

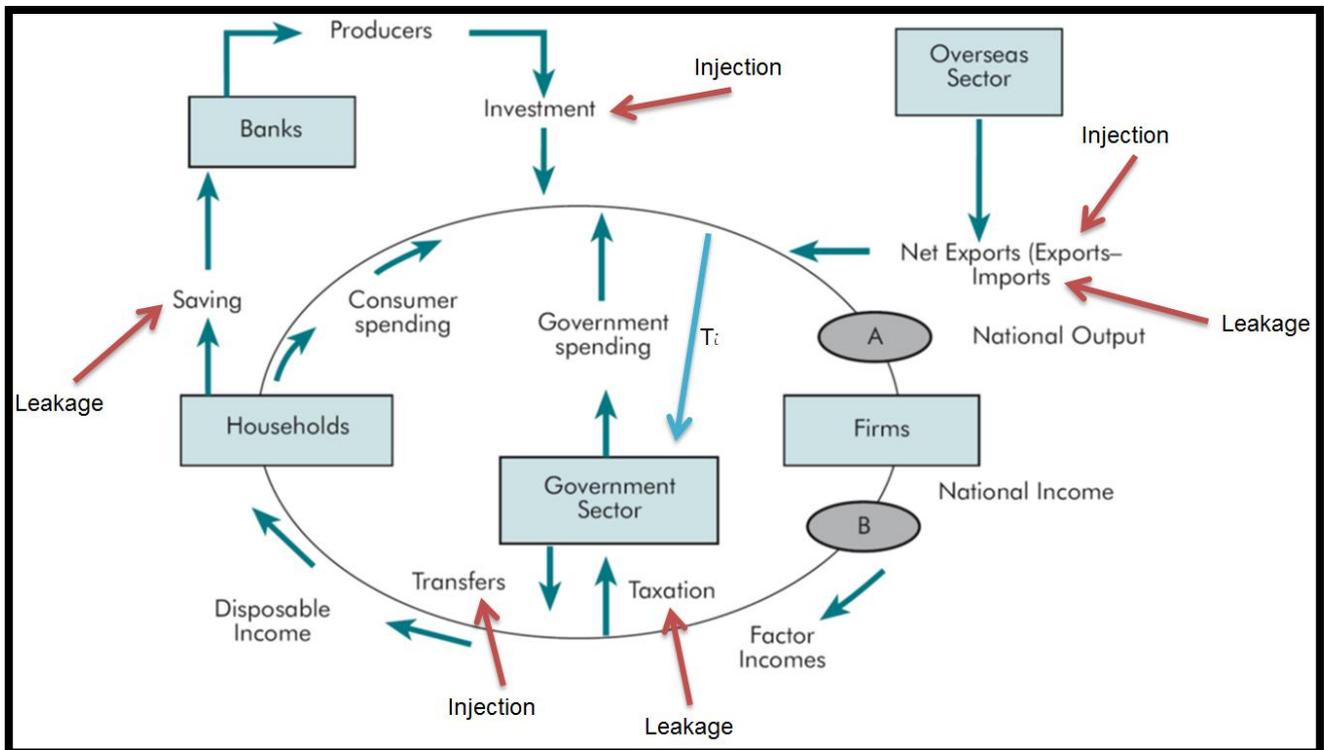
## Measuring a nations income

### Gross domestic product

- GDP is a measure of income and expenditure of an economy
- It's the total market value of all final g/s produced within a country in a given period of time
- GDP does not include intermediate goods (raw materials) or second hand goods
- Double counting can occur with intermediate and second hand goods
- GDP includes intangible goods and intangible services
- It only includes g/s currently produced not transactions involving goods produced in the past
- It measures the value of production within the geographic confines of a country
- It measures the value of production that take place within a specific time interval (year/quarter)
- GDP doesn't include any illegal transactions
- The GDP statistic is always understated because of the black economy

### 4-sector circular flow diagram

- $Y = C + I + G + NX$
- $T_i =$  Indirect tax (GST)
- $Y_d =$  Disposable income ( $Y_d = Y - T_d$ )
- $T_d =$  Direct tax
- $T_p =$  Transfer payment (welfare)



## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Leakage

- Anything that leaves the circular flow

### Injection

- Anything that is introduced to the circular flow

### Things not included in GDP

- Items that are produced and consumed in the home which never enter the market place
- Items produced and sold illicitly e.g. drugs
- Production in other countries even if New Zealanders contributed
- Excludes output produced abroad or income earned by citizens of another country

### GNP

- Gross national product tracks down total income of all citizens of a country

### Consumption (C)

- Spending by households on g/s with the exception of purchases of new housing

### Investment (I)

- Spending on capital equipment, inventories and structures including new housing

### Government purchases (G)

- Spending on g/s by govt
- Does not include transfer payments because they are not made in exchange for g/s

### Net exports (NX)

- Exports minus imports

### National foreign Income

- Net factor income from overseas + net current transfers

### Gross national disposable income (GNDI)

- The gross national income plus current transfers from overseas
- $GNDI = GDP + NFI$
- $GDP(Y) = C + I + G + NX$
- This is because GNDI is when NFI is added on
- $YD = Y + NFI$

### Nominal GDP

- Values the production of g/s at current prices
- Nominal GDP is inflated due to its price

### Real GDP

- Values the production of g/s at constant prices
- An accurate view of the economy requires adjusting nominal to real using the GDP deflator

### GDP deflator

- A measure of the price level calculated as the ratio of nominal to real GDP times 1000
- It tells us the rise in nominal GDP that is attributable to a rise in prices rather than a rise in quantities produced
- To get a true picture we have to remove the price effect
- Therefore we use constant prices rather than current price

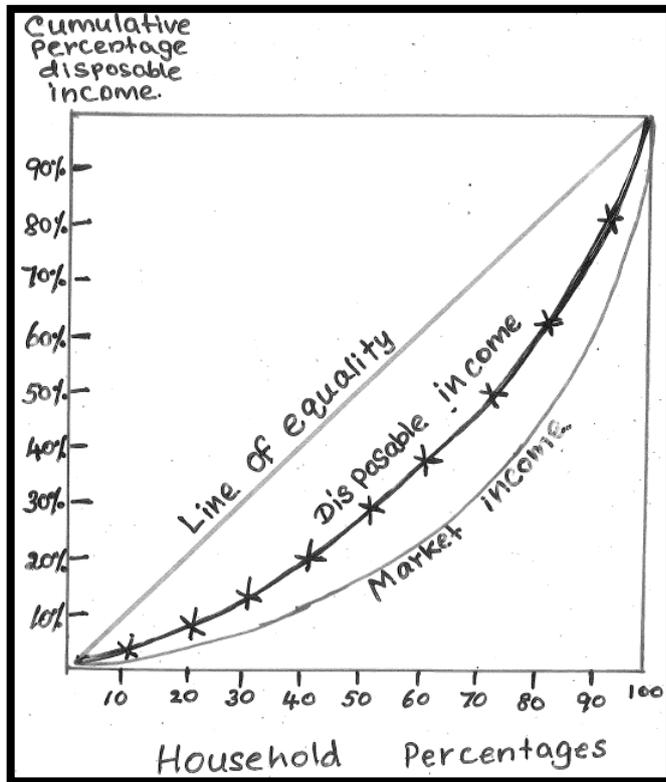
$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 1000$$

### GDP per capita

- Shows the income and expenditure of the average person in the economy
- Higher GDP per person indicate higher standards of living
- However GDP is not a perfect measure of the quality of life as it doesn't show the standard of living for all people
- Averages don't say anything about the distribution of income e.g. bill gates comes to the lecture which increases the GDP per capita of everyone in the lecture

## Lorenz Curve

- Never aim for line of equality



## Problems with GDP

- Comparisons between countries is difficult as the black economy (non-market economic activities) is large in less developed countries
- Undeveloped countries have room to grow while developed countries don't
- GDP doesn't make a distinction between constructive and destructive activities e.g. a war will increase gun production which will improve GDP however the standards of living will be decreasing due to the hostile environment
- GDP counts restorative activities e.g. earthquakes

## Items not included in GDP but improve wellbeing

- Value of leisure
- Value of a clean environment
- Value of activities that take place outside the market such as volunteer work

