITIES FOR THE FIXED INTEREST MANAGER

Futures Markets in financial instruments, often referred to as "interest rate futures", are a relatively recent money market development both overseas and in Australia. They have been hailed by some as a panacea, permitting the shifting of all risks associated with interest rate fluctuations, and condemned by others as offering nothing that cannot be achieved with previously existing instruments. In fact the truth lies somewhere between these two extremes. In this paper I shall attempt to describe the role that interest rate futures may play in the Australian money market with particular emphasis on the uses to which they may be put by those involved in the market for fixed interest securities.

I should state at the outset, however, that the presently existing futures market, in 90 day bank bills, is probably of most value as an adjunct to the cash market in discount securities. Nevertheless the 90 day bank bill futures market does offer direct hedging opportunities for investors and borrowers in securities with a term to maturity of up to two years. Furthermore, projects with terms of, say, three to five years may be financed in part by issuing short term securities and the bill futures market may be of use in this area. In any event it is likely that the 1980's will see the introduction of futures markets in longer term instruments and I am confident that fixed interest managers will increasingly see futures as providing additional flexibility in financing decisions.

The Nature of a Futures Contract

Futures contracts are contracts calling for forward delivery. They are distinguished from other forward contracts by the following features:

- Futures contracts are highly standardized
- Futures contracts are traded in an open and competitive fashion according to the rules of an organized exchange
- All futures transactions are cleared by an independent clearing house

Each of these three elements is an important and necessary attribute of futures trading. Probably the least understood is the third and it is perhaps worthwhile briefly elaborating upon the role of the clearing house. When contracts are registered for clearing the clearing house essentially uses novation to substitute itself between market participants. At the same time it guarantees performance to the clearing member in whose name the contract is registered.

The result is that market risks and transaction costs are greatly reduced. The principal-to-principal element, as between market participants, is eliminated so that no one clearing member need concern himself with the financial condition of the other clearing member in a transaction. Furthermore offsetting of trades is greatly facilitated because it can be accomplished without having to deal with the party on the other side of the original transaction. The result is that the futures contract has evolved as an ideal instrument for the management of risks associated with price and interest rate movements and, not coincidentally, as a means of attracting speculative capital into the marketplace.

Before turning specific attention to interest rate futures

let me refer briefly to the question of deposits and margins. These are important because they are the principal means whereby the clearing house guarantees performance. They also have significant accounting and control ramifications, as we shall see later.

As a party in registering and guaranteeing all futures contracts the clearing house must ensure the ability of all clearing members to perform against their contract. By requiring that all clearing members lodge a deposit against their net contractual position and that they maintain it by meeting daily margin calls, the clearing house protects itself and thereby protects all who have contracts with it. Given the purpose of deposit and margin requirements, the appropriate deposit level must be geared to prospective price changes. It is for this reason that the clearing house sometimes increases deposit levels in times of increased price volatility.

Deposits are frequently interpreted as being a "down payment" on the value of the futures contract. In fact, however, there is no transfer of ownership in a futures contract – only an obligation to transfer ownership at a later date for full cash payment at the time of transfer. Thus a futures contract does not represent a credit transaction, in which the ownership of an asset is transferred. When it is appreciated that the deposit is not a "down payment" the apparently low level of deposit, typically around 8 to 10% of the contract value, becomes easier to understand. This figure roughly represents the maximum risk exposure to the clearing house between margin calls.

Interest Rate Futures

Interest rate futures are no different in principle to any other futures market. The deliverable instrument may either be a discount security, as is the case with the existing market in Sydney, or a coupon security. In both cases those who deal in the cash market securities or hold them in a portfolio are subject to the risks associated with interest rate changes. The futures market may be used as a means of *managing,* but usually not eliminating, these risks. Alternatively the futures market may be viewed as a means of increasing portfolio yield at a given level of risk.

Interest rate futures were introduced in the United States in October 1975 with trading in a mortgage based futures contract on the Chicago Board of Trade. Since then a variety of contracts have been introduced in the United States, the most successful being those in 90 day Treasury Bills and long term Treasury Bonds. In 1979 interest rate futures accounted for nearly one quarter of all futures trading in the United States.

The interest rate futures contract on the Sydney Futures Exchange which commenced trading October 1979, was the first such contract launched outside of the United States. It calls for delivery of bank accepted bills with a term to maturity of 85 to 95 days, but is commonly referred to as a "90-Day Bank Bill" contract. The price is quoted as an index, calculated as 100 minus the yield per annum. This means that when the price rises a long futures position increases in value, a convention which conforms to the practice in other commodity markets and in the stock market. If the money market practice of quoting prices directly in yield had been followed it was felt that the public investor, so important for the growth of an active futures market, might nor participate.

