Macroeconomics Formulas

1. **Y = C + I + G + NX** – the spending approach to calculating GDP.
2. **S = I** in a closed economy (no trade) and **S = I + NX** in an open economy
3. **Calculating Nominal GDP:** Multiple the number of each good produced times the price of each good.
4. **Calculating Real GDP**: this proceeds just as calculating nominal GDP, but instead of current prices you use base prices: In the base year Nominal GDP = Real GDP, with inflation Nominal GDP > Real GDP.
5. **GDP deflator:** A measure of the cost of living (substitute for the CPI). GDP deflator = (Nominal GDP/Real GDP) * 100. Remember that this is an index. In the base year the GDP Deflator = 100.
6. **Constructing the CPI:** step 1: compute the cost of a market basket in each year (prices times quantities), step 2: choose a base year. Step 3: Calculate the CPI for the current year by: $\underline{\text{Cost current year}}$ x 100
   .   Cost in base year
7. **The inflation rate via the CPI:** $\underline{\text{CPI current year} - \text{CPI previous year}}$ x 100
                    CPI previous year
   Note that this is just a percentage change. The inflation rate is the percentage change in the CPI from one period to the next. You could also calculate the percentage change in the GDP (implicit) price deflator from year to year to derive at an alternative measure of inflation.
8. **Correcting for inflation:** Let's adjust for inflation so we can, in a more meaningful way, compare the dollar values of different points in time. Convert a figure in 1990 to its current value: current value = value in 1990 * (CPI in 2000/CPI in 1995). For example, Babe Ruth earned $80,000 in 1931. Translating to current dollars means: current value = 80,000 * (107.6/8.7) = $989,000. So $80,000 back then is equivalent to $989,000 today.
9. **Real interest rate =** nominal interest rate – inflation rate.
10. **Production function:** Y = AF(L,K,H,N)
11. **Productivity:** Y/L = AF(1,K/L, H/L, N/L)
12. **Unemployment Rate = (Number of Unemployed/Labor Force)*100.** Key, first get the labor force – all the folks who are actively seeking employment!
13. **Labor force participation rate:** (Labor force/adult population)*100**.**
14. **Money Multiplier = 1/R where R = reserve ratio.** Application: an initial injection of $1000 of new money into an economy with a reserve ratio of 10% (.1) will generate $1000*(10) = $10,000 in total money.
15. **Quantity equation of money: MV = PY** is a monetarist's view of what explains changes in P (they are correct, in the long run changes in P is driven by changes in M because V is stable and Y is determined outside the model). If given three of the four variables, you should be able to use this equation to find the unknown variable.
16. **Spending Multiplier =** 1/(1 – MPC) OR 1/MPS. It tells you how much total spending an initial injection of spending in the economy will generate. For example, if the MPC = .8 and the government spends $100 million, then the total increase in spending in the economy = $100 * 5 = 500 million   **MPC + MPS = 1.**
17. **Rule of 70:** Used to determine how many years it takes for a value to double, given a particular annual % growth rate. **70/x = #** years to double where x equals growth rate.

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