## Quality of life

- Different measure for standards of living and isn't considered in GDP
- Includes: level of crime, amount of pollution, amount of leisure
- E.g. Singapore vs. NZ

### International differences in GDP

- Wealthier countries have distinctively higher life expectancies, literacy rates and internet usage

### Summary of GDP

- Total expenditure in the economy must equal the total income of the economy
- GDP measures the economy's total expenditure on newly produced g/s and the total income earned from the production of these g/s
- GDP is divided into 4 components of expenditure: consumption, investment, govt purchases and net exports
- Nominal GDP uses current prices to value the economy's production
- Real GDP uses constant base year prices to value the production of g/s
- The GDP deflator measures the level of prices in the economy
- GDP is a good measure of economic well-being as people prefer higher to lower incomes
- However GDP is not a perfect measure of well-being as things such as leisure and a clean environment can't be measured by GDP

## Measuring the cost of living

- Inflation is a situation in which the economy's overall price level is rising
- The inflation rate is the percentage change in the price level from the previous period

### Consumer price index

- The CPI is a measure of the overall cost of the g/s bought by a typical household
- It is used to monitor changes in the cost of living over time
- We want to measure cost of living and the purchasing power of money
- When CPI rises the typical household has to spend more dollars to maintain the same standards of living
- In calculating the CPI statistics NZ uses data on over 700 g/s
- The cost of the basket is calculated at different times
- It's important to keep the basket the same & isolate the effects of the price change so the quantity change is not taken

## Calculating CPI

1. Fix the basket
  - Determine what prices are most important to the typical consumer
  - Monthly consumer surveys are conducted to set the weights for the prices of g/s
  - Greater weights should be given to more important items
  - The basket remains fixed so we can't change it from year to year
  
2. Find the prices
  - Find the prices of each g/s in the basket for each point in time
  
3. Compute the baskets cost
  - Use the data on prices to calculate the cost of the basket of g/s at different times
  
4. Choose a base price and compute the index
  - Once base price is chosen CPI can be calculated

$$\text{CPI} = \frac{\text{Price of basket of goods and services in current year}}{\text{Price of basket of goods and services in base year}} \times 1000$$

5. Calculate the inflation rate

$$\text{Inflation rate} = \frac{(\text{CPI in Year 2}) - (\text{CPI in Year 1})}{\text{CPI in Year 1}} \times 100$$

Table 8.1 Calculating the consumers price index and the inflation rate: An example		
<b>Step 1: Survey consumers to determine a fixed basket of goods</b>		
Basket = 4 cans of beer, 2 hamburgers		
<b>Step 2: Find the price of each good in each year</b>		
Year	Price of beer (\$)	Price of hamburgers (\$)
2008	1	2
2009	2	3
2010	3	4
<b>Step 3: Compute the cost of the basket of goods in each year</b>		
2008	(\$1 per beer × 4 beers) + (\$2 per hamburger × 2 hamburgers) = \$8 per basket	
2009	(\$2 per beer × 4 beers) + (\$3 per hamburger × 2 hamburgers) = \$14 per basket	
2010	(\$3 per beer × 4 beers) + (\$4 per hamburger × 2 hamburgers) = \$20 per basket	
<b>Step 4: Choose one year as a base year (2008) and compute the consumers price index in each year</b>		
2008	(\$8/\$8) × 1000 = 1000	
2009	(\$14/\$8) × 1000 = 1750	
2010	(\$20/\$8) × 1000 = 2500	
<b>Step 5: Use the consumers price index to compute the inflation rate from previous year</b>		
2009	(1750 – 1000)/1000 × 100 = 75 per cent	
2010	(2500 – 1750)/1750 × 100 = 43 per cent	

## Problems with CPI in measuring the cost of living

### 1. Substitution bias

- Basket doesn't change to reflect consumer reaction to changes in relative prices
- Consumers substitute toward goods that have become relatively less expensive
- The index overstates the increase in cost of living by not considering consumer substitution
- E.g. price of apples increases so we switch to consuming oranges

### 2. Introduction of new goods

- Basket doesn't reflect the change in purchasing power bought on by the introduction of new products
- New products result in greater variety which makes each dollar more valuable
- Consumers need fewer dollars to maintain any given standard of living
- E.g. family at the cinema needs 4 tickets (prices) but renting a DVD requires only one ticket (price)

### 3. Unmeasured quality changes

- If quality of good rises from one year to the next the value of a dollar rises even if the price of the good stays the same
- If quality of good falls from one year to the next the value of the dollar falls even if the price of the good stays the same
- Statistics NZ tries to adjust the price for constant quality but such differences are hard to measure
- E.g. new cars that are more economical require less petrol so CPI of 100L isn't accurate as new cars only need 60L

## Problems with CPI

- The substitution bias, introduction of new goods and unmeasured quality changes cause the CPI to overstate the true cost of living
- The issue is important as many govt programs use the CPI to adjust for changes in the overall level of prices
- The CPI overstates true inflation by 0.5-1.5%

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### GDP deflator vs. CPI

- When you see GDP increase the deflator tells us how much of that increase in GDP is attributable to increases in price
- The GDP deflator is the ratio of nominal GDP to real GDP
- Real GDP is the output at base year prices
- The GDP deflator reflects the prices of all g/s produced domestically
- The CPI reflects the prices of all g/s bought by consumers (goods in basket can be produced overseas)
- The CPI compares the price of a fixed basket of g/s to the price of the basket in the base year
- The GDP deflator compares the price of currently produced g/s to the price of the same g/s in the base year
- E.g. expensive goods (planes) produced in USA but not consumed by normal consumers
- E.g. VW cars consumed by normal consumers but not produced in America
- E.g. GDP deflator will show oil produced by USA while the CPI will show all oil consumed by USA (from middle east)

### Producer price index

- PPI measures the cost of a basket of g/s bought by firms rather than consumers
- Because firms pass on their cost to consumers PPI can influence CPI
- So PPI has a direct influence on CPI

### Tradable inflation

- The g/s that are influenced by international prices & exchange rates
- It is calculated by the reserve bank and comprises of all g/s in the CPI that are imported or are in competition with foreign goods either in domestic or foreign markets
- Dairy prices are included in tradable inflation because prices are determined in world markets

### Non-tradable inflation

- Created by the reserve bank and comprises of all g/s in the CPI that do not face foreign competition e.g. govt charges but excludes interest rates

### Headline inflation

- Includes prices of food and energy which are volatile (affected by war, adverse climate)

### Core/underlying inflation

- Concerns the RBNZ as they are a result of monetary policy like money supply

### Correcting economic variables for the effects of inflation

- Price indexes are used to correct for the effects of inflation when comparing dollar figures from different times
- A price index can help establish what earnings would be relative to today's prices

$$\text{Amount in today's dollars} = \frac{\text{Price level today}}{\text{Price level in year T}} \cdot \text{Amount in year T dollars}$$

$$\text{Wage in 2008 dollars} = \frac{\text{Price level in 2008}}{\text{Price level in 1905}} \cdot \text{Wage in 1905 dollars}$$

### Indexation

- When a dollar is automatically corrected for inflation the amount is said to be indexed for inflation
- Superannuation contributions for instance may be indexed so each year the contribution increases to account for rising prices
- When CPI is overstated it can cost the govt millions of dollars as wage increases are tied up to the rate of inflation e.g. superannuation/welfare
- Price indices are used to correct figures for effects of inflation when comparing dollar figures from different times
- Many long term contracts between firms and unions include partial or complete indexation of the wage to the CPI e.g. cost of living allowance which automatically rises when the CPI rises

### Nominal interest rate

- Not corrected for inflation
- Shows how much dollars have increased

### Real interest rate

- Corrected for the effects of inflation
- Shows how much purchasing power has increased

### Interest rates

- Sally saves \$1000 at 10% interest & at the end of the year she gets \$1100
- If inflation was 4% then her purchasing power has only increased by 6%
- If inflation was 15% then her money is less valuable than what she had originally invested
- Therefore if inflation is higher than the interest rate it's better to spend money than save it

