The Classical School

The production function

> $Y = F(K, N)$ In the short run labour is said to be fixed. Where K is capital and N is labour. So output varies only with labour drawn from a fixed population size. We mostly look at diminishing marginal product to labour.

To get the demand for labour. Multiply the product of labour by the price of the products in the market. This gives the total benifit to a producer of hiring additional workers. Subtact from this the costs or wages of labour. Then differentaite to find the point of maximium profit.

Or MC for a firm is $\frac{W}{MPN}$

In a perfectly competitive market. $P = MC = \frac{W}{MPN}$ So $\frac{W}{P} = MPN$ ie The number of goods for which the last labourer is paid the full value of goods they work produce is the whole number of goods they produce? Wages overprices is the real wage rate Macro Economics ==========

GDP

GDP(Gross Domestic product) The Total amount of goods and services produced within an economy in a given year [ˆmn] {-}There are three ways of culculating this * Expenditure This must only include expenditure on goods and services produced within the economy (no imports, and no goods produced in a previous year) * Income This must only use income obtained by selling goods and services (no transfer payments) * Output

GDP composition

To measure the GDP[1] it is simplest to measure the amount spent on goods and services and then subtract the part of that which is spent on goods and services produced outside the economy (imports) or before the given year (invetories). Finaly goods not bought in the bought elsewhere (exports) or stored for the future are added.[2]

- Consumption(C): The goods and services purchased by consumers
- Investment(I): The sum of
  - no-resedential investment: Capital equipment and land bought by firms
  - resedntial investment: Housing bought by consumers
- Goverment spending(G): The amount the goverment spendings buying goods and services from firms and employing workers. (goverment tranfers are not payments for work done and are not included)
- Net exports (X-I): The total amount of exports minus imports.
- Net inventory build up

This brings us to the equation $Z = C + I + G$

Consumption

Consumption is a function of disposable income [3] (Y_D)

$$C(Y_D)$$

Unemployment ————-

[1] GDP and total demand(Z) are used interchangably

[2] Exports and inventories are ignored in the begining part of the course

[3] income minus taxation

Inflation

Philips curve

GDP composition 2

Go over chapter 2

Net foriegn factor income.

Indirect taxes :Sin taxes , value add tax , import taxes

Directs taxes Direct on factor imput, wages profit

GDP at market price - direct taxs +(net subsidies)[4]

further adjustments

- further transaction on household income
- Insurance contrabutions(money is taken directly taken, south african pensions come directly from tax not from fund)
- Unemployment funds (are in douth africa)
- Corporaate taxes
- Profits that could have been paid by firms that are retained by firms
- transfer payments[5] This results in personal income
- taxes on interest This results in disposable income : The amount of income a consumer can produce

GDP is concerned with the amount of production that takes place in a country GNP is by national citizen

GDP + income from foriegn source - production from foriegn sources

Output(Value add) = Output(Income) + assume not corporate profit is retained.

Output(Value added) = output(expenditure) + No inventories

Output(expenditure = output(income) + No saving

Important

[4]indirect taxes - subsidies

[5]Do not confuse payments to and from unemployment and pension payments

Nominal vs real GDP Nominal GDP = real GDP * current prices

- Prices measured as a pecentage of the bases year

Real GDP higher than nominal GDP means increase in output[6]

Unemplyment or inflation

Strict unemployment People that are activly looking for work Broad unemplyment
Poeple activly looking for work plus discouraged works (everybody who would like to work)

Broad is greater the strict easaly proovable

U or Ut is the number of people unemployed u or ut is the unemployment rate

Paticipation rate The the labour force over the population size. Higher participation rates tend to have higher employment rates.

Problems with unemplyment

- GDP excludes the illigal economy and exculdes the legal economy that is not reported for tax evasion.
- Good unemployment benefits may couses people to register as unemployed.
- Unemployemnt couses less than optimal production.

