

Main Macroeconomics Formulas

$$\text{Average Tax Rate} = \text{ATR} = \frac{\text{tax paid}}{\text{income}}$$

$$\text{Marginal Tax Rate} = \text{MTR} = \frac{\text{change in tax paid}}{\text{change in income}}$$

GDP = C+I+G+(X-M), where C is consumption, I is investment,

G is government spending, (X-M) is net exports

$$\frac{\text{Nominal Value}_{\text{of year B in year B prices}}}{\text{Real Value}_{\text{of year B in year A prices}}} = \frac{\text{Price Index}_{\text{year B}}}{\text{Price Index}_{\text{year A}}}$$

$$\text{Price Index}_{\text{Current or Nominal year}} = \frac{\text{Nominal GDP}_{\text{Current Year}}}{\text{Real GDP}_{\text{for current year in base year prices}}} \times 100$$

$$\text{Real GDP} = \text{Nominal GDP} \times \frac{\text{Price Index}_{\text{Base Year}}}{\text{Price Index}_{\text{Current/Nominal Year}}}$$

$$\text{Growth Rate or Percent Change} = \frac{\text{later value} - \text{earlier value}}{\text{earlier value}} \times 100\%$$

$$\text{e.g., growth since last year} = \frac{\text{this year's value} - \text{last year's value}}{\text{last year's value}} \times 100\%$$

growth rate in price index = inflation rate

$$[\text{Nominal Growth Rate}] = [\text{Real Growth Rate}] + [\text{Inflation}]$$

$$[\text{Real Interest Rate}] = [\text{Nominal Interest Rate}] - [\text{Inflation}]$$

labor force = unemployed + employed

$$\text{Labor Force Participation Rate} = \frac{\text{labor force}}{\text{population}}$$

$$\text{Unemployment Rate} = \frac{\text{number unemployed}}{\text{labor force}}$$

M1= cash + checkable deposits

M2 = M1 + saving deposits

Actual Reserves = cash + reserve deposits (at Fed)

Required Reserves = deposits x required reserve ratio

Excess Reserves = Actual Reserves - Required Reserves

maximum potential expansion multiplier= k = 1/r (where r = required reserve ratio)

$$M \times V = P \times Q$$

$$[\text{Growth Rate in M}] + [\text{Growth Rate in V}] = [\text{Growth in Real GDP}] + [\text{Inflation}]$$