## Summary

- Consumer price index shows the cost of a basket of g/s relative to the cost of the same basket in the base year
- The index is used to measure overall level of prices in the economy
- The percentage change in the CPI measures the inflation rate
- The CPI is an imperfect measure of the cost of living because of the substitution bias, the introduction of new goods and unmeasured changes in quality
- Because of measurement problems the CPI overstates true inflation
- The GDP deflator differs from CPI because it includes g/s produced rather g/s consumed
- The CPI uses a fixed basket of goods while the GDP deflator automatically changes the group of g/s over time as the composition of GDP changes
- Dollar figures from different points don't represent a valid comparison of purchasing power
- Various laws and private contracts use price indexes to correct for the effects of inflation
- The real interest rate equals the nominal interest rate minus the rate of inflation

## **Saving, investment and the financial system**

### The financial system

- Consists of the group of institutions in the economy that help to match one person's saving with another person's investment
- It moves the economy's scarce resources from savers to borrowers
- The financial system is made up of financial institutions that coordinate the action of savers and borrowers

### Financial markets

- Institutions where savers can directly provide funds to borrowers
- E.g. share market, bond market

### Financial intermediaries

- Financial institutions through which savers can indirectly provide funds to borrowers
- E.g. banks, managed funds

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### The bond market

- A bond is a certificate of indebtedness that specifies obligations to the borrower to the holder of the bond
- Bond is a form of debt finance
- Junk bonds are not reputable and credit risk is very high
- The term is the length of time till the bond matures
- The credit risk is the probability that the borrower will fail to pay some of the interest or principal
- The tax treatment is the way in which tax laws treat the interest on the bond
- Risk adverse people go for shorter term bonds

### The share market

- Share represents a claim to partial ownership in a firm and therefore a claim to the profits the firm makes
- The sale of shares to raise money is called equity financing
- Compared to bonds shares offer both higher risk and potentially higher returns
- Shareholders are the last to be paid if a firm goes bankrupt therefore shareholders run a bigger risk which explains the higher returns
- The information in stock tables consists of: price of shares, volume of shares sold, dividends, price-earnings ratio

### Financial intermediaries

- Financial institutions which through which savers can indirectly provide funds to borrowers
- Stocks and bonds are issued only by large corporations & govt
- E.g. a dairy owner can only raise money from a bank because nobody would buy bonds or shares from a dairy

### Banks

- Take deposits from people who want to save and use the deposits to make loans to people who want to borrow
- Pay depositors interest on their deposits and charge borrowers slightly higher interest on their loan
- Banks help create a medium of exchange by allowing people to write cheques against their dollars
- Stocks and bonds are a store of value for people just like bank deposits
- A medium of exchange is an item that people can easily use to engage in transactions

### Managed/mutual funds

- An institution that sells shares to the public and uses the proceeds to buy a portfolio of various types of stocks, bonds or both
- They allow people with small amounts of money to diversify their investment easily
- This reduces the risk but the shareholder has to accept both loss or gain
- The mutual fund will charge a small commission for their services

### Other financial institutions

- Credit unions, pension funds, insurance companies, loan shark
- All institutions of the financial system coordinate savings & investment into the economy
- They determine long term economic growth, GDP & living standards

### Savings and investment in an open economy

- GDP is both total income and total expenditure in an economy ( $Y = C + I + G + NX$ )
- GNDI is the disposable income (YD) of an economy which often differs significantly from GDP in a small open economy because  $YD = Y + NFI$

### Implications for low NZ savings

- $S = (Y - C - G) + NFI$
- Savings as a proportion of GDP in NZ is rather low by international standards
- A low savings to GDP ratio doesn't mean that NZ residents consume too much and save to little

### Saving and investment in an open economy

- $S = I + (NX + NFI)$

### Saving and investment in a closed economy

- The economy does not engage in international trade and doesn't allow residents to earn income across national borders ( $NFI = 0$ )
- Therefore  $GNDI = GDP$  and  $YD = Y$
- So  $Y = C + I + G$
- Which gives  $S = I$

### Saving and investment in national income accounts

- National saving:  $S = YD - C - G$
- National savings is the total disposable income in the economy that remains after paying for consumption and govt purchases

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### National savings

- $S = I$
- $S = Y - C - G$
- $S = (Y - T - C) + (T - G)$

### Private saving

- The amount of disposable income that households have left after paying their taxes and paying for their consumption
- Private savings =  $YD - T - C$

### Public saving

- The amount of tax revenue that the govt has left after paying for its spending
- Public saving =  $T - G$

### Saving and investment in the national income accounts

- If  $T > G$  the govt runs a budget surplus as it receives more money than it spends
- The surplus of  $T - G$  represents public saving
- If  $G > T$  then the govt runs a budget deficit
- $T = G$  is a balanced budget

### Loanable funds

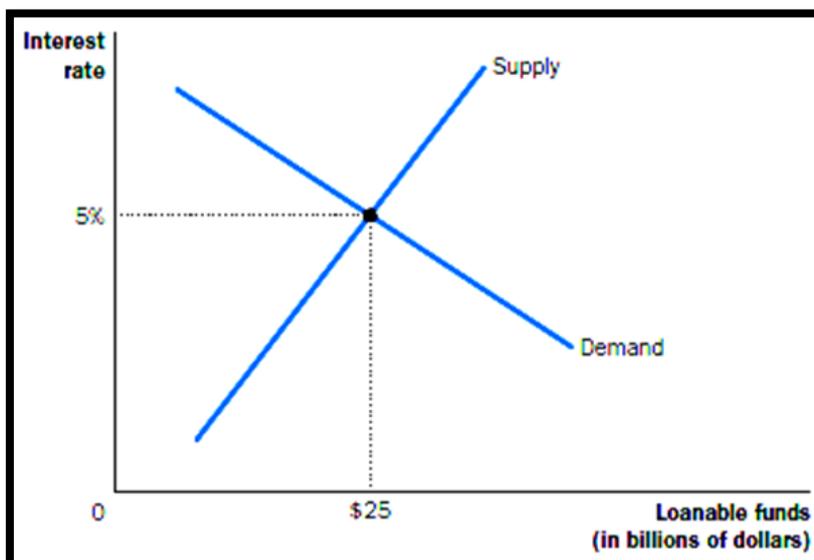
- Funds that can be given out to borrowers
- Supply comes from savers
- Demand comes from big businesses

## The market for loanable funds

- Financial markets coordinate the economy's saving and investment in the market for loanable funds
- The market for loanable funds is the market in which those who want to save supply funds and those who want to borrow to invest demand funds
- For the economy as a whole:  $S = (Y - T - C) + (T - G)$
- The financial system stands between S & I and directs the nation's investment
- There is active and passive investment
- For an individual S does not equal I but for the nation it is made possible by financial institutions
- Loanable funds refer to all income that people have chosen to save and to lend out rather than use for their own consumption
- Loanable funds are typically exchanged as bonds, shares, mutual funds or cash deposits in a bank
- Loanable funds link the present to the future
- Well-functioning financial markets are important for current and future generations who will inherit money of the resulting benefits

## Supply and demand for loanable funds

- Supply of loanable funds comes from people who have extra income they want to save and lend out by buying financial assets such as bonds, shares and term deposits
- The demand for loanable funds comes from households and firms that wish to borrow to make investments by buying financial assets
- Savers lend money to investors at a price
- The interest rate is the price of the loan
- It represents the amount borrowers pay for loans and the amount lenders receive on their savings
- The interest rate in the market for loanable funds is the real interest rate
- The equilibrium of the supply and demand for loanable funds determines the real interest rate



## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Glass-Steagall act

- Introduced the separation of bank types according to their business (commercial and investment)
- The act enabled commercial banks to underwrite and trade instruments such as mortgage-backed securities and other financial derivatives
- Some argue this act contributed to the global financial crisis

### Subprime mortgage crisis

- A Loan given by the bank to buy a house where the person is unable to pay back the loan
- See course book for more info (not relevant to test)

### How over speculation led to a credit squeeze

- Speculation involves the lending of money or the purchase of assets, equity or debt but in a manner that has not been given thorough analysis or is deemed to have low margin of safety or a significant risk of the loss of the principal investment

