



LEVEL TWO Cycle Time

Now you know how to make a t-bar graph of the cash flow inflows and outflows. It is important to add the dimension of cycle time to the equation. This will help us understand how the **WHEN TIME** effects the net result. Cycle time is really the **when** time and how often it occurs in a certain period of time.

What happens when you are riding your bike and you peddle faster? YOU GAIN MORE! The opposite happens when you reduce your peddle speed slower. You lose distance/time. The same result happens to your money! When the cycle time is faster the gain will be quicker and the growth will accelerate. Likewise, when the cycle time is slower or longer in duration opportunity growth dwindles.

With \$100.00 to invest and two competing banks wanting your Certificate of Deposit business (CD).

GOLD BANK is offering a one year CD at a rate of 9.75 % APR **compounded annually**. BURKLYN BANK offers a one year CD at a rate of 9.5 % **compounded monthly**. Which is a better deal? Let us answer this question using our familiar tool.. The T-bar graph and add cycle time.

In order to solve the question we must convert the return on investment (ROI) by the compounding periods. GOLD BANK'S offer of 9.75 % APR compounded annually on the investment is added because it is one compounding period paid per year. (at the end of the year) This equals 9.75% APR one time for the whole year.

TIME	GOLD BANK Offer's 9.75% APR compounded yearly	CASH FLOW
Start	Deposit made to GOLD BANK CD Account	<\$100.00 outflow>
End Of Year 1	Interest earned at a rate of 10%/year	\$9.75 earnings
Total	Interest earned plus the return of deposit	\$109.75
	OVERALL Gold Bank APR = 9.75%	

Banks and other institutions MUST represent the true annual percentage rate as A.P. R. Often if the compounding period occurs more frequently such as monthly compared to annually the effective A.P.R. will be higher. This is because you will earn interest each month and that can be reinvested into the same asset or at a safe rate of return investment. This called Capital Accumulation. I always refer to it as Financial Management Rate of Return. (F.M.R.R.) This is because the interest is earning interest while we wait for the CD or other instrument to mature.

Sometimes other loans or offerings charge add on fees called discount points. CAUTION these are NOT a discount at all. They are fees charged by the lender as a percentage of the amount being lent to increase the lender's effective A.P.R. For example a lender may lend \$98.00 and document it as a \$100.00 loan. This is a huge increase in the A.P.R due and credited to the lender even though the documents may express a smaller interest rate. Later in advanced games we will also add other variable costs to the equation and hidden expenses, charges, finance costs, and examine how this effects the final A.P.R.

BURKLYN BANK is offering 9.5% interest per annum compounded monthly on your \$100.00 investment. In this case there are 12 compounding periods so we divide 9.5 (the annual interest offered) by the compounding periods which is 12 because it is monthly over a one year period.

How much is 9.5 divided by 12? _____

This return made on your investment is expressed as an interest rate of "79%" per month and now let us calculate the annual A.P.R.

Let's examine the Burklyn Bank CD at 9.5% annual interest *compounded monthly* compared to Gold Bank's offer of 9.75% APR *compounded annually* and put into our t-bar for the exact results!



We invest \$100.00 for the year and accept their CD offer. If we were to reinvest the interest earned at the same rate back into the principal then let's calculate the amount of money you will have using Snowball Math and also determine the true A.P.R. for this investment. (In this case we assume that we invest the monthly returns back into the principal or other similar investment)

TIME	EVENT	CASH FLOW
Start	Burklyn Bank offers (9.5% annual ROI Compounded monthly)	<\$100.00 outflow>
End Of Month 1	Interest earned (ROI) is .79% on principal of \$100.00	\$.79 inflow
EOM 2	The new total is \$100.79 invested @ ROI .79%/month	\$.80 inflow-
EOM 3	Interest earned at a rate of .79 on principal of \$101.59	\$.80 inflow
EOM 4	Interest earned at a rate of .79 on principal of \$102.39	\$.81 inflow
EOM 5	Interest earned at a rate of .79 on principal of \$103.20	\$.82 inflow
EOM 6	Interest earned at a rate of .79 on principal of \$104.02	\$.82 inflow
EOM 7	Interest earned at a rate of .79 on principal of \$104.84	\$.83 inflow
EOM 8	Interest earned at a rate of .79 on principal of \$105.67	\$.84 inflow
EOM 9	Interest earned at a rate of .79 on principal of \$106.50	\$.84 inflow
EOM 10	Interest earned at a rate of .79 on principal of \$107.34	\$.85 inflow
EOM 11	Interest earned at a rate of .79 on principal of \$108.19	\$.85 inflow
EOM 12	Interest earned at a rate of .79 on principal of \$109.04	\$.86 inflow
TOTAL	<i>amount of our asset at maturity plus interest</i>	\$109.90 inflow
A.P.R. =	<i>OVERALL Burklyn Bank APR = 9.90%</i>	9.90 %

From the above two exmples we can learn that compounding periods (CYCLE TIME) does matter and affect the overall return. Infact Burklym Bank with an annual lower interest rate actually earns more than the competing bank at a higher rate but longer compounding periods! It is these little details that make a big difference when we invest or borrow hundreds of 1000s of dollars or even millions.

Pay Attention to Cycle Times and compounding periods!