Managing the interest rate margin

When incoming interest payments are poorly matched in terms of amount or timing to interest liabilities a corporate faces potential problems. Permjit Singh identifies the different kinds of anomaly that can occur and, by invoking a case study, illustrates the means by which the dangers can be neutralised.

It is a fact of corporate life that for a company to achieve a positive return to its shareholders the return on its assets should exceed the cost of its liabilities. For many corporates – particularly those engaged in financial services – a major contributor to liability costs is the interest charge on debt. To some extent this may be mitigated by income from interest-earning assets.

In any event, the contrasting effects of the yield-curve on a company's interest-rate-sensitive assets and liabilities will eventually feed through to that ubiquitous barometer of financial performance, the profit and loss account. Not surprisingly, therefore, asset and liability management – specifically margin management – represents a key discipline of corporate treasury management and the maximisation of shareholder wealth.

The principles of margin management can be illustrated by identifying sources of interest rate risk in a company's asset and liability structure and reviewing the basic financial instruments commonly used to mitigate such risks. But before considering how to manage interest rate risk, its precise nature needs to be defined.

A review of market interest rates (such as Libor) over the recent past confirms the volatility of interest rates at which corporates borrow or invest money. A UK company that had taken the decision to lock in a fixed rate of interest for five years on its debt would find itself still paying 14% today, whereas its income may have fallen in line with subsequent interest rate reductions. Consequently, the company would have seen its profit margin gradually wittled away as subsequent reductions in income were not offset by corresponding reductions in costs. Interest rate (margin) risk therefore refers to the risk that changes in interest rates do not affect cashflows generated by assets and liabilities to the same extent – with the result that the profit margin (the difference between asset income and liability cost) is changed.

The absolute rates of interest receivable or payable and whether they are fixed or floating may largely be ignored as long as a constant margin between the cost of liabilities and income from assets is created and maintained. This is most readily observed in the residential mortgage sector, where building societies will borrow money from investors at a relatively low rate and on-lend it to home-buyers at a higher (mortgage) rate. The margin must be sufficiently wide to absorb operational costs and still leave a return to shareholders.

There are several types of interest rate risk and it is important to identify each before considering their individual management. Taking the building society example further, it is likely that the rate at which the building society takes deposits from investors will be based on investment rates generally available to investors. The rate at which the society lends mortgages will probably be based on mortgage rates. The building society runs the risk (to its profitability) that a change in investment rates will not be matched by a corresponding change in mortgage rates, as each is set on a different basis. This form of interest rate risk is the basis risk.

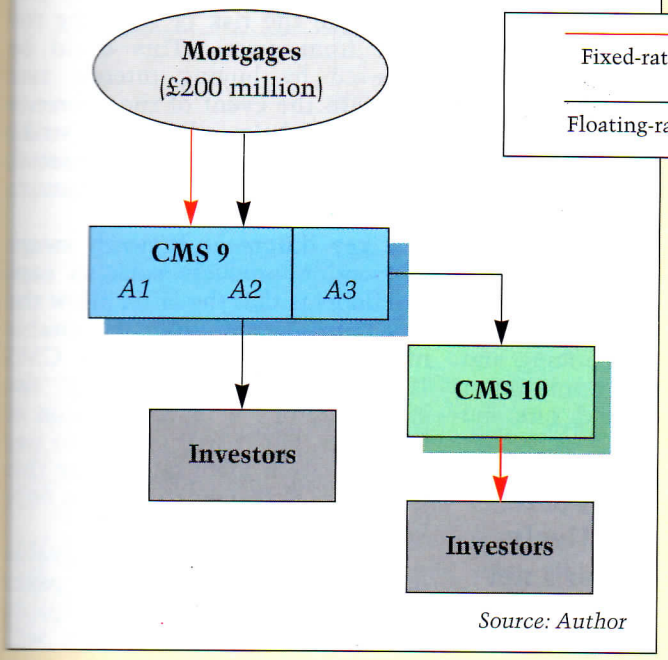
Even where interest rates on assets and liabilities are set on the same basis, it is possible that the rate will reset at different times. For example, assets may have their rate reset (repriced) each month based on three-month Libor, whereas the liabilities may reprice, still based on three-month Libor, each quarter. If, in a falling interest rate environment, assets reprice sooner than liabilities, the asset will generate a lower return, while the corresponding liabilities will continue to cost the same (higher) rate. The consequence is that the company's profit margin will diminish. This form of interest rate risk is the repricing risk.