### Govt policies that affect saving and investment

- Taxes and saving
- Taxes and investment
- Govt budget deficits

### Policy 1 – Incentives to save

- Taxes on interest substantially reduce the future payoff from current saving and as a result reduce the incentive to save
- Japan & Germany save more than America and this is mostly due to taking of interest income
- Some people advocate a consumption tax as an incentive to save
- If a change in tax law encourages greater saving then result will be lower interest rates and greater investment

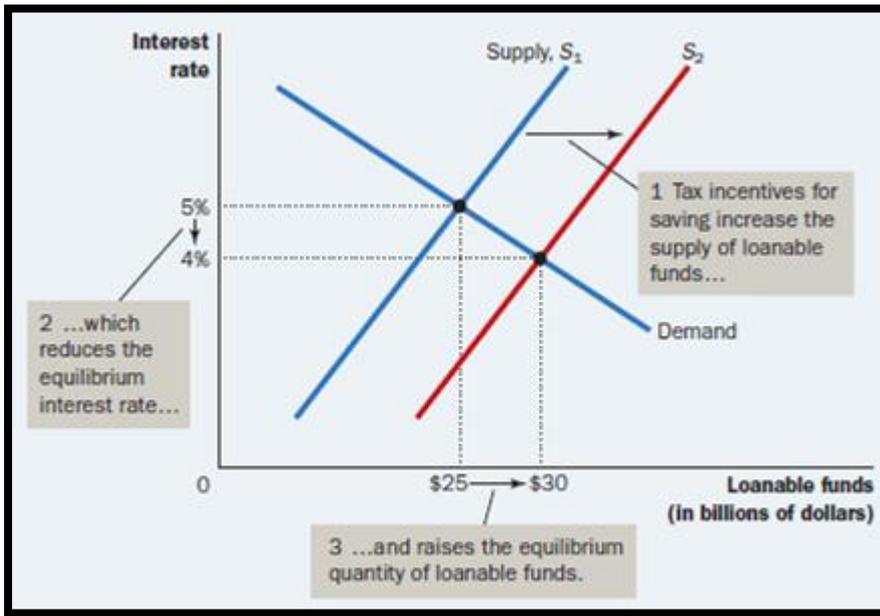
### Tax decrease

- A tax decrease increases the incentive for households to save at any given interest rate
- The supply of loanable funds curve shifts to the right
- The equilibrium rate decreases
- The quantity demanded for loanable funds increases

### Taxing interest rates

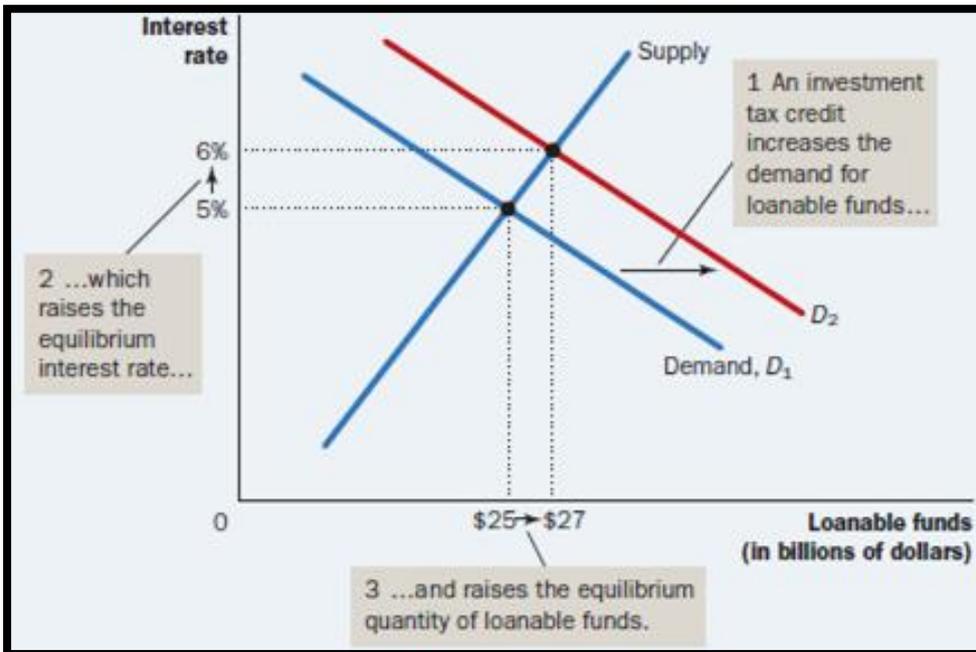
- The govt should only tax the nominal interest rate not the real interest rate
- Tax is a disincentive to save

Increase in the supply of loanable funds



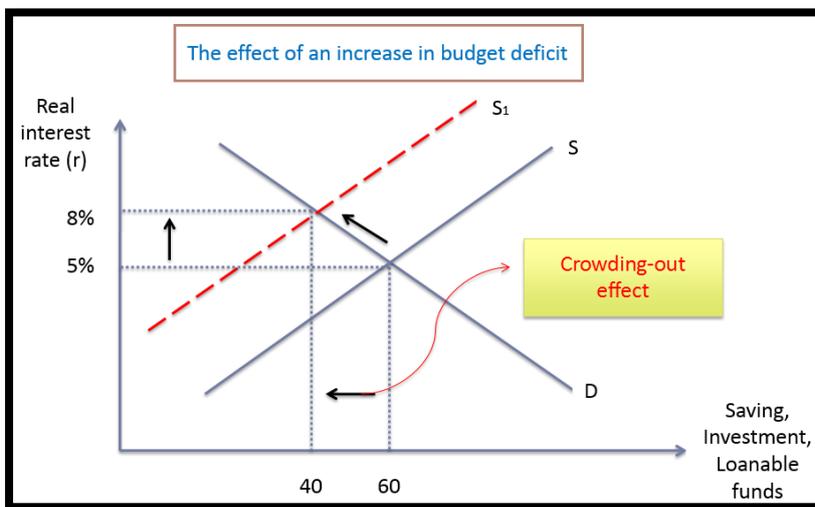
Policy 2 – Investment incentives

- An investment tax credit increases the incentive to borrow
- It increases the demand for loanable funds
- Shifts the demand curve to the right
- Results in a higher interest rate and a greater quantity saved
- Savers supply more savings due to higher interest rate (movement along supply curve)
- Raises return on investment and the amount of loanable funds



### Policy 3 – Govt budget deficits and surplus

- When the gov't spends more than it receives in tax revenues the shortfall is called a budget deficit
- The accumulation of past budget deficits is called the gov't debt/public debt/national debt
- Gov'ts borrowing to finance its budget deficit reduces the supply of loanable funds available to finance investment by households and firms
- The fall in funds for private investment is called crowding out
- The deficit borrowing crowds out private borrowers who try to finance investments
- A budget deficit decreases the supply of loanable funds
- It shifts the supply curve to the left, increases the equilibrium interest rate and reduces equilibrium quantity of loanable funds
- The fall in investment because of gov't borrowing to cover the budget deficit is represented by the movement along the demand curve
- When gov'ts reduce national saving by running a deficit the interest rate rises and investment falls
- Deficits make public spending negative ( $T - G$ ) but will not affect demand
- Return on investment will rise and discourage people from buying houses & building factories
- A budget surplus increases the supply of loanable funds, reduces the interest rate and stimulates investment (shifts supply to the right)
- A level of gov't debt under 28% is acceptable



1. A budget deficit decreases the supply of loanable funds (supply curve shifts left)
2. Which raises the equilibrium interest rate
3. Which reduces the equilibrium quantity of loanable funds
4.  $GDP \text{ decreases: } Y \text{ (decrease)} = C \text{ (decrease)} + I \text{ (decrease)} + G$

### Fiscal responsibility act

- There is a debate about the large national debt & effect on long run economic growth

