MACROECONOMICS STUDY SHEET

Three Main Variables in Macroeconomics

1: Output

GDP, GNP

2: Prices

CPI, PPI, GDP deflator

GDP deflator =

(Nominal GDP / Real GDP)

3: Unemployment

Unemployment Rate = U/ L

where L = U + E

Types of Unemployment

a) Frictional

b) Structural

c) Cyclical

The natural rate of unemployment is approximately equal to the sum of **frictional** and **structural** unemployment.

Income Approach to GDP
$Y = C + S + T$
Gross Domestic Product =

GDP = Depreciation + Indirect Business Taxes + Rent + Wages + Interest + Profit

Net Domestic Product =

GDP - Depreciation = Indirect Business Taxes + Rent + Wages + Interest + Profit

National Income =

GDP - Depreciation - Indirect Business Taxes = Rent + Wages + Interest + Profit

Personal Income =

National Income + Transfer Payments - Social Security Contributions - Undistributed Corporate Profits

Disposable Income (Y^d) = Personal Income - Personal Taxes

$(Y^d) = Y - T$

Expenditures Approach to GDP
$Y = C + I + G + (X - M)$
Income Approach to GDP
$Y = C + S + T$
Formula for the 45 degree line
$Y = AE$
NOTE: The intersection of the 45 degree line with the AE function will determine the equilibrium level of output (Y^*).
Leakages-Injections Approach to

Equilibrium GDP (Y^*)
$$S + T + M = I + G + X$$

- $C = a + bY$
- where a = autonomous consumption &
- b = MPC
- $S = -a + (1-b)Y$
- where - a = autonomous dissaving &
- (1-b) = MPS
- APC = C/Y   APS = S/Y
- APC + APS = 1
- MPC = $\Delta C/\Delta Y$ MPS = $\Delta S/\Delta Y$
- MPC + MPS = 1

Three Keynesian Conjectures Regarding Consumption

1 $C = f(Y^d)$
Consumption is a function of disposable income. Also note: saving is a function of disposable income.

2 $0 < MPC < 1$
The Marginal Propensity to Consume is some number between zero and one.

3   If Y increases, then APC falls
As Income rises, the Average Propensity to Consume falls.

The third conjecture is the most controversial.

MULTIPLIERS

1   Investment Multiplier
This multiplier tells us how much equilibrium income changes when investment changes.
$$\frac{\Delta Y}{\Delta I} = \frac{+1}{(1-MPC)}$$

2   Government Multiplier
This multiplier tells us how much equilibrium income changes when government spending changes.
$$\frac{\Delta Y}{\Delta G} = \frac{+1}{(1-MPC)}$$

3   Tax Multiplier
This multiplier tells us how much equilibrium income changes when taxes changes.
$$\frac{\Delta Y}{\Delta T} = \frac{-MPC}{(1-MPC)}$$

4   Money Multiplier
This multiplier tells us how much the money supply could grow potentially with an initial deposit.
Note: If the Required Reserve Ratio is small, then the money multiplier will be large...and vice versa.
1 / (Required reserve ratio)

Building the Keynesian Expenditures Model
Stage 1: Consumption
$AE_1 = C$
To solve for Y^*, set Y = C. NOTE: When Y = AE, the level of savings will equal zero (S=0).

Stage 2: Investment
$AE_2 = C + I$
To solve for Y^*, set Y = C+I. NOTE: When Y = AE, the level of savings will equal the level of investment (S=I).

Stage 3: Government
$AE_3 = C + I + G$
To solve for Y^*, set Y = C+I+G. NOTE: When Y = AE, the level of savings will equal the level of investment plus government spending (S = I + G).

