Reference sheet

**GDP = Y = C + I + G + NX Wages + Rent + Profit + Interest Revenue – cost of resources**

**TOTAL OUTPUT TOTAL INCOME VALUE ADDED**

Inventory investment = total amount produced in year – amount sold (goes in the “I” category)

Sale of used good for profit = difference goes in “I” category (real estate typically)

GDP per capita = output per person = GDP/population

Real GDP = nominal GDP/Price Index

GNP = GDP + income from domestic workers abroad

Standard of living = output/population = output/labor force X labor force/population

**Real vs Nominal** = What is something worth today in terms of money from a base year = nominal/base

% difference between wage, GDP, Rates = Nominal – base/base X 100

(inflation is the difference in price level)

**CPI is the “basket of goods”; shows price levels at different points of time**

To calculate into REAL figures = Today (or Nominal) CPI/Base year X 100

To calculate the “basket” of goods (CPI) = price of current(quantity of the base)/price of the base(qty of base)

ALWAYS use BASE year QUANTITY when calculating the baskets of goods

**Inflation = Current CPI – Base CPI/ Base CPI X100**

When prices go up

Deflation – when prices go down (buy more with less $)

Stagflation – high unemployment, high inflation

When calculating the real value:

I.e. a toothbrush cost $2 in 2000

The same tooth brush cost $3 in 2014

What is the real cost of the 2014 toothbrush cost it 2000 is the base year (base year = CPI is 100)

1. Calculate CPI for 2014 3/2 X 100 = 150 THIS IS THE CPI of 2014
2. Calculate inflation 150-100/100 X 100 = 50%
3. Real price X inflation 3.00 X 50% = 1.50 THIS IS THE AMOUNT THAT THE PRICE INFLATED – NOT the REAL price
4. ADD the inflation amount to the nominal cost = $4.50 is the REAL cost of the 2014 tooth brush at 2000 prices

**EMPLOYMENT**

**WORK FORCE** = ALL people 16 or older, not in the military, not in prison and not institutionalized

\*\* “Institutionalized” means in a facility for an extended period of time. DO NOT assume that a disabled or hospitalized person is “institutionalized” unless specified

**Unemployed** = all those who are able and willing to work, have looked for a job in the past 4 weeks but have not found one

**Employed** = all those who have worked for pay for 1 hour or more in the past week (prior to the BLS monthly survey)

**Labor Force** = Unemployed + Employed

**NOT in Labor Force (but IN Work Force)** = Discouraged workers, retirees, student – anyone who falls under work force requirements but is not working or looking for work (in past 4 weeks)

**Work force participation rate** = work force/TOTAL population

**Labor force participation rate** = Labor force /WORK force or Employed + Unemployed / Work force

**Unemployment rate** = Unemployed / Labor force

**Employment rate** = Employed / Labor force

**Types of Unemployment**:

Frictional = a decision by the person (typically by choice), considered short term

Structural = decision by firm (restructuring, downsizing, etc), considered short term

Cyclical = result of change in the economy (recession) Seasonal = change in climate, time of year

**FULL employment** = when population is at the NATURAL RATE of UNEMPLOYMENT = 5% in the US (includes just frictional and structural unemployment which can still exist due to technology changes, etc.)

WAGES: Real (adjusted for inflation) = nominal/price index X 100

**Interest Rates**: Nominal Rate (what to charge today) = Real Rate (what lenders expect to see in returns at the end of the loan) + inflation

**AGGREGATES: TOTAL ECONOMY!!!**

**Aggregate production function**: relationship of how much total output can be produced with different quantities of labor; resources and technology held constant

**Labor supply market** = # of people who want to work at various real wages

**Labor demand** = # of people needed at various wages

**Aggregate Demand** = AD = C + I + G + NX (OUTPUT, INCOME, EMPLOYMENT are measured on the X axis as AD)

RISE in PRICE LEVEL= DROP in DEMAND

**EXOGENOUS CAUSES for AD to shift**

CONSUMER EXPENDITURES (“C” of AD)

Taxes rates Income (short term and expected

Wage increases Credit (availability, restrictions)

Interest rates (Impact savings, lending) Consumer Confidence (going to spend? Or save?)