## Summary

- The NZ financial system is made up of financial institutions such as the bond market, share market, banks and managed funds
- All these institutions act to direct the resources of households who want to save some of their income into the hands of households and firms who want to borrow
- National income accounting identities reveal some important relationships among macroeconomic variables
- National savings equal private savings plus public savings
- In a small open economy low saving may not imply high consumption either by the private sector or the govt
- In a closed economy national savings must equal national investment
- Financial institutions attempt to match one person's saving with another person's investment
- The interest rate is determined by the supply and demand for loanable funds
- The supply of loanable funds comes from households who want to save some of their income
- The demand for loanable funds comes from households and firms who want to borrow for investment
- A govt budget deficit represents negative public savings and therefore reduces national savings and the supply of loanable funds
- When a govt budget deficit crowds out investment it reduces the growth of productivity and GDP

## **Production and growth**

### Productivity

- The amount of g/s produced for each hour of a workers time
- A nations standard of living is determined by the productivity of its workers
- Productivity plays a key role in determining living standards for all nations in the world

### Productivity & growth statistics

- The average person in USA or Japan is more than 10 times better off than a person in Nigeria
- GDP has grown on average by 2% each year for the last 100 years in the USA
- In some African countries like Chad and Ethiopia growth is stagnant for many years
- A typical person in China in 2000 had the real income of a typical resident in England in 1870
- A typical person in Pakistan in 2000 had half the real income of a typical American 100 years ago
- Japans average income was only a little higher than México and behind argentine 100 years ago but today it is an economic super power
- Americans enjoy a higher standard of living than Nigerians as American workers are more productive

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Economic growth around the world

- Living standards as measured by real GDP per person vary significantly among nations
- Annual growth rates that seem small become large when compounded for many years
- Compounding is the accumulation of a growth rate over a period of time
- Annual growth rates that seem small become very large when compounded for many years
- Compounding refers to the accumulation of a growth rate over a period of time

### How productivity is determined

1. Physical capital
  - The stock of equipment and structures that are used to produce g/s
  - E.g. tools, office buildings, schools
2. Human capital
  - Knowledge and skills that workers acquire through education, training and experience
  - Human capital raises a nations ability to produce g/s
3. Natural resources
  - Inputs in production that are provided by nature
  - Includes renewable (trees) and non-renewable (oil) resources
  - Can be important but not necessary for an economy to be highly productive in producing g/s
4. Technological knowledge
  - Society's understanding of the best way to produce g/s
  - E.g. mechanisation of agriculture (hand picking compared with tractor picking)

### Conserving natural resources

- It's important to consider whether natural resources impose a limit to growth
- E.g. phone wires use to be copper now they are fibre optics which are made by sand so copper is conserved
- With conservation natural resources will not limit growth

### The production function

- Describes the relationship between the quantity of inputs used in production and the quantity of outputs from production

$$Y = A F(L, K, H, N)$$

- $Y$  = quantity of output
- $A$  = available production technology
- $L$  = quantity of labor
- $K$  = quantity of physical capital
- $H$  = quantity of human capital
- $N$  = quantity of natural resources
- $F()$  is a function that shows how the inputs are combined.

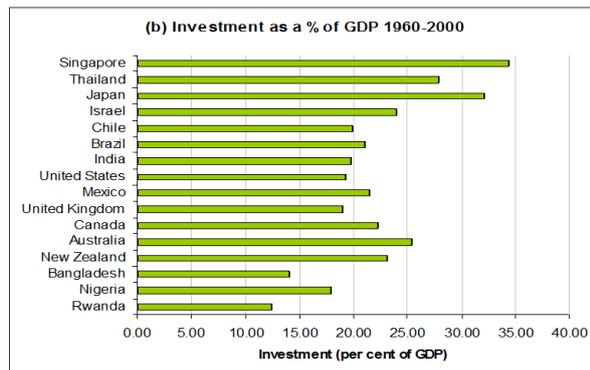
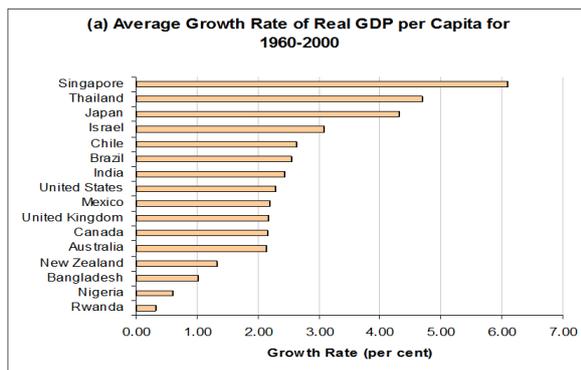
### Inward orientated policies

- Not trading with the rest of the world
- This policy transformed argentine from rich to poor
- E.g. Bolivia has a supply of lithium but refuses to trade with it

### Govt policies that raise productivity and living standards

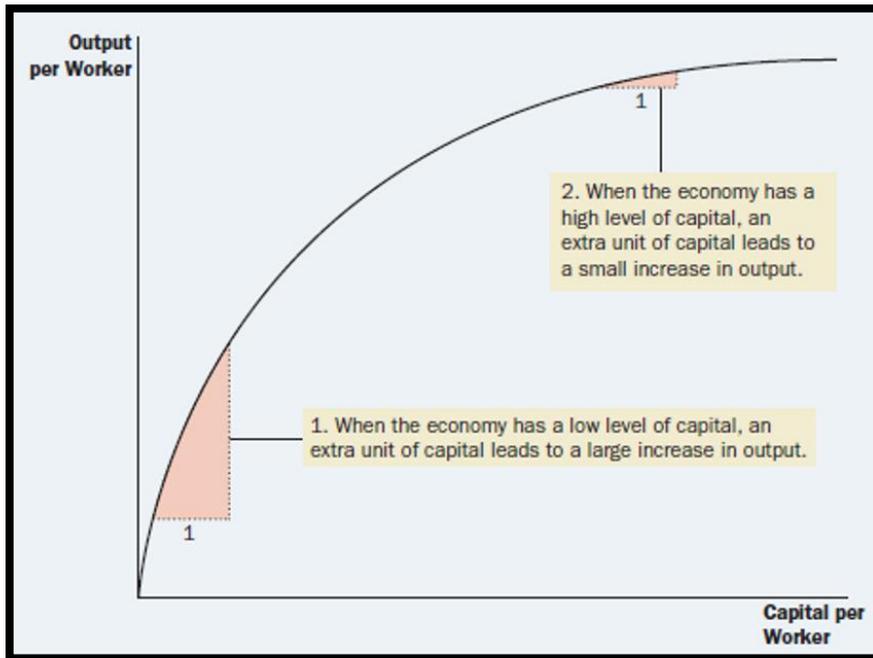
- Encourage saving and investment
- Encourage investment from abroad
- Encourage education and training
- Establish secure property rights and maintain political stability
- Promote free trade
- Promote research and development
- Invest more current resources in the production of capital

### Connection between investment, savings and economic growth



## Diminishing returns

- As the stock of capital rises the extra output produced from an additional unit of capital falls
- Give capital to workers in poor countries and output will increase massively but in a rich country where workers already have lots of capital output will not increase by so much by giving them more capital
- Because of diminishing returns an increase in the savings rate leads to higher growth for a period of time
- In the long run the higher saving rate leads to a higher level of productivity and income but not to a higher growth in these areas



## The catch-up effect

- Countries that start off poor tend to grow more rapidly than countries that start off rich
- E.g. before 1840 wooden sticks were used for farming and then after the English arrived they introduced steel spades which increased productivity
- Therefore increased capital has a small effect on productivity for developed countries

## Investment from abroad

- Govt can increase capital accumulation and long term economic growth by encouraging investment from foreign sources
- Foreign investment is important as it increases the stock of capital, results in higher wages, increases productivity and there is a transfer of technology

## Foreign direct investment

- Capital investment owned and operated by a foreign entity

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Foreign portfolio investment

- Investments financed with foreign money but operated by domestic residents

### Education

- An educated person might generate new ideas about how best produce g/s which in turn might enter society's pool of knowledge and provide an external benefit to others
- One problem facing poor countries is the brain drain where the most highly educated workers emigrate to rich countries

### Health and nutrition

- Human capital can refer to education or investment leading to a healthier population
- Healthy workers are more productive
- Policies that attempt to improve nutrition of its workers will lead to increasing economic growth

### Property rights and political stability

- Property rights is the ability of people to exercise authority over the resources they own
- An economy-wide respect for property rights is an important prerequisite for the price system to work
- It is necessary for investors to feel their investments are secure

