

Time Value Of Money And Capital Budgeting

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Loan Amortization Schedule

The present value of the annuity is given by:

$$PVIFA_{12\%} = 1 - (1+r)^{-n}/r$$

$$1 - (1+0.12)^{-5}/0.12 = 3.605$$

$$\text{Annual repayment} = 1,000,000/3.605 = \$277,393$$

End of year	Loan payment	Beginning of the year principal	Annual interest 12%	Principal payment	End-of-year principal
0	–	–	–	–	1,000,000
1	277,393	1,000,000	120,000	157,393	842,607
2	277,393	842,607	101,123	176,270	666,337
3	277,393	667,337	79,960	197,433	468,904
4	277,393	468,904	56,268	221,125	247,779
5	277,393	247,779	29,734	247,759	0

After acquiring the loan, interest expenses are at the highest. The interest costs have a diminishing trend from year to year as the firm's contribution goes towards covering the interest expense. When a loan is amortized, the principal payment accumulates, and thus, it increases from period to period as the interest expense decreases and the sum that goes towards the principal payment increases. As the firm divides the loan into equal sums and distributes it to the years required to pay the loan, the loan is totally paid during that period, and hence, the sum in the total payment column decreases as the debt is paid in installments.

Future value of an ordinary annuity

$$P = PMT [(1+r)^n - 1]/r$$

PMT = the amount of each annuity payment

$$P = \$10,000[(1+0.05)^5 - 1]/0.05$$

$$10,000(84) = \$840,000$$

Present value

$$PV_{k,n} = FV/(1+k)^n$$

$$PV_{6\%, 12\text{yrs}} = 140,000 / (1+0.06)^{12} =$$

$$140,000/2.012 = \$69,582.5$$

The present value indicates that the investment can produce a double income in 12 years. The investment decision made by the board will be realized, this is because the value of the investment today of \$70,000 reflects a given future amount of \$140,000. Given a discount rate of 5%, the initial investment will yield the anticipated future return and double the initial value of the investment (Anonymous, 2012).

Annuities

Annuities provide a channel through which one can generate lifetime income and plan for retirement without the inherent market risks. Financial institutions or insurance companies provide annuities in order to grow and hold funds. The need to analyze annuities is to determine if the type of annuity package suits the financial situation and has the anticipated suitability factors. In choosing the right type of annuity, I would consider the use of the annuity, when I will need the money, the minimum return that the insurance firm can guarantee, and the cost of the annuity. The benefits associated with the annuity and the flexibility of the annuity as well as the limitation associated with a certain type of annuity contract. When I annuitize, I expect to receive payouts, whether for a lifetime or the specified number of years as outlined in the contract. Annuities are of different types, and there is a need to consider several criteria when choosing the right package. A fixed annuity, variable annuity, and equity-indexed annuity are the types of annuities available for consumers. Variable annuity payout depends on the rate of interest subject to the funds under the annuity agreed upon. Indexed annuity payouts depend on the performance of the common index (U.S. Securities & Exchange Commission, 2016). All the annuities have some common features, which are incorporated in the payout phase and the accumulation phase.

Variable annuity entails unique features which are not included in the other types of annuities. This

type of annuity offers an investment option that lacks tax expenses; it offers lifetime income stability and inhibits several benefits, including death benefits. A variable annuity is characterized by an agreement that dictates the mode of payment, whether in installments or a single payment. This type of annuity offers payment flexibility. The equity-indexed annuity offers an alternative to variable and fixed annuities.

The first suitability factor to be considered is age. Different types of annuities are intended to have different terms of engagement. In choosing an annuity, age is the key factor to be taken into account since it dictates the specific needs of the annuity. When approaching retirement age, the package chosen should provide flexible income when needed. Depending on the principal amount set, a deferred annuity offers the potential to accumulate interest and provide more flexible payouts. A younger person may choose long-term annuities and give room for the interest to accumulate and access more at a later date. The financial time frame in which the investment can pay back the initial cost and the duration over which the annuity will specify to withdraw the funds needs to be considered.

The amount of annual income should also be taken into consideration. High annual income implies that an individual does not probably need additional money. On the other hand, low annual income implies that there is a need for annual income. The financial situation in regards to where to acquire the capital to fund the annuity affects the choice of the annuity. If the income is obtained through debt, the annuity chosen should be able to generate returns to cover the debt within the specified period. The financial needs that are intended to be covered by the annuity determine the type of deferred annuities to be considered. The anticipated use of the annuity, which comprises the objective and the intended use of the inflows to be generated by the annuity, affects the type of annuity. This is measured by considering the financial objectives and the premeditated goals that the investment is supposed to achieve within an outlined period.

Another aspect to be considered is liquid net worth, which describes an alternative source of income when the need arises. Having a supplementary source of funds provides a degree of freedom in choosing annuities since the principal has a stable source of income and does not primarily depend on the annuity selected for the unanticipated need of cash. Additionally, the element of risk tolerance defines the possibility of risks exposed to different annuities and the guarantee that the investment would or might not generate income due to either inflation risks or liquidity risks.

References

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