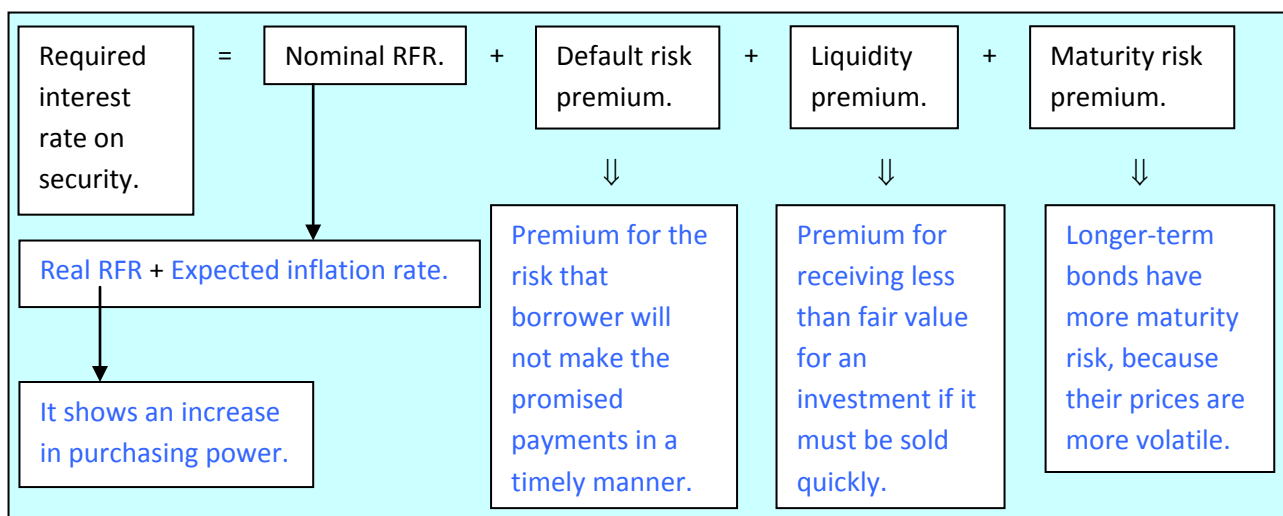


“The Time Value of Money”

<p><u>Compound Interest or Interest on Interest</u></p> <p>Growth in the value of investment includes, interest earned on:</p> <ul style="list-style-type: none"> • Original principal. • Previous period’s interest earnings. 	<p><u>Time Line</u></p> <p>Diagram of the cash flows associated with a TVM problem.</p>	<p><u>Discounting</u></p> <p>Moving CF to the beginning of an investment period to calculate PV.</p> $PV = \frac{FV}{(1+i)^N}$ <p style="text-align: center;">$\frac{1}{(1+i)^N}$ is PV factor</p>	<p><u>Compounding</u></p> <p>Moving cash flow to the end of the investment period to calculate FV.</p> $FV = PV (1+i)^N$ <p>$(1+i)^N$ is FV factor</p>
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<p><u>Loan Amortization</u></p> <p>Process of paying off a loan with a series of periodic loan payments, whereby a portion of the outstanding loan amount is paid off, or amortized, with each payment.</p>	<p><u>Perpetuity</u></p> <ul style="list-style-type: none"> • Perpetual annuity. • Fixed payment at set intervals over an infinite time period. • $\frac{1}{r}$ is the discounting factor for perpetuity. 	<p><u>Annuity</u></p> <p>Stream of equal cash flows accruing at equal intervals.</p>
<p><u>Cash flow Additivity Principle</u></p> <p>PV of any stream of cash flows equals the sum of PV of each cash flow.</p>	<p>PV of annuity due > PV of ordinary annuity.</p>	<p style="text-align: center;">↓</p> <p style="text-align: center;">Two types</p> <p style="text-align: center;">⇐ ⇒</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%; padding: 5px;"> <p><u>Annuity Due</u></p> <p>Cash flows occur at the beginning of each period.</p> </div> <div style="width: 45%; padding: 5px;"> <p><u>Ordinary Annuity</u></p> <p>Cash flows occur at the end of each period.</p> </div> </div>

<p style="text-align: center;"><u>Interpretations of Interest Rate</u></p> <ul style="list-style-type: none"> • Required rate of return. • Discount rate. • Opportunity cost.
<p><u>Effective Annual Rate (EAR)</u></p> <ul style="list-style-type: none"> • Rate of return actually being earned after adjustments have been made for different compounding periods. • $EAR = (1 + \text{periodic rate})^m - 1$ • Stated rate will be equal to the actual (effective) rate only when it is compounded annually.