Special Report 2012/16

A realistic discount rate

As a result of the historically low level of interest rates and the resulting downward effect on pension funds' funding ratios, Dutch Minister Kamp recently announced plans to artificially increase the discount rate used by pension funds to value their liabilities. A similar measure has already been introduced in Sweden and Denmark. This Special Report investigates the current interest rate conditions and looks at the desirability of the proposed changes.

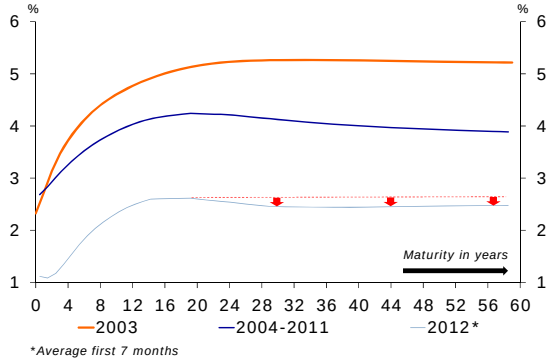
Market rates as a valuation tool

Since the introduction of the Financial Assessment Framework in 2007, pension funds have measured their liabilities against a so-called 'risk-free' interest rate. This rate is derived from the interbank market for interest rate swaps. Pension funds are thus required to discount their liabilities, which stretch decades into the future, to the present market value. Previously, a fixed discount rate of 4% was used for this purpose. However, the use of a risk-free interest rate is more appropriate given that most pension funds have implicitly guaranteed a nominal pension. Market interest rates moreover ensure consistency on both sides of the balance sheet, since pension funds also use mark-to-market (MtM) valuation for their assets.

Due to the fluctuations in interest rates, the introduction of market valuation has led to much greater volatility in pension fund funding ratios – the ratio between the present value of assets and the present value of liabilities. There has moreover been another notable development in recent years: interest rates have fallen sharply as a result of financial market stress and the low official ECB rate. Pension fund funding ratios have dropped significantly as a result. Most pension funds currently experience a funding shortfall, despite the fact that a large number of funds submitted recovery plans in 2008 in an attempt to restore their funding ratios to the required level. Now that most pension funds are falling behind their recovery plans they will have to curtail pension benefits and the accrued pension entitlements of employees if there is no change in policy. A number of the larger pension funds have recently issued a warning to this effect.

The low interest rate is not the only driving force behind the poor financial condition of pension funds, but it is the most important factor. The movement in the yield curve shows this development clearly. The yield curve is currently inverse, meaning that interest rates are lower at the long end of the yield curve (Figure 1). Theoretically speaking one would expect the exact opposite since long-term interest rates include higher inflation and risk premiums. The inverse yield curve is first of all the result of the unusual market conditions, but it is also due to the relatively limited supply of government bonds and interest rate swaps with long maturities at a time when demand for these instruments is high, especially because pension funds and insurers need to hedge their interest rate risk (Mensonides and Frijns, 2011).

Figure 1: Yield inversion makes its entrance



Source: DNB

The downward interest rate spiral

The move towards market valuation has brought pension fund risk management to the fore. Interest rate risk is one of the principal

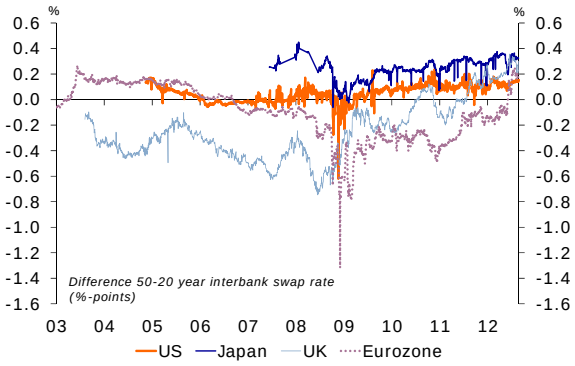
risks. After the introduction of the Financial Assessment Framework (*Financieel Toetsing-skader*, or FTK), many pension funds began hedging their long-term interest rate risk by means of swap contracts. They purchase these interest rate swaps from supply-side parties such as governments and banks. Like pension funds, insurers are also large buyers of interest rate swaps. In these swap transactions, the providers are the payers of the fixed interest and the purchasers are the recipients.