It is in fact difficult to judge the extent of public participation in the market at the moment. The extent of deliveries has been greater in the bill market, relative to its overall size, than is the case with other futures markets, suggesting that the public speculator is less important in that market. This also suggests that money market dealers are still tending to view the futures market as an alternative cash market instrument rather than as a pure risk management tool. It remains to be seen whether this will continue to be the case.

Overview of Potential Hedging Use of Interest Rate Futures

There are three major categories of potential hedging users of interest rate futures:

Capital Users
Capital Sources and
Market Intermediaries

Included amongst *capital users* are companies seeking funds for expansion and working capital, development and construction companies, together with institutions and semi-government bodies involved in capital formation.

The second category, *capital sources,* includes firms and institutions that are suppliers of capital funds. Examples would be insurance companies, superannuation funds and portfolio managers.

Market intermediaries include firms such as finance companies together with institutions such as building societies. It also covers those engaged in dealer-type activities such as the merchant banks. This last group is oriented towards trading and has substantial long and short cash market positions. They operate on narrow margins relative to the value of the cash items in which they deal, and hence have a greater incentive to hedge their exposure to interest rate fluctuations than do capital users or capital suppliers.

Futures markets provide a mechanism for firms and institutions borrowing, lending or dealing in capital funds to separate the "pricing" of their transactions from the actual cash transactions. Futures permit each to be done at different times. When the purpose is to protect against *adverse* movements in interest rates and thereby manage the firm's risk exposure, it is called hedging.

Let me give a simple example to illustrate how futures can be used to separate the time of *pricing* a cash market transaction from the time of the transaction itself. An

institution which borrows short term and lends long term might be concerned that interest rates will rise over the next six months.

A building society, for example, may be particularly concerned at this prospect because its lending rate may respond sluggishly to money market conditions. In anticipation of a rise in rates it could sell 90-day bill futures as a means of lowering the effective rate it pays on future cash inflows. In effect it is locking in today's interest rate on deposits it expects to receive in the next three to six months. As the depositors' funds flow in, and the anticipated higher interest rate is paid, the futures position can be closed out. Using the futures market in this way is often referred to as *anticipatory hedging.*

The mechanics of an anticipatory hedge can be illustrated as follows. Suppose that in July 1980, that a manufacturing company expects to have to issue $2 million of 90 day commercial bills in December. 90 day commercial bills are currently priced to yield 14.7% p.a. The company believes that interest rates will rise between now and December. On July 1, 1980 December bill futures are quoted at 89.25, reflecting a yield of 10.75%. Believing that short term interest rates in December will be higher than that reflected in the futures quote the company treasurer on July 1 sells 4 December bill futures contracts at 89.25. Suppose by early December the company treasurer's forecasts have been proven correct with 90 day bills yielding 12.5%. He closes out his futures position and at the same time issues 90 day commercial bills at 13.1%. The result of this hedging exercise is spelled out in Table 1. This example is a deliberately simple one, but it illustrates the risks associated with anticipatory trading as well as the potential benefits.

Three such risks should be emphasized

First, a futures position that successfully protects the firm against adverse movements in yields also means that the firm foregoes the benefits of *favourable* movements. There is a chance that interest rates will not move in the direction that the firm anticipates.

Second, the anticipatory hedging strategy may not be successful even when interest rates in general move in the anticipated direction. This is because of the *basis risk* that arises due to the fact that changes in the futures price seldom correspond exactly with changes in the cash instrument being hedged. An essential requirement of successful hedging is the analysis of price relationships; the decision to hedge means the firm is incurring a new risk (basis risk) in place of the initial risk of adverse movements in rates. In certain situations the new basis risk might be greater than the interest-level risk. In the preceding example the basis risk is that 90 day bank bill yields and 90 day commercial bills yields may be imperfectly correlated.

A third risk in anticipatory hedging arises from changes in the shape of the yield curve which arise when the maturity of the instrument being hedged does not coincide with the maturity of the future in which the hedge is placed. This risk, which could be viewed as a component of basis risk, is a very important consideration in interest rate futures. It would have arisen in our example if the firm had intended to issue 120 day commercial bills rather than 90 day commercial bills.

Anticipatory hedging of the type described above is to be distinguished from the other major form of hedging in interest rate futures known as *"cash and carry"*. Cash and carry operations are primarily carried out by dealers and are thus not of direct interest to fixed interest managers. Nevertheless they are an important element in the marketplace and any informed market participant needs to be aware of the underlying concept. All that is involved in the cash and carry operation is the purchase of a cash bill with a term to maturity of greater than 90 days and the simultaneous sale of the 90 bill future against which the cash bill could be delivered. The cash bill is then held until the futures contract expires and is delivered against the short futures position.