### Free trade

- A country that eliminates trade restrictions will experience the same kind of growth that would occur after a major technological advancement
- When a country exports wheat and imports steel it's the same as inventing a technology to turn wheat into steel
- If a country doesn't trade they will have to produce consumer and capital goods they need which may not be as advanced as equipment elsewhere so they can't produce top class modern equipment
- Some countries have inward orientated trade policies avoiding interaction with other countries
- Some countries have outward orientated trade policies encouraging interaction with other countries

### Research and development

- The advance of technological knowledge has led to higher standards of living
- Most technological advance comes from private research by firms and individual inventors
- Govts can encourage the development of new technologies through research grants, tax breaks and the patent system

### Taxation

- Tax on income will have a negative effect on growth whereas tax on consumption encourages saving and increased capital per worker
- If tax revenue is used for public investment in healthcare, education and infrastructure then it will contribute to growth

### Population growth

- Population growth interacts with other factors of production such as: stretching natural resources, diluting the capital stock, promoting technological progress

### Summary

- Economic prosperity measured by real GDP per person varies substantially around the world
- The average income of the world's richest countries is more than 10 times that in the world's poorest countries
- The standard of living in an economy depends on the economy's ability to produce  $g/s$
- Productivity depends on the amounts of physical capital, human capital, natural resources and technological knowledge available to workers
- Govt policies can influence the economy's growth rate in many different ways
- The accumulation of capital is subject to diminishing returns
- Because of diminishing returns, higher saving leads to a higher growth for a period of time but growth will eventually slow down
- Because of diminishing returns the return to capital is high in poor countries

## **Unemployment and its natural rate**

### Natural rate of unemployment

- Unemployment that does not go away on its own even in the long run
- It is the amount of unemployment that the economy normally experiences

### Cyclical unemployment

- The year to year fluctuations in unemployment around its natural rate
- Its associated with the short term ups and downs of the business cycle

### How is unemployment measured?

- Measured by statistics NZ
- Data comes from a survey of about 30,000 individuals called the household labour force survey
- Statistics NZ considers a person an adult if they are 15 years or older
- A person is considered employed if they spend most of the week working at a paid job
- A person is unemployed if they are temporarily laid off and are looking or waiting for a job to start
- A person that doesn't fit one of these categories such as a student or a retired person is not in the labour force

### Labour force

- The total number of workers including both the employed and unemployed

### Unemployment rate

$$\text{Unemployment rate} = \frac{\text{Number of unemployed}}{\text{Labour force}} \times 100$$

### Labour force participation rate

- The percentage of adult population that is in the labour force
- Women have lower rates of labour participation but once in the labour force they have similar rates
- Teenagers have lower rates of participations and higher rates of unemployment

$$\text{Labour-force participation rate} = \frac{\text{Labour force}}{\text{Adult population}} \times 100$$

### Reasons for increased women participation rates

- Technology (finish chores faster)
- Birth control
- Changes in social attitudes (women allowed to do more things)

### Reasons for decreased men participation rates

- Stay in education longer
- People retire early and live longer due to better health services
- House husbands (stay at home with children)

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Problems with measuring unemployment

- It's difficult to distinguish between a person who is unemployed and a person who is not in the labour force
- Discouraged workers are people who would like to work but have given up looking for jobs so don't show up in unemployment statistics
- Other people may claim to be unemployed in order to receive financial assistance even though they aren't looking for work
- Almost half of unemployment ends when the unemployed person leaves the labour force so people move into and out of the labour force

### How long are the unemployed without work?

- Most spells of unemployment are short (3 months)
- Most unemployment observed at any given time is long term
- Most of the economy's unemployment problem is attributable to relatively few workers who are jobless for long periods of time
- When designing policies it must be remembered that the unemployment problem is due to the relatively few workers who are jobless for long periods of time
- E.g. 3 people unemployed for 1 year =  $3 * 52 = 156$  weeks of unemployment

### Frictional unemployment

- Unemployment that results from the time that it takes to match workers with jobs
- It takes time for workers to search for the jobs that best suit their tastes and skills
- Caused by the time spent searching for the right job
- Not caused by a wage rate higher than equilibrium

### Structural unemployment

- The unemployment that results because the number of jobs available in some labour markets is insufficient to provide a job for everyone who wants one

### Job search theory

- Search unemployment is inevitable because the economy is always changing
- Changes in the composition of demand among industries or regions are called sectorial shifts
- It takes time for workers to search and find jobs in new sectors

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Public policy and job search

- Govt programmes can affect the time it takes unemployed workers to find new jobs
- Types of programmes:
  - Govt run employment agencies
  - Public training programmes
  - Unemployment insurance
- Govt agencies give out information about job vacancies in order to match workers and jobs more quickly
- It increases the job finding rate

### Public training programmes

- Aims to ease the transition of workers from declining to growing industries and to help disadvantaged groups escape poverty
- It increases the job finding rate

### Unemployment benefit

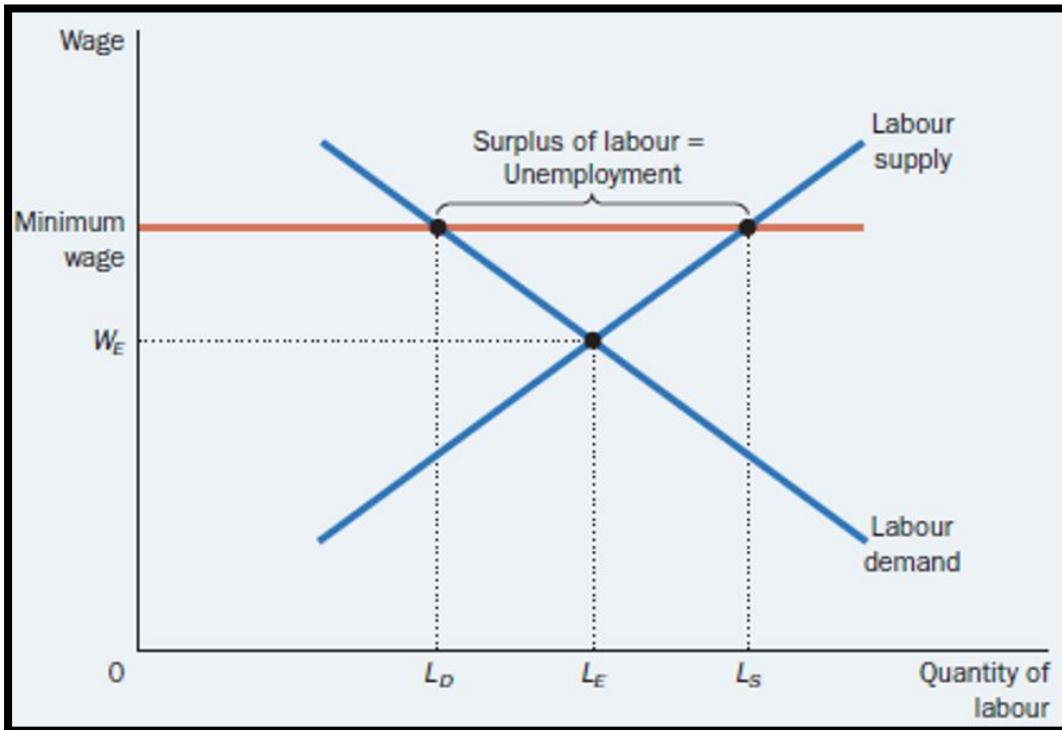
- A govt program that ensures a minimum standard of living for workers when they become unemployed
- While reducing the hardship of unemployment the benefit may actually increase the level of unemployment
- It reduces the search efforts of the unemployed
- It may improve the chances of workers being matched with the right jobs
- It decreases the job finding rate and increases the job separation rate

### Structural unemployment

- Occurs when the quantity of labour supplied exceeds the quantity demanded
- Happens when there is less jobs available compared to the number of applicants for the jobs
- Structural unemployment is often thought to explain longer spells of unemployment
- Reasons for structural unemployment: minimum wage laws, unions, efficiency wages

