Discount Analyses Spreadsheet

\[
\begin{array}{c}
\alpha = 10\% \\
C_i \quad 10 \quad 100 \\
(1+i) \quad (1+i)^2 \quad \ldots \quad \ldots \\
\text{Total} \quad \ldots \quad \ldots \\
\end{array}
\]

\[\text{Effective Rate} = 12.36\%\]

The Cool Derivation

\[n\sigma_0 = \left[1 + \left(\frac{M}{M}\right)^{1/n}\right] - 1\]

\[p = \frac{M}{n}\]

\[\left[\frac{F}{P}, \frac{i}{n}, j\right] = \left(1 + \frac{i}{n}\right)^{np}\]

\[= \left(\left(1 + \frac{i}{n}\right)^{np}\right)\]

\[\lim_{n \to \infty} \left(1 + \frac{i}{n}\right)^{np} = e\]

(See Note on Equivalence)

Effective v.s. Nominal Rate

<table>
<thead>
<tr>
<th>1000</th>
<th>12.3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1060</td>
<td>Semi-annual</td>
</tr>
<tr>
<td>1060</td>
<td>1060 + 60 = 1120</td>
</tr>
<tr>
<td>EFFECTIVE RATE</td>
<td>12.36%</td>
</tr>
</tbody>
</table>

Proposed Map of Downtown Boston, 1970
Review of what we are and where we are going

Present Economy

More Intricate Formulation
QR Calculus

But - Time Value of Money

Equivalence

More Intricate Formulation
Nominal vs. Effective Rates

But - what is the discount rate (and assumption)

Sensitivity Analysis
Re in assumptions re cash flows & cost models

But - what about non-cash, non-financial

Panama Canal

Very General Perspective
Don't get lost in details