As a form of arbitrage between the cash and futures markets the cash and carry operation helps to keep the two markets in line.

The Bank Bill Futures Market: Alternative Hedging Strategies for The Fixed Interest Manager

The examples provided in the previous section might suggest that the 90 day maturity of the instrument deliverable against futures greatly restricts the usefulness of the futures market to the fixed interest manager. The basis risks may appear to be too great to warrant hedging. Certainly fixed interest hedging opportunities would be greater if there existed a longer term futures contract. Nevertheless the presently existing market does offer potential trading opportunities to the fixed interest manager.

a. As an adjunct to the use of 90 day securities as part of the regular management of fixed interest obligations.

b. As a means of constructing "synthetic" securities with terms of up to two years.

c. As a means of hedging against anticipated changes in the shape of a yield curve.

A. Adjunct to the use of cash instruments

Companies and institutions frequently find it convenient to use securities with maturities of less than one year in managing their fixed interest obligations. This is especially true in times of refinancing or restructuring of portfolios. Other organisations such as insurance companies and superannuation funds may have rather predictable cash inflows on which they may, from time to time,

choose to fix a short term yield prior to receipt of the funds. And I have already mentioned the case of building societies who may wish to protect interest rates on their short term borrowings. In these cases anticipatory hedging programs along the lines described above could be used to improve yields on portfolios or to reduce effective borrowing rates.

In each of these examples the crucial concept is that of *flexibility*. The futures market simply provides a means of "locking-in" a short term interest rate while the cash market position is being put together. It is for this reason that hedging has sometimes been defined as "a temporary substitute for a cash market position to be taken at a subsequent time".

B. Construction of "Synthetic" Securities

The time dimension of the futures contract actually provides hedging opportunitites beyond simple anticipatory hedging of 90 day obligations. Delivery months for the bill futures contract are the six nearby consecutive months and then the calendar quarters for the following eighteen months. Thus at present it is possible to buy or sell 90 day bill futures for March 1982 delivery, that is, calling for delivery of bills which mature in June 1982. As a result it is possible to construct "synthetic" securities with terms of up to two years by an appropriate futures trading strategy.

For example an institutional investor in June 1980 with funds to place for a two year term could buy a 90 day bank bill in the cash market and take bought positions in the September 1980, December 1980, March 1981, June 1981, September 1981, December 1981 and March 1982 bill futures contracts. He will then be essentially rolling over his bill position each quarter, *but at a yield which is specified today.* The yield on this synthetic two year security can of course be compared with the currently quoted yield on two year cash market securities. Details are provided in Table 2.

The borrower of funds can also make use of this concept. Consider a corporate treasurer who in June 1980 expects that he will in the following September require $10 million for a one year period. Assuming he has a bill facility with one of the major banks which are approved acceptors for the futures contract he could sell 20 futures contracts for delivery in September 1980, December 1980, March 1981 and June 1981. He would then deliver bills against each sold futures position, thereby borrowing over the period September 1980 – September 1981 at a rate determined in June 1980.

In principle the notion of a longer term synthetic security considerably enhances the hedging potential of the bill futures contract as the basis risks can be more effectively managed.

In practice however the two examples just discussed are of course predicated on the assumption that the futures market is active and liquid. This is generally a prerequisite for the market to be useful to the hedger, who needs to feel confident that he can, if he desires, have orders executed at a price not much different to the current quotes. It is especially important to those whose hedging strategy involves simultaneously taking positions in several futures contracts, as is required in the construction of our synthetic securities. In this case the success of the overall strategy depends on executing each transaction at the right price. The question must be asked whether the futures market presently has the depth to facilitate this type of hedging use.

The growth in the Sydney interest rate futures market since its launching last October has been extremely encouraging. Typically, daily trading volume is in the range of 70 to 150 contracts. The open interest presently stands at around 1050 contracts. In the nearby months the market is quite liquid in the sense that the spread between bid and asked price is usually narrow, around 20 points. However in the more distant months the market could not at present be described as liquid. There tends to be little trading activity and the bid-asked spread may be as wide as 150 basis points. Under these circumstances it would not be possible to construct a synthetic two year bought position without substantial price effect which in itself could be the undoing of the overall strategy. However I do believe that this situation will change as dealers in the cash bill market increase their usage of the futures market and as public participation in the market increases.

While the thinness of the distant futures months presently makes it difficult to create synthetic two year securities the market is sufficiently active in the nearby months to enable six or nine month synthetic securities to be created. Thus a company treasurer considering issuing 180 day promissory notes and rolling them over rather than issuing, say, three year debentures, could make use of the bill futures market.

