

Chapter 24

INTEREST RATE RISK MANAGEMENT

1. Introduction

In this chapter we will consider the nature of interest rate risk and ways in which this risk can be managed.

Note that throughout this chapter we will be considering a company wishing to borrow money. All of the techniques dealt with are equally available for a company wishing to deposit money.

2. The nature of interest rate risk

Interest rates on borrowing have fluctuated greatly over the past. Companies can borrow money at either floating interest rates or at fixed interest rates. If they have floating rate borrowing, then clearly they are subject to the risk of future interest rate changes. We will consider the possible advantages and disadvantages of this form of borrowing later.

However, more important for the examination is fixed interest borrowing. It would appear that this carries no risk in that any later changes in the interest rate are irrelevant. However, there can still be a problem which is illustrated below.

Illustration

It is now 1 June. A company has decided that they will wish to take out a loan of \$100,000 for six months, starting in 3 months time on 1 September.

If they were to take the loan today then the rate of interest that they would be charged is 10% p.a. (fixed).

The problem is that they are not taking the loan today but in 3 months time. If they do nothing then there is a risk that by the time they actually take the loan the rate of interest will have changed.

The risk that we are concerned about is therefore the risk of interest rates changing between now and the date the loan starts (not the risk of interest rates changing after the start of the loan – the loan will be taken at a fixed rate).



3. Methods of managing interest rate risk

The methods with which you must be familiar for the examination are the following:

- (a) forward rate agreements
- (b) interest rate guarantees
- (c) interest rate futures
- (d) interest rate options

The above are all ways of managing the risk involved with fixed interest borrowing, and will be dealt with in this chapter.

In addition you must be familiar with swaps which are rather different.

4. Forward rate agreements

A forward rate agreement (FRA) is the fixing of an interest rate now to apply to a loan starting at a fixed future date.

It is an OTC (over-the-counter) transaction and effectively involves asking the bank to quote an interest rate now to apply to a specified amount of borrowing, for a specified period, the loan to start at a specified future date. Once the interest rate has been agreed, then if the actual rate at the start of the loan is any different the bank and the company will settle up for the difference.

4.1. Terminology

If we ask the bank to quote an FRA 3-9 on \$100,000 then it means that we want a fixed interest rate to be quoted for a loan of \$100,000 starting in 3 months time and ending in 9 months time (i.e. for a 6 month loan).

5. Interest Rate Guarantees

An interest rate guarantee (IRG) is an arrangement with the bank whereby the bank fix a maximum interest rate to be applied to a loan of a specified amount, for a specified period, starting on a specified future date.

It is effectively an option, in that if interest rates rise above the agreed rate then the company is protected whereas if interest rates should fall then the company gets all the benefit. Since the company can only benefit, and not lose, the bank will charge a premium for the IRG which is payable immediately, whether or not the option is eventually exercised.

It is an OTC instrument and can not be traded.



6. Interest rate futures

Interest rate futures operate in a similar way to currency futures in that they are instruments that change as interest rates change, that an investor can buy today and sell later (or sell today and buy later). At the end of the deal any profit or loss is calculated and settled between the investor and the dealer. A company intending to borrow money on a future date can leave the borrowing at risk but use a futures 'gamble' to create an opposite risk that will net off against the risk of the underlying transaction.

Interest rate futures are not quoted as actual interest rates, but as a number which is 100 – interest rate.

For example, a futures price of 92.00 is equivalent to an interest rate of 8% p.a.

Similarly, an interest rate of 12% p.a. has an equivalent future price of 88.00.

6.1. It is important to note two things.

Firstly, if a company is borrowing money, then they will suffer if interest rates rise between now and the date the loan will start. If interest rates do rise, then the futures price will fall. They need to make a profit from the future to cover against the increased interest, and the way in which they can make a profit from a falling futures price is to sell futures today and buy them back later at a lower price. **A borrower will always SELL futures.**

Secondly, the futures available are what are called 3 month futures. This means that any profit or loss is always calculated for 3 months even though the equivalent interest rate is quoted on a 12 month basis. This means that if the futures price changes by 2.00, this is equivalent to a change of 2% p.a., but any profit or loss is only calculated for a 3 month period and so will be 0.5% (2% divided by 4). This is always 3 months and has nothing to do with the length of the loan. It does however mean that we have to be careful to match the amount of the 'gamble' taking account of the length of the loan.

You will see how we deal with these two points in the following example. This example is intended to demonstrate how we use interest rate futures in a simple way.

Please note that you cannot be asked for any calculations in this exam.

Example 1

Today is 3 October, and interest rates are 8% p.a.. X plc will wish to borrow \$6M for 6 months starting on 1 January.

3 months January interest rate futures are available at 92.00.

Show how interest rate futures may be used to hedge the risk, and calculate the outcome on 1 January.

(Assume that on 1 January interest rates have changed to 10% and the futures price to 90.00)



6.2. Additional points:

- (a) Futures can only be dealt in contracts of fixed amounts.
- (b) In practice the change in futures prices will not exactly equate to the change in interest rates – the difference being the basis risk.
- (c) The previous two points mean that it is unlikely that we will end up with a perfect hedge.

7. Interest rate options

In section 5 of this chapter we looked at Interest Rate Guarantees, which are effectively options but are OTC.

Traded options are also available – these are traded which means that the premia payable are determined by market forces and therefore we can be more certain that we are paying a fair price.

The effect of them is (for borrowers) to limit the maximum interest payable.

8. Caps, Floors, and Collars

A borrower will use options to fix a maximum interest rate – we refer to a maximum rate as being an interest rate cap.

Similarly, a depositor will be interested in fixing a minimum interest rate, and could use options to do so. We refer to a minimum interest rate as an interest rate floor.

A collar is the name we give to the situation where we fix a maximum and a minimum interest rate. A borrower would achieve this by buying an interest rate cap, and selling (to a depositor) an interest rate floor.

The reason the borrower might do this is that they would have to pay a premium for the cap, but would receive a premium for the floor. In this way they end up paying a lower net premium but still having a cap (but in return, having to accept a floor).



9. Fixed or floating?

The advantage of fixed rate borrowing is that once the loan has been taken out, the interest payments are then certain and there is no risk due to future movements in interest rates.

However, a company may prefer to borrow at floating rate for two reasons:

- (a) they think that interest rates are going to fall and thus borrowing at floating rate will enable them to get the benefit of the fall (although clearly there is still a risk that they are wrong and that interest rates will rise)
- (b) more importantly, if they are in a type of business whose income rises and falls as interest rates rise and fall then it makes good sense to borrow at floating rate so that their expense falls as their income falls.

10. Interest rate swaps

Whether a company chooses to borrow fixed or floating, some companies can borrow at better rates than other companies depending on their credit rating.

Because of this, it is potentially (but not always) possible for two companies to swap their borrowings in a way that saves money for both of them.

This is illustrated in the following example:

Example 2

Company X can borrow at a fixed rate of 10% or at a floating rate of LIBOR + 3%.

Company Y can borrow at a fixed rate of 12% or at a floating rate of LIBOR + 6.5%.

Company X wishes to borrow at fixed rate, whereas company Y wishes to borrow at floating rate.

Show how a swap can benefit both companies.

Now read the following technical article available on the ACCA website:
"Hedging techniques for interest rate risk"

When you finished this chapter you should attempt the online F9 MCQ Test



