

Definition of value creation ratios

ATP's value creation ratios

ATP's value creation ratios consist of the following:

- Value creation, total
 - Value creation from pensions
 - Guaranteed pensions
 - Life annuity with market exposure
 - Value creation from undistributed funds
 - Bonus potential
 - Long-term supplementary provision

The ratio 'Total value creation' is an expression of the total value creation in ATP. It is calculated by aggregating the value creation in the individual parts of ATP. Below is a description of how the value creation in the individual parts is calculated and how the aggregation is done.

Guaranteed pensions

Value creation from guaranteed pensions describes the average return that occurs in the guaranteed pensions during the period. This ratio illustrates the connection between the contributions paid and the benefits that have been guaranteed (cash flows). The value creation from each period is calculated as the return on a 'pension account' (PA), which corresponds to the value of all interest-bearing contributions to a guaranteed pension.

It has not been possible to recreate the guaranteed cash flows from ATP's start in 1964. The value of the pension account when this calculation started at the beginning of 2008 has therefore been determined at DKK 281bn, corresponding to the value of the guaranteed benefits at the end of 2007. The amount of DKK 281bn is considered an individual contribution to the pension account.

Based on the guaranteed cash flow at the end of 2007, the return on this contribution can be determined as the interest, r , which satisfies the following equation:

$$\text{Contribution}_{\text{year-end 2007}} = \sum \text{CF}(t) (1+r)^{-(t-2008)}$$

where $\text{CF}(t)$ is the payout from the guaranteed cash flow until the time, t . It is assumed that all payouts are made mid-period.

Looking forward, contributions will be made to the pension account in the form of, for example, ordinary contributions from members, update of life expectancy, addition of bonus, transfers from life annuity with market exposure, etc. At the end of a year, the contributions, $C(t)$, added to the guaranteed benefits over the year can be calculated. At the same

time, the acquired guaranteed cash flow can be calculated by deducting the cash flow at the beginning of the year from the cash flow at year-end:

$$\Delta \text{CF} = \text{guaranteed cash flow, year-end} - \text{guaranteed cash flow, beginning of year}$$

The interest on period i 's contributions is the interest, r , that satisfies the equation:

$$\sum C(t)(1+r)^{(i+1-t)} = \sum \Delta \text{CF}(t)(1+r)^{-(t-(i+1))}$$

For each period, the interest payable on contributions in future will be calculated to ensure that contributions made in the year correspond to the future guaranteed payouts relating to these contributions. Accordingly, the pension account can be seen as a number of subaccounts that each bears the interest that was determined in the period in which the relevant subaccount was set up. By taking the sum of all sub-accounts at the beginning and end of the period, the total value of the pension account at the beginning and end of the period is determined. When adjusting for any payments, $P(t)$, and contributions, $C(t)$, over the year, the interest on the pension account can be calculated as the interest, r , that satisfies the equation:

$$\text{PA}_{\text{year-end}} = \sum C(t)(1+r)^{(i+1-t)} - \sum P(t)(1+r)^{(i+1-t)} + (1+r)\text{PA}_{\text{beginning of year}}$$

Life annuity with market exposure

The provision for annuity with market exposure, PM, is recognised at the beginning and end of the period. This will have changed with the return that was attributed to life annuity with market exposure during the period. The calculation of value creation also takes into account the period's payments (transfer to a regular life annuity), $P(t)$, and contributions, $C(t)$.

$$\text{PM}_{\text{year-end}} = \sum C(t)(1+r)^{(i+1-t)} - \sum P(t)(1+r)^{(i+1-t)} + (1+r)\text{PM}_{\text{beginning of year}}$$

Bonus potential

The bonus potential, BP, is calculated at the beginning and end of the period and adjusted for the contributions, $C(t)$ (bonus contributions), and payments, $P(t)$ (longevity updates, bonuses, etc.) that occurred during the year. The interest on the bonus potential is the interest, r , that satisfies the equation:

$$\text{BP}_{\text{year-end}} = \sum C(t)(1+r)^{(i+1-t)} - \sum P(t)(1+r)^{(i+1-t)} + (1+r)\text{BP}_{\text{beginning of year}}$$



Long-term supplementary provision

The long-term supplementary provision, LSP, is calculated at the beginning and end of the period and adjusted for the contributions, C(t), and payments, P(t), that occurred during the period. The change in the long-term supplementary provision from interest is recognised as an addition to the long-term supplementary provision so that the value creation from LSP reflects the return in the related Supplementary Hedging Portfolio. The value creation for the long-term supplementary provision is the interest rate, r, which fulfils the equation

$$LSP_{\text{year-end}} = \sum C(t)(1+r)^{(i+1-t)} - \sum P(t)(1+r)^{(i+1-t)} + (1+r)LSP_{\text{beginning of year}}$$

Value creation from pensions

Value creation from pensions is the aggregated value creation from guaranteed pensions and life annuity with market exposure. The ratio is calculated by taking the sum of the pension account and the provision for life annuity with market exposure (PA+PM), at the beginning and end of the year, adjusted for the sum of incoming and outgoing payments to the pension account and life annuity with market exposure. Value creation from pensions is the interest rate, r, that fulfils the equation

$$(PA+BP)_{\text{year-end}} = \sum C(t)(1+r)^{(i+1-t)} - \sum P(t)(1+r)^{(i+1-t)} + (1+r)(PA+BP)_{\text{beginning of year}}$$

Value creation from undistributed funds

Value creation from undistributed funds is the aggregated value creation from the Bonus Potential and Long-term supplementary provision. The ratio is calculated by taking the sum of Bonus Potential and Long-term supplementary provisions (BP+LSP), at the beginning and end of the year, adjusted for the sum of payments into and out of the Bonus Potential and Long-term supplementary provisions. Value creation from undistributed funds is the interest rate, r, that fulfils the equation

$$(BP+LSP)_{\text{year-end}} = \sum C(t)(1+r)^{(i+1-t)} - \sum P(t)(1+r)^{(i+1-t)} + (1+r)(BP+LSP)_{\text{beginning of year}}$$

Value creation, total

Total value creation is the aggregated value creation from pensions and undistributed funds. The ratio is calculated by taking the sum of pensions (P = PA + PM) and undistributed funds (UF = BP + LSP) at the beginning and end of the year, adjusted for the sum of incoming and outgoing payments to pensions and unallocated funds. Total value creation is the interest rate, r, that fulfils the equation

$$(P+UF)_{\text{year-end}} = \sum C(t)(1+r)^{(i+1-t)} - \sum P(t)(1+r)^{(i+1-t)} + (1+r)(P+UF)_{\text{beginning of year}}$$