In view of the sizeable effect of interest rate volatility on pension fund funding ratios, it is no coincidence that structural inversion of the yield curve occurred directly prior to the introduction of the FTK. This can be seen from the differential between the 50-year and 20-year swap rate, which after 2006 in the eurozone was negative for a considerable period (Figure 2). Yield inversion has occurred because demand for interest rate swaps for long maturities structurally exceeds supply. There are many market participants on the buy-side and disproportionately few counterparties. For maturities of more than 30 years in particular, the tradability of interest rate swaps is negligible. The institutional investors have as it were brought the inverse yield structure on themselves by hedging their interest rate risk.

The yield inversion in the eurozone was particularly severe during the credit crisis. This was partly due to reinforced demand for interest rate swaps by pension funds due to the low level of interest rates. The eurozone includes a number of countries with large institutional pension funds, particularly the Netherlands. Here, and in a number of other European countries as well, pension funds use MtM-valuation of their liabilities. The discount rate is derived from the market rate at which European banks place Euro-denominated deposits with each other, known as the Euribor rate. This combination of large pension funds and a discount rate that originates from the European money market has led to a relatively sharp inversion of the yield curve. The supply-side of the swap market mainly consists of European banks and governments. There has been little or no yield inversion in the US or Japan in recent years, because the pension funds in these countries are smaller in relation to the total size of the economy.

One interesting observation is that the yield inversion in the eurozone has eased since the publication of the new Dutch pension agreement in mid-2011 (see Smid en Piljic, 2011), and has now in fact completely disappeared. In the agreement, it is proposed that pension funds value their liabilities with a discount rate that is maximized to the expected portfolio return. Pension funds have anticipated this new piece of legislation by reducing their interest rate risk hedge. This trend has been reinforced in recent months now that Minister Kamp of Social Affairs has made it clear he is considering to alter the method by which the long end of the yield is determined (see below).

Figure 2: Yield inversion in the eurozone



Source: Bloomberg

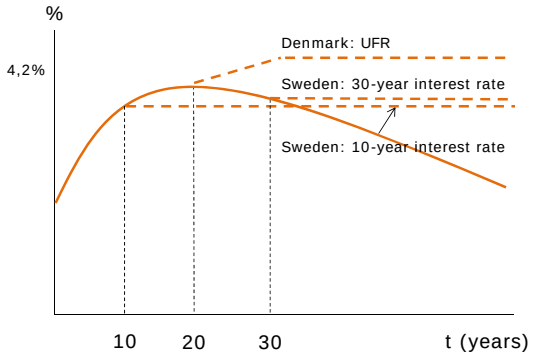
Another issue besides the problem described above is that pension funds are caught between keeping their short-term nominal funding ratio in shape and the long-term real objective of indexing pensions to price or wage growth (Frijns, 2010). The funding requirements applying to pension funds under the FTK are designed from a nominal perspective. This is because pension funds usually guarantee only the nominal value of accrued pension rights. One effect of this nominal assessment framework is that in the short term pension

funds are heavily focused on protecting their nominal funding ratio. Their long-term objective is however to provide price or wage indexation. For pension fund members this last feature is actually the most valuable.
The consequence of this focus on nominal risks is that pension funds invest more in interest rate swaps and bonds than actually is necessary from a long-term perspective. Therefore the upward potential of their portfolios is restricted, while they remain exposed to inflation risk. While a nominal interest rate hedge will protect a fund against fluctuations in its nominal funding ratio, in a scenario of rising inflation and unchanged real interest rates, however, this type of hedge will reduce the real funding ratio. That is, the value of the liabilities in real terms will remain unchanged while the nominal swap contract will lose value.

Developments abroad

Not only Dutch pension funds are struggling with the low level of interest rates. The same problems arise in Sweden, Denmark and Finland. These countries, which have similar pension systems and like the Netherlands are seen as safe havens, have been using MtM-valuation of liabilities for several years as well. To give pension funds some room to breath, the regulators in Denmark and Sweden have recently changed the rules regarding the discount rate. In Denmark, the regulator has recently decided to gradually increase the interest rate for maturities of at least 20 years to a fixed interest rate of 4.2%, known as the Ultimate Forward Rate (UFR) (Figure 3). This reduces the value of the liabilities and improves the financial position of the pension funds. The choice of a UFR of 4.2% corresponds to a long-term inflation forecast of 2% and a short-term real interest rate of 2.2%. The idea behind a UFR for pension funds comes from the Solvency II proposals: the uniform European regulation for insurance companies that is on its way. Like in the Netherlands, the yield curve in Denmark is largely constructed from swap rates (the rates of interest at which the Euribor rate can be swapped for a fixed interest rate).