Wealth: Property, stocks, bonds, savings

INVESTMENT EXPENDITURES (“I” of AD):

Spending $ on Machinery, Equipment, Buildings, Infrastructure which are influenced by expected rates of return, interest rates, future sales and future (anticipated) inflation rates

GOVERNMENT EXPENDITURES (“G” of AD):

Defense, Health care, social welfare, education, foreign aid, regions, industry, law/order

IMPORT SPENDING (negative impact on AD): goods and services bought from foreign countries (outflow of $)

Open Economy effect: prices go up, inflation goes up, money doesn’t buy as much abroad resulting in domestic products being more expensive, buy more imports and trade partners buy less exports

EXPORT EARNINGS (positive impact on AD): goods and services sold abroad (flow of $ in)

**Aggregate Supply:** capacity of the economy; price levels of goods and services in entirety

Inflation; interest rate; and wages can all be indicators

Costs production Incentives Productivity Capital Stock

Technology Taxes Labor market Education/training

**Long run aggregate supply (LRAS):** AT NORMAL OUTPUT (ALSO CALLED OUTPUT AT FULL EMPLOYMENT) AS PRICES RISE, SO WILL THE CAPICITY OF SUPPLY RESULTING IN A VERTICAL LINE

**SHIFTS IN LRAS**: size of labor force (more = shift to right; less = shift to left)

Quantity or quality of capital (better/more = produce more = shift right)

Quantity or quality of resources (more resources = produce more = shift right)

Technology

Health (healthier population = more productive)

Education

**Short run aggregate (SRAS):** UPWARD SLOPING

**CLASSICAL:** Relationship between output and price level: as price level increases, quantity supplied increases (suppliers want to sell more if they can get a higher price for it). Changes in price level result in change ON the curve; exogenous changes result in shifts OF the line.

**KEYESIAN:** Wages are assumed to be fixed because labor is at its maximum capacity (there are no new people to work: full employment). The only way to increase production is to make the existing capital (labor) work harder which means more costs (overtime). This results in increased cost and increased prices. The concept of wages not changing is based on the idea that if the economy is at full employment, all of the workers are at a set wage and all are employed. This is called “STICKY WAGES”. The workers’ pay does not adjust with the price level right away. So, if the firm wants to get more productivity, they are going to have to pay overtime. Eventually, the consumers will adjust to the change in price level (buy less) so demand will go down and the balance will return and the wage will also adjust to the price level change.

**Exogenous causes for shifts of the SRAS:**

Business costs (go up = produce less goods = shifts less)

Business taxes and regulations

All the rest are the same as the LRAS

**AD/AS TOGETHER:**

UNEMPLOYMENT and the AD/AS graph: Employment is a factor of production and is measured also by AD. At equilibrium, we are at Full Employment (in US that’s an assumed 5% unemployment). As prices go up, employment goes down (less need for labor, less goods demanded, less supplied). Unemployment rates go up and the equilibrium shifts left (because the AS curve shifts left)

Sustained Growth: AS and AD rise at similar rates; GDP can rise without effects on inflation

Diminishing Returns: AD goes up at a smaller growth rate (diminishing returns)

**SHIFTS from SRAS to LRAS:** Short run is in REAL time (now). LRAS reflects economists’ belief that changes in AD only temporarily change as economy’s output.