## Minimum wage laws

- When the minimum wage is set above the market wage it creates unemployment
- The minimum wage effects different wage earners in different ways
- The minimum wage tends to have a disproportionately adverse impact on low wage earners



## Unions and collective bargaining

- Union is a worker association that bargains with employers over wages and working conditions
- A union is a type of cartel to exert its market power
- The process by which unions and firms agree on the terms on employment is collective bargaining

## Strikes

- Will be organised if the union and the firm cannot reach an agreement
- A strike refers to the withdrawal of labour from the firm by the union
- A strike makes some workers better off and others worse off
- Workers in unions reap the benefits of collective bargaining while workers not in the union bear some of the costs

### Unions as cartels

- By acting as a cartel with the ability to strike or impose high costs on employers, unions usually achieve above equilibrium wages for their members and other employees
- It is said that unions obstruct competition in the labour market and therefore are a drag on productivity
- Advocates of unions contend that unions are a necessary antidote to the market power of firms that hire workers
- They claim that unions are important for helping firms respond effectively to workers concerns

### Efficiency wages

- Above equilibrium wages paid by firms in order to increase worker productivity
- Same diagram as the minimum wage diagram except the employers willingly pay so there is no enforcement by unions or govt

### Reasons why firms prefer above equilibrium wages

- Worker health – better paid workers eat a better diet and thus are more productive
- Worker turnover – a higher paid worker is less likely to look for another job
- Worker quality – higher wages attract a better pool of workers to apply for jobs
- Worker effort – higher wages motivate workers to put forward their best efforts

### Summary

- The unemployment rate is the percentage of those who would like to work but don't have jobs
- Statistics NZ calculates this statistic quarterly
- The unemployment rate is an imperfect measure of joblessness
- In NZ most people who become unemployed find work within a short period of time
- Most unemployment observed at any given time is attributable to a few people who are unemployed for long periods of time
- Minimum wage laws raise the quantity of labour supplied and reduced the quantity demanded
- Reasons for unemployment: time to search for jobs, minimum-wage laws, unions, efficiency wages

## The monetary system

### Money

- The set of assets in an economy that people regularly use to buy g/s
- With money, trading becomes a roundabout operation and money acts as an intermediary
- Without money we would have problem trading e.g. the egg and chair example

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Functions of money

- Medium of exchange
- Unit of account
- Store of value
- Standard of deferred payment

### Commodity money

- Things like sea shells, salt and gold
- It has intrinsic value

### Currency

- Also called token money or fiat money
- Has no intrinsic value i.e. it's just paper
- Currency can be used as money because of govt law

### Medium of exchange

- An item that buyers give to sellers when they want to purchase g/s
- Anything that is a readily acceptable payment
- Medium of exchange helps society to escape the complications of barter and gain the benefits of specialisation
- For medium of exchange to exist money must have these functions: acceptable to all, limited in supply (scarce), readily portable, divisible, durable, not perishable, stable in value
- Credit cards are not a medium of exchange however debit and EFTPOS cards are

### Standard of value/Unit of account

- The measure people use to post prices and record debt
- Money is used as a measuring rod to measure the relative worth of g/s without having to measure in terms of other products

### Store of value

- An item that people can use to transfer purchasing power from the present to the future
- Helps a person to store their wealth in the form of money

### Standard of deferred payment

- Money measures the value of outstanding debt (buy now pay later)

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Liquidity

- The ease with which an asset can be converted into the economy's medium of exchange
- Money is the most liquid asset as it can easily converted into g/s unlike less liquid assets such as a house or shares in a company

### Technical definition of money

- Based on liquidity
- M1 = notes, coins, cheque accounts, EFTPOS accounts (transaction balances)
- M2 = M1 + other accounts which can be converted easily into spending money but not directly to buy g/s e.g. call accounts
- M3 (least liquid) = M2 + deposit accounts e.g. term deposits

### Currency

- The paper bills and coins in the hands of the public
- Most currency in countries like USA is held abroad or by illegal entities
- If there are no banks in an economy and currency is the only form of money the supply of money will be equal to the quantity of currency

### Demand deposits

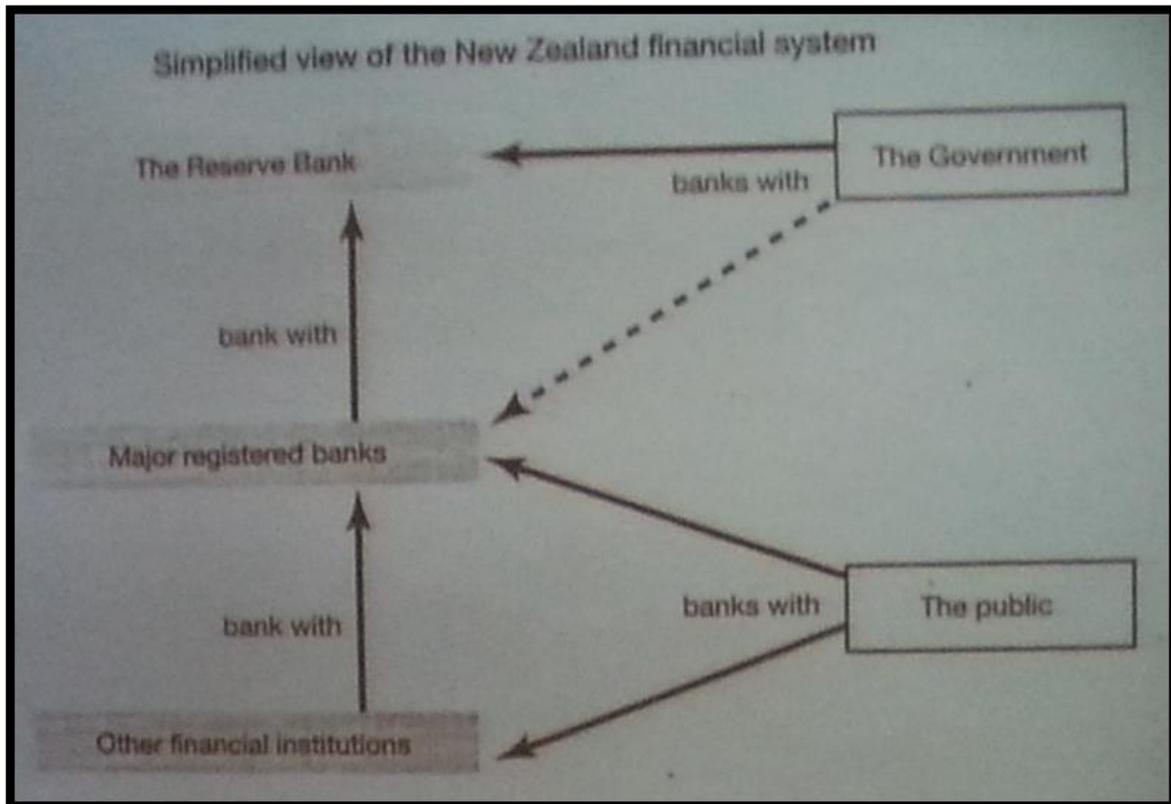
- Balances in bank accounts that depositors can access on demand by writing a cheque or using a debit card

### Credit and debit cards

- Increased popularity of credit cards may decrease demand for money
- Increased popularity of debit cards has no effect on money demand

### Reserve bank of New Zealand

- Serves as the nation's central bank
- It is designed to oversee the banking system
- It regulates the quantity of money in the economy
- The main objective of the reserve bank is to ensure price stability



### Objectives and functions of the reserve bank

- Implement monetary policy objectives set out by the policy target agreement
- Issue notes and coins and provide banking services to registered banks and the govt
- Conduct prudential supervision to maintain a healthy financial system which requires that banks maintain a minimum capital adequacy ratio
- Keep inflation between 1 – 3%

### The official cash rate

- The interest rate set by the governor of the RBNZ every six weeks
- It determines the interest that banks earn on their deposit with the RBNZ (settlement cash balances) as well as the interest that banks pay to borrow overnight from the RBNZ