A quite separate risk but one that is sometimes overlooked or not recognised as being distinct from interest rate risk is liquidity risk. Here the risk is that a company's liabilities may mature ahead of its assets, with the potentially disastrous consequence that the company cannot pay its liabilities when they fall due. In other words, there is a cashflow risk.

How interest rate risk is managed will depend on many factors, including:–

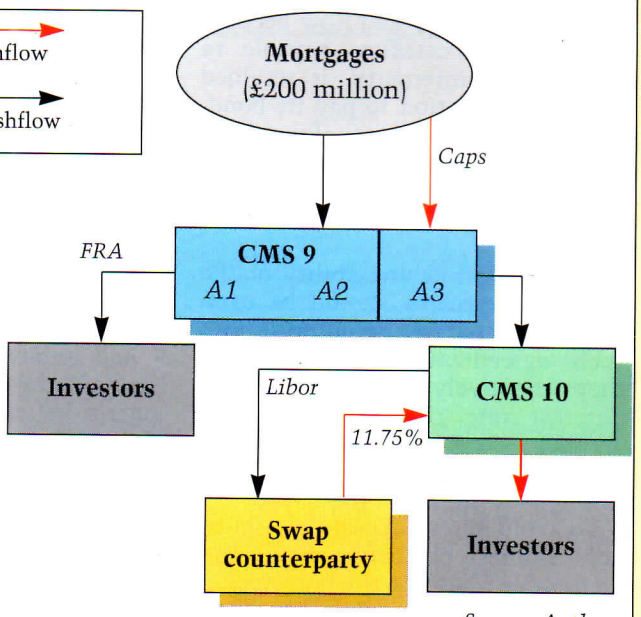
- The company's attitude to risk – that is, whether it is risk-averse and so locks in a margin on all its assets or is prepared to accept some risk in return for a (potentially) larger profit margin.
- The company's view on interest rates.
- The level of technical expertise available to the company to use financial instruments.
- The strategy adopted by competitors to manage interest rate risk.
- Legal/regulatory restrictions on the use of certain instruments.
- The nature of the company's assets and liabilities – for example, their relative sensitivities to interest rate movements and the rate at which they are turned over.
- The extent to which internal hedging methods can be used – for example, timing of receipts and pay-

Chart 1 – Case study cashflows before...



Source: Author

Chart 2 – ...and after hedging measures



Source: Author

ments or leading and lagging cashflows, cash concentration accounts or transfer pricing.

- The tax treatment of gains or losses on the financial instrument versus the underlying asset or liability.
- The severity of an adverse interest rate change on the company's profitability; if this is relatively low the company may opt to take a more bullish stance on hedging the risk.

The following case study illustrates some of the financial instruments commonly used to mitigate (hedge) interest rate risk. It is based on the securitisation process, in which a company issued floating-rate notes (FRNs) to investors, the floating rate of interest being based on three-month Libor and due each calender quarter. The FRNs were secured on a pool of assets (UK residential mortgages). Chart 1 illustrates the inter-relationship between the assets and liabilities and their cashflows before the introduction of interest rate risk management instruments (indicated in chart 2).

NHL plc, a centralised mortgage lender, decided to sell a portfolio of assets valued at £200 million ($302 million) in exchange for £200 million cash. The assets comprised numerous mortgages where the interest (receivable monthly) ranged from being fixed, variable (set by the mortgage lender) or capped (variable but subject to an agreed maximum rate). Not surprisingly, the assets generated an array of interest income streams monthly for the new owner of the assets, a company called CMS 9 plc.

To fund the acquisition, CMS 9 issued three FRNs totalling £200 million. FRNs A1 and A2 were sold to various investors, which may have included the ubiquitous Belgian dentist. FRN A3 totalled £100 million and was sold to a second company, CMS 10 plc. Like CMS 9, CMS 10 had no assets and so funded the purchase of FRN A3 by issuing its own bond. The bond paid a fixed rate of 11.75% annually and had a minimum term of five years. FRN A3 could not be cancelled for five years, but the other FRNs could be cancelled at any time.

CMS 10 had created interest rate risk in the form of repricing risk by acquiring an asset paying a floating rate of interest but which was funded by a liability costing a fixed rate of interest. CMS 9, conversely, paid a floating rate of interest on all its liabilities (FRNs) but received a fixed rate of income on that part of its assets paid by a fixed rate of interest.

CMS 9's margin would inevitably diminish if Libor increased, as there could be no corresponding increase in the interest received on its fixed-rate assets. A compensatory increase in the rate receivable on its floating-rate assets may also not be possible – for example, because of competitive pressures.

Both CMS 9 and CMS 10 therefore had interest rate re-pricing risk but, as we shall see, each was "neutralised" in a different manner.

