Intro to BAII Plus

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Financial Calculators

• Only 2 financial calculators are allowed in the CFA exam
  • HP12C
  • TI BAII plus (basic and professional)

• Major function is to calculate TVM
• Same calculator can be used in other professional exams like CSC, FRM, CFP..etc
Setting up the calculator (BAII Plus)

Follow these steps:

* Locate the 2\textsuperscript{nd} function

**Set decimal places** – only for display, it won’t change the actual number in the calculator

- 2\textsuperscript{nd} function -> format key -> 4 -> enter
- CE to return

**Set payments to End of period**

- 2\textsuperscript{nd} -> BGN -> “SET” to toggle between functions
- CE to return
Setting up the calculator (BAII Plus)

Set the number of payments per period (P/Y)

• 2\textsuperscript{nd} -> I/Y
  • Set it to 1 for now, if monthly, N=12 (this simplify things a bit)

2 modes of operation (CHN vs AOS)

• Most student prefer to use the calculator in AOS mode, however default is chain
• 2\textsuperscript{nd} -> format -> up arrow

CHN: 2+5\times3 = 21
vs
AOS: 2+5\times3 = 17
BAII Plus introduction

• Memory!!
• This will be extremely handy and I suggest you take full advantage of this function!

[STO] & [RCL]

To view MEM: 2^{nd} -> MEM -> up/down arrow keys
To clear MEM: 2^{nd} -> MEM , 2^{nd} -> CLR WORK
Time Value of Money

• TVM Keys: (5 grey keys in the middle)
• Enter any 4 variables and solve for the 5\textsuperscript{th}.
  • N
  • I/Y (in %)
  • PV
  • FV
  • PMT

• Pay attention to direction of Cash Flow!!
• Always clear PV and FV before you begin (2\textsuperscript{nd} -> CLR TVM)
Find FV

A couple plans to set aside $20,000 per year in a conservative portfolio projected to earn 7 percent a year. If they make their first savings contribution one year from now, how much will they have at the end of 20 years?
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N = 20
I/Y = 7
PV = 0
PMT = -20000
FV = ?
Find N

For a lump sum investment of ¥ 250,000 invested at a annual rate of 3%, the number of years needed to grow the sum to ¥ 1,000,000 is closest to:
Find N

For a lump sum investment of ¥ 250,000 invested at a annual rate of 3%, the number of years needed to grow the sum to ¥ 1,000,000 is closest to:

\[ N = ? \]
\[ I/Y = 3 \]
\[ PV = -250000 \]
\[ PMT = 0 \]
\[ FV = 1000000 \]
Annuity due example

• BGN mode vs END mode
• [2nd][BGN][2^{nd}][SET][2^{nd}][QUIT]

Given a discount rate of 10%, what is the present value of a 3-year annuity that makes a series of $100 payments at the beginning of each of the next three years, starting today?

N = 3
I/Y = 10
PV = 0
PMT = 100
FV = ?
Discounted Cash Flow Applications

• The [CF] button will allow you to calculate uneven cash flow
• Very important! First always reset CF:
  • [CF] -> [2nd] -> [CLR WORK]

Calculate the NPV of an investment project with an initial cost of $5 million and positive cash flows of $1.6M at the end of year 1, $2.4M at the end of year 2, and $2.8M at the end of year 3. Use 12% as the discount rate.

Note* / is in % and always pay attention to direction of cash flow
Discounted Cash Flow Applications

Calculate the NPV of an investment project with an initial cost of $5 million and positive cash flows of $1.6M at the end of year 1, $2.4M at the end of year 2, and $2.8M at the end of year 3. Use 12% as the discount rate.

\[
\begin{align*}
CF_0 &= -5 \\
CF_1 &= 1.6 \\
CF_2 &= 2.4 \\
CF_3 &= 2.8 \\
I &= 12
\end{align*}
\]
Discounted Cash Flow Applications

Calculate the NPV of an investment project with an initial cost of $5 million and positive cash flows of $1.6M at the end of year 1, $2.4M at the end of year 2, and $2.8M at the end of year 3. Use 12% as the discount rate.

Now with the same example, find IRR
Factorial, Combination and Permutation

- Factorial ($x!$)
- Combination ($\binom{n}{r}$)
  - When order doesn’t matter
- Permutation ($\binom{n}{r}$)
  - When order matters

How many ways can 3 stocks be sold from an 8-stock portfolio?

*What if the order of the sales is important?