**CLASSICAL MODEL**: 1770s and Adam Smith’s “Invisible Hand” (Wealth of Nations, 1776)

* questioned how society could organize itself so an individual could make his own wealth; goal was for country to grow output
* develop a system to explain price levels
* David Hume: man’s motivations are based on desires (not reason)
  + In short run: increase in $ supply = increase in production
  + In long run: increase in $ supply will do nothing
* Say’s Law: Supply creates its own demand
  + People only produce more if they want to trade for other goods

(think about scarcity – there is only so much we can produce with the amount of resources we have and there is only so much we can consume based on our productivity)

* Assumptions of Classical Model:
  + Pure competition exists (no 1 seller/buyer can affect a price)
  + Wages and prices are flexible (supply and demand dictates)
  + People are motivated by self-interest (people want to maximize well-being; firms want to maximize profits)
  + People can’t be fooled by money prices (buyers and sellers react to relative prices not changes in the money value when relative prices remain unchanged)
    - Buy the same amount if wages and prices go up by same amount
* Equilibrium
  + In credit market
    - Each $1 saved = $1 invested in business
    - Interest rates equate to amount of credit demanded with the amount of money supplied
      * Planned investment = planned savings
      * Savings is a supply of credit
      * Investment is a demand for credit
  + In labor market
    - Excess labor at a certain wage = wage level is too high
    - Unemployed will be employed if accept lower wages (they are voluntarily unemployed)
    - Only structural and frictional unemployment exists
    - Level of employment determines real GDP (all else constant)
    - Long term involuntary unemployment isn’t possible
      * Say’s law and flexible rates, prices and wages keep full employment
        + Results in vertical LRAS
        + Result of economy with – full information; full adjustments for wages; and full adjustment for prices
    - Increase in AD = results from increase in PL as wages rise as result for rise in demand for L
      * GDP is unchanged on LRAS curve
    - Decrease in AD = results from decrease in PL as wages drop due to decrease in demand for L
      * Workers bid down wages; other inputs fall and real GDP is unchanged on LRAS curve

**KEYNESIAN THEORY**: John Maynard Keynes (The General Theory of Employment, Interest and Money, 1936)

* AD:
  + Influenced by production, employment and inflation
  + During a recession the economy may not return naturally to full employment
    - The government must STEP IN and use government spending to STIMULATE economic growth
      * Lack of investment in goods and services causes the economy to operate below its potential output and growth rate
  + Overcoming a depression requires economic stimulus which includes cutting interest rates and increasing government investment
* Unemployment
  + Result of structural inadequacies within the economic system
    - Not a product of laziness (unemployment is involuntary)
    - Unions and long-term employment contracts explain downward INFLEXIBILITY of wages
      * Lead to “stickiness” of wages
      * Can have excess capacity and high unemployment where prices do not fall

**Terms:**

Economics – how individuals/firms/society choose to allocate resources (land, labor, capital, entrepreneurship)

Macroeconomics – output, unemployment, banking, trade and business cycle

Ceteris paribus – all things equal

Positive economics – study of how economy works (can be tested)

Normative economics – opinion, used in policy

Scarcity – unlimited wants vs limited resources available

Opportunity cost – best alternative given up when a choice is made

PPF or PPC – production possibilities curve; max possible production of 2 goods given existing resource (efficiency is ON the curve; inefficiency is inside the curve; unattainable is above curve)

Curve can move in or out based on resource changes

Resource allocation: who decides what resources will be used where

Market = individual command = government traditional = history/tradition

Resource ownership:

Capitalism = private socialism = government communism = people

Goods: Durable (lasting) non-durable (perishable – food)

Normal = desirable (income up = buy more) Inferior good = buy more when income down (Ramen noodles)

Intermediate = used in production Final good = end product that is sold

Factor market = payments to owners of resources used in production (labor) Product market = final good sold

Demand – amount demanded by buyers at each price

Supply – amount supplied by sellers at each price P up = D down; P down = D up

Shifts: Demand = # of buyers, income, wealth tastes, related goods (substitutes or complements);

Supply = # of sellers, technology, weather, natural resources, resource prices, taxes, subsidies, cost of other goods supplier make