Interest rate swaps

Interest rate swaps provide a means by which two counterparties agree to swap periodic cashflows – that is, interest. CMS 10 wished to receive a fixed rate of interest at 11.75% annually in order to meet its obligation to its bondholders. In return, CMS 10 could afford to pay the swap counterparty a floating rate of interest based on Libor, since the income it received from its FRN A3 assets was based on Libor.

As Libor, inevitably, rose and fell, CMS 10's Libor-based income (from FRN A3) and Libor-based outflow (swap) would rise and fall in parallel, thus maintaining the margin between its asset income and liability cost. It is essential that the reference rate on the asset and liability are identical, otherwise there is the risk – basis risk – that the rate receivable in any one period is less than that payable. Such an outcome could have occurred if CMS 10 received interest from FRN A3 based on a reference rate of three-month Libor but paid interest under the swap based on, say, six-month Libor or another reference rate such as the Treasury bill rate.

Periodic exchanges of interest cashflows continued until expiry of the interest rate swap – which was deliberately structured to coincide

with the expiry date of the bond (thereby removing re-pricing risk). It is important to note that although CMS 10's liability had now become the quarterly cashflow payable to the swap counterparty, it retained the legal obligation to pay its bondholders 11.75% annually, even though it had entered into an interest rate swap agreement to receive this amount from the swap counterparty.

The interest-paying ability of the swap counterparty should be carefully evaluated before entering into such agreements, since although they effectively remove one risk (interest rate risk) they open up another – credit risk. This new exposure will need to be monitored throughout the life of the swap.

To avoid potential cashflow shortfalls, interest payments should not be payable ahead of the corresponding interest receipt.

Interest rate caps

The approach used to neutralise the risk of a reduced or negative margin between the floating-rate payable on CMS 9's FRNs and the fixed-rate receivable on the fixed-rate portion of its mortgage assets involved the use of interest rate caps.

The purchase of such instruments effectively limits the purchaser's net interest cost to a pre-agreed rate of interest – called the strike rate – for any given period of time (for example, quarterly). In the case of CMS 9 the company had a continuing obligation to pay a floating rate of Libor. It wished to limit this cost, however, as the most it could pay was a rate of 10% (which we will assume was the fixed rate on £10 million of fixed-rate mortgages owned by CMS 9). CMS 9 therefore purchased caps valued at £10 million with a strike rate of 9%.

Each time CMS 9 set the Libor interest rate payable on its FRNs (quarterly) this would be compared to the cap strike rate. If at that time Libor exceeded the strike rate, the difference would be paid to CMS 9 by the cap-seller. The receipt would be timed to coincide with CMS 9's quarterly FRN payments to its noteholders.

CMS 9's income would therefore be supplemented to the extent by which Libor exceeded the agreed cap strike rate on each rate-setting date.

Had Libor, conversely, fallen below the cap strike rate of 9%, CMS 9 would be able to meet its Libor interest payment entirely from its own income, since it would have received 10% from the corresponding fixed-rate assets being hedged. No supplementary income would be received from the associated cap for that quarter. Comparisons between Libor and the cap strike rate continued each quarter throughout the life of the fixed-rate mortgages – that is, until they converted to a rate that could be set at CMS 9's discretion, in line with Libor, for example.

It is apparent therefore, that CMS 9 had removed both repricing and basis risk by locking in a minimum margin between the strike rate and the fixed-rate mortgage assets.

The purchase of such instruments effectively limits the purchaser's net interest cost to a pre-agreed rate of interest – called the strike rate – for any given period of time.

Buying interest rate caps can be likened to taking out an insurance contract: they will protect the buyer in the event that interest rates rise excessively, breaching a pre-agreed limit. There is, of course, a premium payable to the seller for such protection. Typically quoted as a percentage of the nominal amount of the cap, the premium is usually paid at the time of purchase as a one-off payment. The amount can be substantial and thus may cause a significant drain on cashflow – a potential disadvantage of caps compared to swaps, where there are no separate fees to pay.

The size of the premium depends partly on the time till expiry of the cap, the nominal amount of cover required, the strike rate chosen relative to current and forecast reference rates – the more this is below market rates, the more valuable it becomes and hence the greater the premium – and the volatility of the reference rate.

Pricing interest rate caps bought from banks and tailor-made to the buyer's requirements (over-the-counter products) is often a complex mathematical process but one that involves some subjectivity on the part of the seller. It is therefore advisable to seek several quotes from selling banks or brokers or to use options pricing software.