#inflation An increase in the change of general price levels. inflation rate is the differentite of inflation. An index may be simple or compound

CPI is used in south africa (goods consumed by a typical or average houshold)

- Conducts infequent houshold servays every five or more year to get weightings
- Consumer price index
- State SA trakes some prices monthly and others quaterly

[6]Q: What is calculated first infaltion or gdp, Why not exponential but go over

- Month by month inflationn a - b / a
- monthly anual inflation rate. jan to jan ... dec to dec
- annual = average of monthly annual

1. find the size of the labour force

GDP deflator Real GDP - Nominal GDP / reaGDP

GDP deflator and CPI move together most of the time but cpi moves faster from international shokes.

Competition determines how much price shocks are communicated to consumers.

Hyperinflation and deflation

Inflation affect income distrabution

- Fixed income earners such as pensioners loose income
- Distorions
- Bracket creep(Goverments try to adjust)
- Exchange and inflation tend to move together

Is inflation ever good

- In japan moderate inflation could have worked
- High deflation can lead to uncertainty
- Why does low inflation make monetary policy useless
  - Inflation and interest rate move together.
  - Centeral bank cannot reduce interest rates below zero

Chapter 3

Core assumptions

Understanding the economics of GDP equation.

The aggregate expenditure model.

In equalibrium

- Y = income = output **45 degree line**
- $Y = C + I + G + (X - M)$
- solve for Y
- Alternitive leakages vs injections in the goods/output market
- Find saving (the part of disposable income which is not consumed)
  - Yd is disposable income $Y - T$ [7]
- National income may be veiw as the aount of income earned or the amount generated.
- $Y = C + T + S$
- Generation
  - Generated by private investment goverment of and private spending.
  - Or factor income.
- Equat the right hand side of both equations and solve for S
- Group together goverment policy
- Assume govermant defiicit
- S = private savingscorperate saveings
- Some private savings are used to finaces deficit so there is crowding out of privated investment.
- Solve for I to show this
- If goverment is running a surplus goverment has savings which is used to finace private sector investment.
- $S_p + S_g = I$
- Than add G on both sides of the inequality.
- LHS saving and taxes are lelakages
- In equilibrium leakages are equal to injections

Diagamatically

- Draw a line represnting the realtionship between I + G and S + T
- replace S by a function of income.
- S + T veries positivly with Y and S +T0 is negative.
- Leakages are equel to investment when the two lines meet

Introducing imports and exports

- Exports are a leakage. Impports are an injection

[7] Taxes do not very with income for simpplity.

- Solve for S with exports and imports
- group G and T
- group X and M
- Interprete the equation
  - assume that G > T and X > M
  - curret and finacial acount
  - Blance of payment meens imports must be equal to 0
  - Balance of payments := current acount + finacial account
  - Part of our saving are being held off shore.
  - F_s is domestic savings held offshore.
  - Solve for I in an open economy
  - South African rand is volatile becouse of high reaince on short term forign loans.
- Methedology used to find equilibrium dependece on veriables given

Paradox of thrift

A paradox is a seemingly ontradictory stament that may none the less be true on a deaper level of meaning or understanding.

A household try to save more their income decreases by a level such that thier income remains unsaved.

- I = S + (T-G)
- I = 1 - c_0 + (1 - c_1)Y_n +(t_0 + t_1Y) -G]
- assume autonomous savings decreases.
- Draw the graph of the consumption and savings function.
- People tend to spend more than they save.
- Saving functions is flatter than consumtion function
- More savings meens consumption function moves down and savings function moves up.
- Change in equilibrium
- So lower income meens less saved even though thier is a higher savings rate.
- This is not indefinate the susesiive falls get smaller and smaller.
- If saving and income induced tax revenues shrink.
- Invesment is assumed to be constant. Savings levels will eventually equalize.
- In reality output and investment move together.
- Investment is the engine of growth in fast growign economies.

Is the goverement omnipontent

Goverment cannot change goverment spendign at its own will Medium term expenditure plan in south africa is the 3 year plan which the goverment must stick there are also palamentry adjsutments. Large deficits increase risk which adversly effect exchae rate.

