

Superannuation Formula

Note: synonymously known as the **Pension Fund Formula**

Problem: An amount of R dollars is deposited at the beginning of each period into an account interest of $100r\%$ p.a., compounded at the end of each period. How much will be in the fund after n periods? (The periods are of equal length, and there are N of them per year. The term consists of a total of n periods.)

(Note: Such an account is called a superannuation fund especially in the case where the period is fairly long – a year, say, – and the number of periods is fairly large – say, twenty or more. In other words, this is the pile of money you get when you retire, to give you financial independence in your old age.)

Solution: This is just like an ordinary annuity (in which each deposit is made at the END of each period, except that each deposit is made at the BEGINNING of each period, so everything will grow by yet another factor of $(1 + i)$, so the formula is the Future Value formula multiplied by $(1 + i)$, that is,

$$(1+i)R \left(\frac{(1+i)^n - 1}{i} \right) .$$

Note: This is mathematically equivalent to an annuity due.

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