Stage 4: Taxes
$AE_4 = C(Y-T) + I + G$
To solve for Y^*, set Y = C(Y-T) +I+G. NOTE: When Y = AE, the level of savings + taxes (**Leakages**) will equal the level of investment + government spending (**Injections**) (S + T = In + G)

Stage 5: Net Exports

$AE_5 = C(Y-T) + I + G + (X-M)$

To solve for Y^*, set Y = C+I+G+(X-M). NOTE: When Y = AE, the level of savings + taxes + imports (**Leakages**) will equal the level of investment + government spending + exports (**Injections**)

$(S + T + M = I + G + X)$

Three Functions of Money

1: Medium of exchange: Barter requires a *"double coincidence of wants."*

2: Store of Value

3: Unit of Account

MACROECONOMICS STUDY SHEET

"Rule of 72"

To determine how fast an item doubles, divide the number 72 by the rate. For example, if inflation grows at an annual rate of 12%, then it will take approximately 6 years for the inflation rate to double.

Four Tools of the Fed

1. Reserve Requirements

If RR increases, then Ms decreases.

2. Discount Rate

If the discount rate increases, then Ms decreases.

3. Open Market Operations

If the Fed buys bonds, then the Ms increases. If the Fed sells bonds, then the Ms decreases.

4. Moral Suasion (a.k.a. "Open Mouth Operations)

The Equation of Exchange

$$MV = PY$$

$$\%\Delta M + \%\Delta V = \%\Delta P + \%\Delta Y$$

where M = money supply; V= velocity; P = price level; and Y= income (output)

Three Keynesian Motives for Holding Money

1: Transactions Demand - positively related to income

2: Speculative Demand - negatively related to the interest rate

3: Precautionary Demand - positively related to income

Economic Warnings!!!

1. *Post Hoc, Ergo Propter Hoc* Fallacy - ("because of this, therefore because of this") - the erroneous notion that because A precedes B that A causes B

2. **Fallacy of Composition** - the erroneous notion that what holds true for the individual must also hold true for the group as a whole

3. **Violation of** *ceteris paribus* - ("all other things being equal") the error in comparing items when the situations are not comparable

---

4. **Correlation does not mean Causation** - the erroneous notion that when items are correlated that one item must cause the other

5. **Reverse causation** - the erroneous notion that A causes B when, in fact, B causes A.

NOTE: Ockham's Razor - the model with the fewest variables is preferred to a model which explains a situation equally well with a larger number of variables.

Classical versus Keynesian Views of the Macroeconomy

Classical: The economy is inherently stable; government intervention is destabilizing.

AS is vertical. Note: Prices are flexible.

Keynesian: The economy is inherently unstable; government intervention is stabilizing.

AS is horizontal. Note: Prices are sticky.

- **National Debt vs. Budget Deficit**

- **National Debt** - (stock concept) $5 trillion

- **Budget Deficit** - (flow concept) $150-$250 billion per year

Economic Laws

Law of Supply - "As the price of a good increases, the quantity supplied increases."

Law of Demand - "As the price of a good increases, the quantity demanded decreases."

Say's Law (Classical) - "Supply creates its own demand."

Gresham's Law - "Bad money drives good money out of circulation."

Economic Definitions

Contractionary Fiscal Policy - a decrease in government spending and/ or an increase in taxes

Cost-push Inflation - inflation which is caused by a leftward shift of AS

Crowding Out - a condition in which an increase in government spending forces out some private investment from the economy

Demand-pull Inflation - inflation which is caused by a rightward shift of AD

Elasticity - a measure of responsiveness; the percentage change in quantity divided by the percentage change in the variable of interest

Expansionary Fiscal Policy - an increase in government spending and/ or a decrease in taxes

Fiscal Policy - a change in government spending and/ or a change in taxes

Flow - the quantity which occurs over a period of time

Keynesian Cross - the intersection of the 45 degree and AE lines

Inflation - an increase in the overall price level (Π)

Marginal - "change" (Δ)

Misery Index - the sum of the inflation rate and the unemployment rate

Monetary Policy - a change in the Money supply

Seigniorage - the ability of a government to raise revenue by printing more currency

Stagflation - high inflation and high unemployment

Stock - the accumulation of an item at a point in time

Velocity - the number of times that an average dollar changes hands