Figure 3: Altering the discount rate



Source: Rabobank

The yield curve in Sweden is constructed from the interest on Swedish government bonds, and after a certain maturity assumes a constant rate of interest. Pension funds can choose the longest-maturity bond (10-year or 30-year) they wish to use for constructing the yield curve (Figure 3). If a yield curve is constructed on the basis of the 10-year maturity, the interest for maturities longer than 10 years is set at the 10-year interest rate. This basically means that a flat interest rate is used. The advantage of this is that there is a liquid market in the underlying instruments as the maturity is not too long. The alternative, a yield curve based on a 30-year maturity, has the advantage that the present value of the liabilities will be lower. On the downside, there is less trading in 30-year instruments so that unusual movements in the interest rate may occur.
Due to stress in the financial markets and the historically low interest rate, the Swedish regulator has announced a temporary floor for the discount rate for a period of one year. Insurers and pension funds will be able to decide whether they will use the current yield curve or the yield curve of 31 May this year. The present value of liabilities will thus be maximised. The regulator on the other hand has indicated that its current measure is temporary, and that the pension sector itself bears a responsibility to come up with a strategy that is also viable in times of volatility. This could mean that pen-

sion funds will ultimately be forced to abandon their current nominal guarantees.

A realistic discount rate

A recently published framework memorandum on the revision of the FTK, that was also presented to the Dutch Parliament, points out that Minister Kamp of Social Affairs wants to introduce the UFR for Dutch pension funds as well. Minister Kamp wants to implement the new pension rules that were set for 2014, at an earlier date. The idea behind a UFR is that short-term interest rates will converge to a stable level in the long term. However, this cannot, or cannot adequately, be observed from market information due to low liquidity in the market for interest rate contracts with a long maturity and the current stress in financial markets. The plan of Minister Kamp is to implement a UFR of 4.2%, as is the case in Denmark.

One of the benefits of the UFR is that this will avoid a situation in which pension funds push long-term interest rates even further down by purchasing very long-dated interest rate instruments. The long-term perspective will once again become the centrepiece of pension fund investment policy, which is appropriate given the long-term horizon that these funds have. However, the use of an UFR also comes with a number of downsides. To start with, the UFR includes a particular interest rate vision and is not tradable, which destroys the principle of MtM-valuation. Furthermore, in a scenario of sharply rising short-term interest rates the UFR could cause the yield curve to invert. And this is exactly what the UFR intends to prevent.

The main disadvantage of the current proposals is that a UFR of 4.2% goes much further than reversing the current yield inversion. The difference between the 50-year and the 20-year euro swap rate amounts to a few tenths of a percent, while the UFR is around 1.5% to 2% higher than the current 50-year swap rate. One solution to this problem could be to keep the interest rate constant after a certain maturity, for example from 20 years. This is the solution that Sweden is applying. To safeguard the existence of markets for long-term interest rate risk, an alternative solution could be to average the long-term rates between the 20-year swap rate and the swap rates observed in the market for the maturity in question (De Lange and Troost, 2012).
A UFR that is well above the 20-year interest rate will clearly not have the intended effect. Not only because the principle of market valuation is unnecessarily abandoned, also because it is not at all certain that such a high interest rate would be realistic. On the basis of long time series one cannot postulate that interest rates have long-term equilibrium, let alone that this equilibrium is 4.2%.

The interest rate used by pension funds for their funding ratio calculations may appear to be a detail, but actually the discount rate has far-reaching consequences for the distribution of pension wealth. If a long-term rate of 4.2% turns out to be unrealistic, this will mean a reallocation of pension assets from younger to older members. In the short term, application of a UFR may mean that more indexation can be allocated to older members, but the long-term risks will be borne by the young.

Conclusion

Minister Kamp's proposal to gradually raise the discount rate for pension funds to a fixed interest rate is good to the extent that it is intended to correct the inversion of the yield curve. The current proposals however assume a long-term interest rate that is significantly higher than the 20-year interest rate, without any clear substantiation for this. Flattening the discount rate for long maturities would be a better solution.

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