Anticipations are likly to matter, permanent or tempory decrease in taxes have different effects. Full employment plus stimulation will could result in inflation. Expansionary fiscal policy may have short run beneficail effects. Which increase the amount of interest that needs to be paid.

large defficits can crowd out private investment.

Is it not posible for trusted goverments to get very low interest rate loans such that interest may even dip below infaltion?

Change in inventories are cuased by a lack of equilibrium

In cahptr 5 we will include finacial markets and in 7 we will include the differnece between real and nominal interest. Models which show interaction between the outpt market finacial market and labour markets

The link between the utput market and the finacial market are interest rates and income Changes in money supply chaneg interest rates Changes in the interest rate change the output level This again changes income.

The mathamatical model of the finacial market.

Functions of money

Motives fror holding money

nessesary information

- Assume their are only two markets
  - Exclude stock market
  - Exclude Diravite market -W is finacial wealth total amount owed + total amount of bonds ownd
  - Cu is currency held by public
  - D is the deposits in private /or commercial banks
  - Using simple balance sheets (Aggregated all balance sheets for commercial banks)
  - Liability are accounts held by consumers
  - Assets are goverment bnods(assume short term goverment bond with a one year period)
  - Bonds are bought from goverment
  - Bonds are an interest yielding good
  - Bond are fixed interst rate
  - Goverment issues bonds to the private sector and to the central bank
    Assets Liabi —— ——- ———

Required reserve ratio is the ratio of reserves to assets that may be issued based on the amounts of bonds. Not on loans. Money is created in the baking sector though loans and lent out through.

Look at differen measures of money supply in south africa. Assume money earns no interest. Assume all acounts are cheque account deposits rather than saving accounts IE low interest rates.

The inverse relationship between interest rates and the price of bonds. Zero coupon bonds. face value is determined by the issuer or goverment. This is the result that the goverment borrows from consumer

- Assume there is an expectation that interest rates will increase in the future. Assume individuals want to hold more money
- Total wealth is money + bonds
- holding more money meens selling bonds
- Increase in the supply of bonds.
- So price of bonds increases
- Ask about this it is confusing.
- To see the effect of interest rate expecations
-
- Money Demand = currency demand by the private sector + Deposites
- $\frac{C_u}{D} = c$ so curreny is a proportion of money demanded?
- derive the ration between Md and Dd = 1-c
- h donnates central bank money = currency + deposites with central bank (held by private banks)
- GO OVER FULL EQUATIONS FOR MONEY SUPPLY. # Budget speech Links to concepts studied. Go over in tut tests.

Monetary policy effectivness and the islm curve

Expansionary monitry policy

- Repo rate
- Easy open market operations

- The horizontal shift in equilibrium income in the islm model is the same as the horizontal shift in the aggregate expenditure model
- A verticle IS curve means there is no change of income with a change in income
- Find equation for the interest elasticty of income
- Increasing Tax rate and imports reduce the level of output. So small m1 and t1 lead to the same effect of big c1 and b1

The effectivness of fiscal policy under different assumptioms about the slop of the IS function

- Expansionary fiscal policy will shift the IS curve outwards
- Imposes the same shift when IS curve is steep or verticle
- Look at the case where the IS function is verticle
- The steeper the IS curve increase interest more (So interest rate increases)
- A steeper IS means more effective fiscal poicy

Monetary plolicy effectivness (LM slope)

Relitivly flat LM curve

- Money demand is unresopsive to changes in income or interest
- Flat M_d curve results in a flat LM curve
- i = $d_0 - M\frac{}{d1+\frac{d_1}{d_2}Y}$
  - $Md = d_0 + d_1Y - d_2i$
  - LM $Y = \frac{m}{d_1}$...
  - A relitivly flat lm schedule low d-2(interest elasticty of money demand)
    - A high interest elasticty of d_2 means a flat LM
- Out put changes by a larger amount in the aggregate expenditure model that in the islm model
  - Try show this graphically
  - Money demand will increase
  - So investment decreases
- Steep Md = steep LM reactive moentary policy
- Verticle Md must be the same as Ms = verticle LM so reactive LM model

Fiscal policy altering the slope of the LM

- Flatter LM makes fiscal poliy more effective
- An ecpansionsary fiscal poicy leads to an increase in interest rates leads to an decrase in investment "Crowding out"
- Which is consistent with a relitivly flat moeny demand
- Speak about large vs small increase in interest rate relating to large vs small changes in investment.

