Southern New Hampshire University

The Learning Center

2500 North River Road | Manchester, NH 03106-1045 | Phone: 603.645.9606| Fax: 603.645.9753

Using a Financial Calculator

In many finance courses you will be required to use a financial calculator. The Texas Instruments BAII Plus is the one I am most familiar with. The things I show in this tutorial can also be done on graphing calculators or other various financial calculators. However, I am not as familiar with their use. You should consult the instruction manual that came with the calculator.

Essentially what we will be doing is using what is called the time value of money function to do these calculations. Time value of money is defined as **"The idea that money available at the present time is worth more than the same amount in the future, due to its potential earning capacity. This core principle of finance holds that, provided money can earn interest, any amount of money is worth more the sooner it is received."** This is the definition according to investopedia.com

Time Value of Money – Three Ways to Calculate and solve the problems.

1. Formulas
2. Tables
3. Calculator

While you can use all three ways to arrive at an answer, we will use calculators as that is the most practical. Formulas can be very intimidating and it is easy to make an error. And with the time value of money tables not all interest rates are represented.

For all of the problems we do we will use these functions in your calculator.

- N= number of periods involved in the analysis
- I= interest rate per period
- PV= present value
- PMT= payment – use 0 if there is no payment
- FV= future value

As long as you have 4 of these variables you can easily solve for the fifth. So a problem could ask you to calculate

- N – how long for something to double
- I – what rate of interest…YTM
- PV – today's price such as a bond valuation
- PMT – How much payments will be
- FV – what something will be worth in the future.

You must put the PV in as negative when solving for the following; "N" "I" or "PMT"

Things to check on your calculator

Payments per year – check to make sure it is set up appropriately to the problem at hand. Most problems require that it be set to 1 payment per year. You can adjust this by hitting the 2^{ND} then the I/Y key. Make sure after making any changes to hit the enter key.

Decimal places – you can set this to whatever you prefer by changing it. This could have an impact on your final answer. So if you aren't getting the exact answer check this. Hit 2nd then format (the . key).

Begin or end of year payment – this will impact you answer. Check to see if problem is ordinary annuity or an annuity due. Most problems are ordinary annuities. Hit 2nd PMT to check. It should say END. If annuity due it will be factoring in another period of interest. You would need to have it on BGN

Here are a few simple examples of simple TVM problems involving an ordinary annuity. Remember to enter in number then hit the appropriate key

You have saved $1,000 and want to invest it. You go to TD Bank North and they offer you a 6 year CD that pays 8% annually. What will be the value of this CD when it matures?

N= 6
I= 8%
PV= - $1,000
PMT= 0
FV= (?) 1,586.87

You have $20,000 in a brokerage account at Fidelity. You plan to contribute $7,500 at the end of every year. 8% is the expected annual return on the account. If your goal is to have $375,000 how many years will it take?

N= (?) 18.4
I= 8%
PV= - $20,000
PMT= -7,500
FV= $375,000

You are considering investing in a 5 year ordinary annuity. The annual payments are $200 a year. Current interest rates are 15%. What would you be willing to pay today for this?

N= 5
I= 15
PV= (?) $670.43
PMT= $200
FV= 0

Other compounding periods

Periods can be annually. That is what we have examined. There are also

- Semiannual
- Quarterly
- Monthly

If other than annual you have to convert I and N

I = stated rate/number of payments per year

N = number of years * periods per year

PMT = PMT/2

Or you could just change the parameters on your calculator.

NPV Analysis

For NPV analysis you have to enter in a stream of cash flows.

Use 2ND CF key on your calculator.

Make sure to clear your work after doing each problem. Hit 2nd CE/C

You are considering a project that has the following cash flows: Assume a 10% cost of capital.

Year		CF
0	(Initial Outlay)	(1,000)
1		500
2		400
3		300
4		100

Can use calculator or can do through formula

The NPV of this problem is NPV = $78.82

To arrive at this answer you would first enter 2nd CF then hit 2nd CE/C to make sure it is cleared out.

When in the 2nd CF area of the calculator you would see CFo =

Enter in the following

CFo= -1,000 then hit the ENTER button

Use the down arrow and you will see CO1. here you enter in 500 then ENTER

Use the down arrow and you will see FO1. Skip over this and hit the down arrow again until you see CO2. Here you enter in 400 then ENTER

Keep repeating this until you have entered in all cash flows. Once you have done this hit the NPV key. It will ask what I is. This is the cost of capital which you will be given in a problem. Enter in 10 then enter.

Hit the down arrow and it displays NPV = 0

Hit the CPT button and you should see $78.82. This is the net present value of the stream of cash flows.