As well as limiting the interest cost on associated liabilities, one can hedge the risk of receiving too little from assets. This could be achieved by buying interest rate floors. In the event of the reference rate falling below the floor's strike rate, the buyer will be compensated, thereby achieving a minimum return on its assets.

A key difference between swaps and option products such as caps and floors is that the latter allow the buyer to benefit from favourable movements in interest rates. CMS 10 will never pay more than the strike rate of 9% on £10 million of liabilities, but it will be able to pay a lower rate if Libor falls below this rate, since it bought the option only to pay a maximum rate of 9%.

Where a fixed rate is payable under a swap, the fixed-rate payer cannot benefit from subsequent reductions in market rates – it will have to continue paying the relatively higher rate. The implications of this difference on margin management – where the asset being hedged yields a fixed rate – are that caps enable a wider margin to be earned as rates (payable on the associated liability) fall, whereas a constant margin continues to be earned when a swap has been used. This is illustrated in charts 3 and 4.

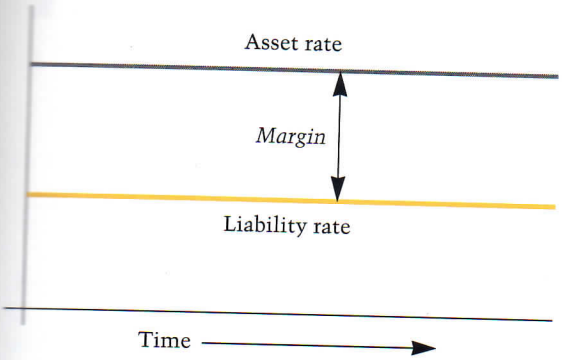
Forward rate agreements

So far, emphasis has been placed on margin management through the precise matching of cashflow streams of corresponding assets and liabilities in order to hedge repricing and basis risks.

Such perfect matching is not always achievable in practice due to the continual turnover of assets and/or liabilities, or the fact that the assets may not be as interest-rate sensitive as the liabilities. Consider a manufacturing company whose output is ball-bearings.

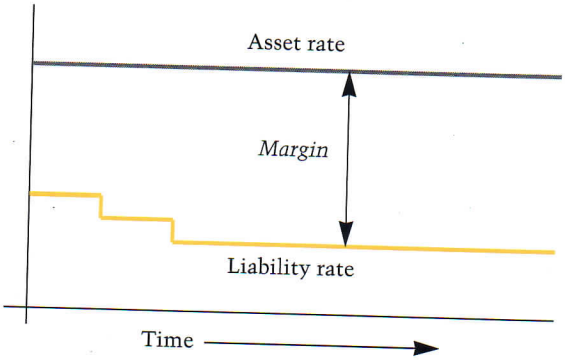
The income that the ball-bearings generate from sales is unlikely to rise or fall directly in line with market rates at which the company has borrowed to finance their production (basis risk). Even if sale prices could be revised, this would take time to work through. In the meantime the borrowing rate may have reset and there will be an immediate and direct effect on the liability side of the equation (re-pricing risk). The outcome is that the manufacturing company's net margin will rise or fall – it will become volatile.

Chart 3 – Interest rate swap



Source: Author

Chart 4 – Interest rate cap



Source: Author

Under such circumstances a company could pre-empt adverse changes in short-term interest rates by agreeing now a rate it wishes to pay during a future period by entering into a forward rate agreement (FRA). To protect against rates rising over the next three- to six-month period (during which the rate on debt may be set) a company could purchase a "threes versus six" FRA, thereby fixing now the rate the company will pay for three months, beginning in three months' time.

As with using other interest rate risk management instruments, buying or selling FRAs requires a conscious decision to be made on the likely movement in interest rates. Interest rate futures could also be used, although they introduce their own basis risk.

Conclusion

We have seen that a key objective of asset and liability management is the creation and maintenance of a positive margin. Where this is not possible from the base cashflows generated by the assets and liabilities, these can be effectively substituted by the introduction of new cashflows generated by specific instruments.

But while such a strategy can mitigate one risk (interest rate risk), it may expose the company to another, previously absent risk, such as counterparty (credit) risk. It is essential, therefore, before embarking on a chosen risk management strategy, to install effective control and administration systems, capable of producing the necessary information to assess the efficacy of the chosen strategy.

For many companies, particularly those engaged in financial services, their assets and liabilities will lend themselves to adopting increasingly sophisticated asset and liability strategies involving the use of techniques such as duration and convexity analysis, delta hedging and portfolio management. The underriding principle for most corporates remains nevertheless that of generating and maintaining a positive margin between assets and liabilities. ■