Liquidity trap

- When both the goods and money market are simulationiously in eqiulibrium We have the LM cruvre
- Wealth can only be held in money or bonds
- If all wealth is held in the form of money wealth is only in th most liqiud asset
- Us economy during the great depession
- Japanese ressesion of the 1990
- During a liquidity trap interest rates are low so bond pirces are high.
- Depresion is more intense than a resesion same time but larger fall
- LM function is flat or horizontal
- So there is a flat M_d d_2 = intfitiy Money demand flattens out
- LM schedule is the mirror image
- As the central bank increases money supply Will result in an equel increase in money demand. interest rates are very low.
- There is a high risk of companies going bankcrupt

- If interest rates are closs to zero they can only move upwards
- So bond prices are expected to decrease
- So capital losses are a large risk
- So fiscal policy is the solution

Policy mix

Fiscal policy and monetary policy mix

Resesion

- Output is very low and we are not in a liquidiy trap
  - Use expansionry policy for both
- If output Y_0 is very low you can use expansionary fiscal policy together with expansionary monetary policy. So the interest rate is unchaged. So no crowding out

Reduce budget defict withouot an adverse effect on output.

Contractionsry fiscal policy Expansionary monatary policy

Consider the effect of eogounous veriables

- Autonoumous investment moves IS outwards Same as fiscal shifts
- Credit card meen less moeny so LM shifts downwards?
- Any factors other than income which shift the LM schedule

Static analyisis is what we have done so far dynamic analyisi would also be useful.

- Investment is done in dynamics
- Plot each veraible against time

The response to chages in disopable income depends on weather the increase in taxes in temporary or peermanent. A temporary change has minamal effect Interest rates only stimulate investment if there is no spare capacity. They also take some time to repond to income changes Finally look at the resonse of consumtion on emloyment ... percentange point is used for changes in percentag

Other veriables

- Lag effect from fedral funds
- relativly small fall
- emplotment is similar to effect on ouput
- Unemployment rate increases
- effect on price level is small deflation over time

This imply that ISML works

** Next tut test in 2 weeks**

Summary.

Aggregate expenditure rather then demand.

AD prices arn't fixed AE prices are fixed.

- Output determination in the medium run.
- Determined by supply side factors.

Labour market

Output market and labour market

Aggregtae expaedntiure increase so firms increas output so firms increase employment so unemployment goes down so wages go up so prices go up so prices go up so wages go up.

W: Nominal wages or nominal wages

Real wage rate = $\frac{W}{P}$

So price wage spiral. Vicouse cycle of increases in money and inflation.

Relax the assumption of fixed prices

The total population is devided into. The instatutional civilian poputaion and the non instatutional civilian population.

Non instatutional is all individuals less then 16 + the number of people in prison and the poeple in asylums and the poeple in the miltary and in old age homes.

Instatutional: Labour force and out of labour force.

Employed: **Narrow defnition** Full time or part time working people with some form of renumeration(**posibly in kind but not for the time**).

Labour force: employed or activly looking for work while available for employment.

Out of labour force: Discouraged workers, retired people >=65yrs, Students in tertairy labour force + severly disabled people + people who don't wan't to work Discouraged workers: Would like to work but are not activly looking for work.

Descriptions

Employment

Unemployment

Participation rate

Wages & Price

Works and unions

Prices

Employment and output.

Aggregate supply aggregate demand function.

Look at dyanamics and rates.