C. Hedging of anticipated yield curve changes

Suppose a company issues five year debentures, but, at the time of issuing, expects a significant drop in yields to occur. It could of course "hedge" against this possibility by deferring the debenture issue completely or by issuing commercial paper with a view to a subsequent issuing of debentures. Alternatively if it is expected that short term yields will decline by more than medium term yields the firm could issue the debentures and at the same time hedge against the yield decline by buying bill futures. If the anticipated shift in the yield curve takes place the profit on the bill futures position will actually exceed the capital loss on the issued debenture stock. This is an example of using an anticipated basis movement to the advantage of the hedger. As before the benefit of the futures market is simply that it provides another vehicle for fixed interest managers to consider. The futures hedge will not always be the best alternative but it will be on occasions. It is in this way that the futures market offers

the fixed interest manager, and other hedgers, the possibility of increased yields on their portfolios.

Corporate Liability: Accounting Control and Taxation Aspects

We have now seen in general terms how interest rate futures can be employed to lock-in current market rates in anticipation of adverse interest rate movements. I have already pointed out that the cost of hedging in this way is that the hedger does not benefit from unanticipated favourable interest rate movements. But the great danger in talking about hedging in terms of "locking-in" an interest rate is that it sounds as though the matter is closed once the hedge is executed. Nothing could be further from the truth.

Futures contracts, unlike options, are *commitments*. The way in which the Exchange and the Clearing House ensure that everyone with an open futures position can fulfil their obligation is by way of deposits and margins. If the market moves in a way unfavourable to the futures position a margin call will be issued to the holder of that position which must be met in cash. Thus, if the market moves in the opposite way to that anticipated, the hedger foregoes the benefit on his cash market position, and he is required to bring his futures market losses to account immediately. If the cash market position being hedged is an anticipated rather than an existing one, the hedger may find himself in the situation of having to make margin payments and, in the accounting sense, having neither a realised nor unrealised offsetting profit on a cash market position. For this reason it is imperative that a firm's senior management and auditors, as well as its financial trading staff, have a clear understanding of the nature of hedging in futures prior to initiating a hedging program. At the same time appropriate internal control procedures should be established, especially because of the very high degree of leverage associated with a futures contract.

A related point is that companies and institutions who use futures to hedge fixed interest obligations must devise accounting systems which accurately describe the nature of the hedging transaction and the purpose for which it is undertaken. I am not aware that the accounting profession has yet formally addressed itself to this question, althought the June 1980 issue of the Chartered Accountant in Australia indicates that a start is being made in this direction.

Finally, the taxation implications of hedging in interest rate futures remain unclear, especially in the case where the futures transaction and offsetting cash market transaction occur in different financial years.

The Coming Decade

I find it difficult not to be optimistic about the future for interest rate futures in Australia in the 1980's. The global move amongst monetary authorities in recent years to

TABLE 1

Simple Anticipatory Hedge Calculations

July		
90 day commercial paper yield		14.7%
90 day bank bills yield		14.1%
90 day bank bills for December delivery quoted on Sydney Futures Exchange to yield		10.75%
Sell 4 December futures contracts on July 1 at 10.75%	Value	$1,948,355.24
December		
90 day commercial paper (hypothetically) yield		13.1%
90 day bank bills yield		12.5%
Buy 4 December futures contracts on December 1 at 12.5%	Value	$1,940,199.34
Profit on Futures		$ 8,155.90
Less Commission		221.60
Net Profit on futures		$ 7,934.30

The net profit on futures can be applied to the cost of funds actually applied to the cost of funds actually raised, giving an effective rate of interest on borrowed funds of approximately 11.35%.

focus on monetary aggregates and to allow more adjustment to occur in interest rates seems likely to continue and Australia will not be able to insulate itself completely from the resulting worldwide interest rate fluctuations. As a result we shall inevitably see a growth in the existing bill futures market.

It is also likely that we shall see the introduction of a second interest rate contract based on a security of longer term, say two to four years. While the Sydney Futures Exchange has no such proposal under active consideration at the moment I do believe that as the existing market becomes more actively used and better understood there will be strong hedging demand for a longer term contract. In any event I feel confident in the prediction that interest rate futures are here to stay and that they will prove to be a valuable tool for both fixed interest managers and money market dealers.

TABLE 2

Constructing a Long Position in a 1 Year Synthetic Security using 90 Day Bank Bill Futures, 13 June 1980

Buy $1 million cash bills yielding	13.75%
Buy 2 September 1980 bill futures yielding	11.70%
Buy 2 December 1980 bill futures yielding	10.79%
Buy 2 March 1981 bill futures yielding	11.00%

$1 million is thus invested for the year commencing June 13, 1980 at an effective yield of approximately 11.81%. This calculation ignores commission and delivery costs.

N.B. Above calculation based on closing seller prices on Sydney Futures Exchange on June 13, 1980.

This announcement appears as a matter of record only.

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