### Settlement accounts

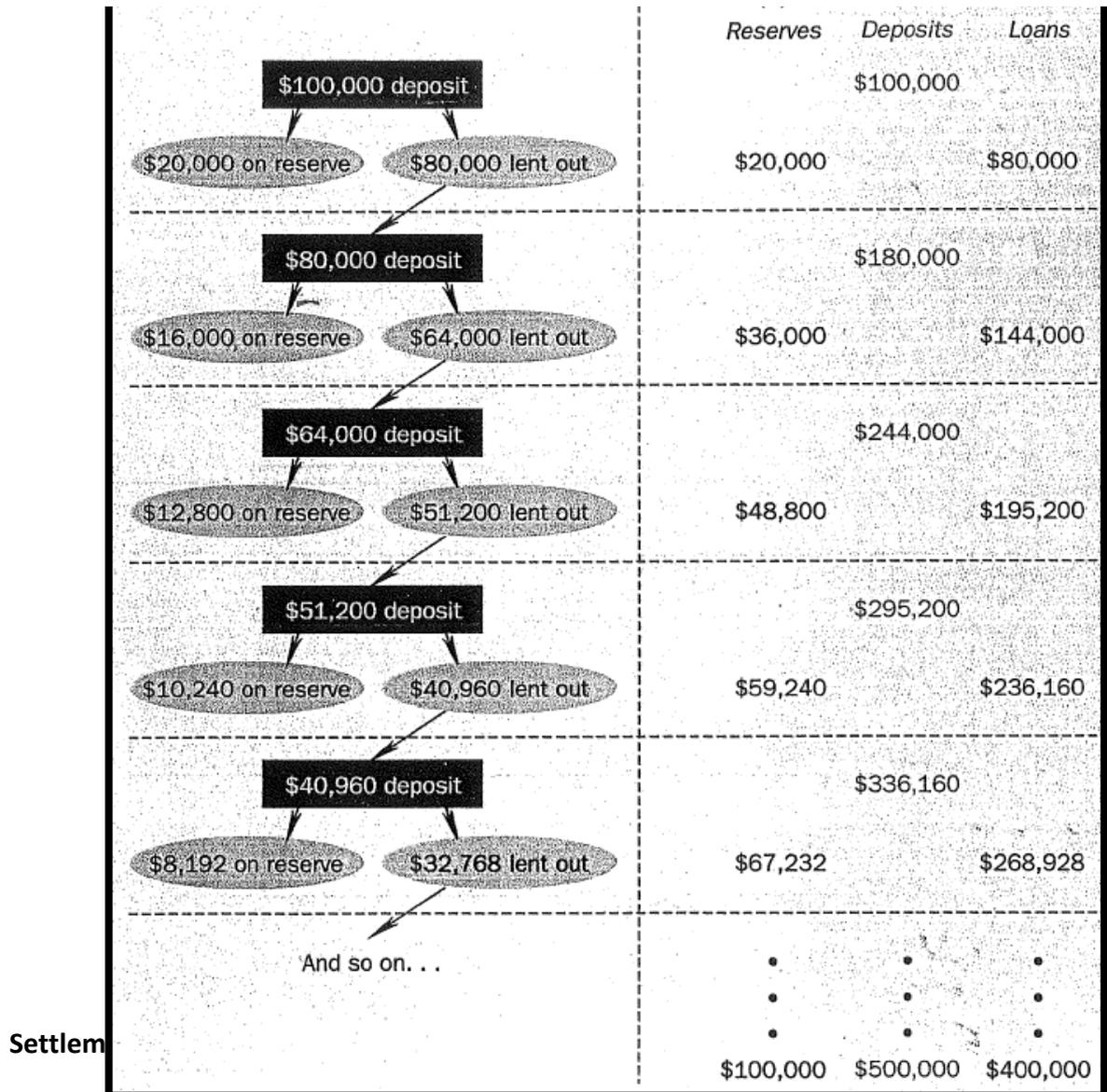
- Accounts held by registered banks and other financial institutions with the reserve bank and are used to settle debt between themselves and the govt

### Primary expansion of money supply

- Takes place when a new deposit is made at a registered bank by a member of the public

**Secondary expansion of money supply**

- Takes place when banks start giving loans to the public against deposits made
- Called the credit creation process
- In this process the banking system creates more money than the cash they hold with them



- The deposits that banks keep with the RBNZ as cash reserves for settling their end of day net transactions

**Liquidity ratio**

- The ratio of settlement cash to banks assets that can be used as collateral

**Money creation with fractional-reserve banking**

- In a fractional-reserve banking system banks hold a fraction of the money deposited as reserves and lends the rest out

### Reserve ratio

- The fraction of deposits that banks hold as reserves
- The reserve bank will stipulate the reserve ratio if it thinks it's required for the banks to maintain suitable liquidity
- Banks have to keep a proportion of the deposits in the vault as depositors can ask for some of their money at any time
- This is the daily cash demand which has to be met, and for that purpose money is kept as reserves in the banks vault

### Banks and the money supply

- When a bank makes a loan from its reserves, money supply increases
- The money supply is affected by the amount of money deposited in banks and the amount banks lend
- Deposits into a bank are recorded as both assets and liabilities
- $MS$  (money supply) =  $CC$  (credit creation) +  $DD$  (demand deposits)

### Bank's T account

<p>– Accepts deposits, – Keeps a portion as reserves, – And lends out the rest. – It assumes a reserve ratio of 10%.</p> <p>\$100 </p>	<b>Number 1 Bank</b>	
	<b>Assets</b>	<b>Liabilities</b>
	Reserves \$10.00	Deposits \$100.00
	Loans \$90.00	
	Total Assets \$100.00	Total Liabilities \$100.00

*Note: A red arrow points from the \$100 icon to the Deposits entry. A brown arrow points from the Deposits entry to the Loans entry.*

### The money multiplier

- The amount of money the banking system generates with each dollar of reserves
- The money multiplier is the reciprocal of the reserve ratio

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- E.g. if the reserve requirement is 20% (0.20) then the multiplier is  $(1/0.20) = 5$

$$M = 1/R$$

Number 1 Bank		Number 2 Bank	
Assets	Liabilities	Assets	Liabilities
Reserves \$10.00	Deposits \$100.00	Reserves \$90.00	Deposits \$90.00
Loans \$90.00		Loans \$81.00	
Total assets \$100.00	Total liabilities \$100.00	Total assets \$90.00	Total liabilities \$90.00

**Total money = \$190 but from only \$100 deposits**

### Central banks tools for monetary control

- Open-market operations
- Changing the reserve requirement
- Changing the OCR

### Open-market operations

- Buying govt bonds from or sells govt bonds to the public
- When the RBNZ buys govt bonds the money supply increases
- When the RBNZ sells govt bonds the money supply decreases

### Changing the reserve requirements

- The reserve requirements is the amount of a bank's total reserves that shouldn't not be loaned out
- Increasing the reserve requirement decreases the money supply
- Decreasing the reserve requirement increases the money supply

### Changing the OCR

- The OCR is the interest rate the central bank charges for loans
- Increasing the OCR decreases the money supply
- Decreasing the OCR increases the money supply

### Quantitative easing

- Govt buying bonds in a company which increases the money supply
- It's not printing money

### **Problems in controlling the money supply**

- The RBNZ does not control the amount of money that households choose to hold as deposits in banks
- The RBNZ does not control the amount of money that bankers choose to lend which can become a problem during recessions when economic growth needs to rise but banks are cautious so don't lend

### **Monetary policy without reserve ratio**

- Recently many central banks have changed their way of implementing monetary policy from short run control of reserves to influencing short term interest rates
- While reserve requirements are essential to a reserves strategy they play a less important role in an interest rate targeting environment
- Without the reserve requirement commercial banks still need to settle transactions with their customers, the govt and other private parties at the end of each business day
- Even without the reserve ratio banks must have sufficient settlement cash to meet inter-bank transactions as people draw cheques daily to make a variety of payments e.g. rent
- If the net transactions of a bank are negative the bank will require more cash to settle the deficits
- If the net transactions are positive the bank can lend the surplus amount to other banks which have net demand for cash
- If there is a net surplus of funds the trading banks can deposit them at the RBNZ
- The RBNZ holds these surplus cash reserves on a special account called the settlement cash balance
- The settlement cash balance with the RBNZ corresponds to a bank's reserves under a fractional reserve system

### **The official cash rate**

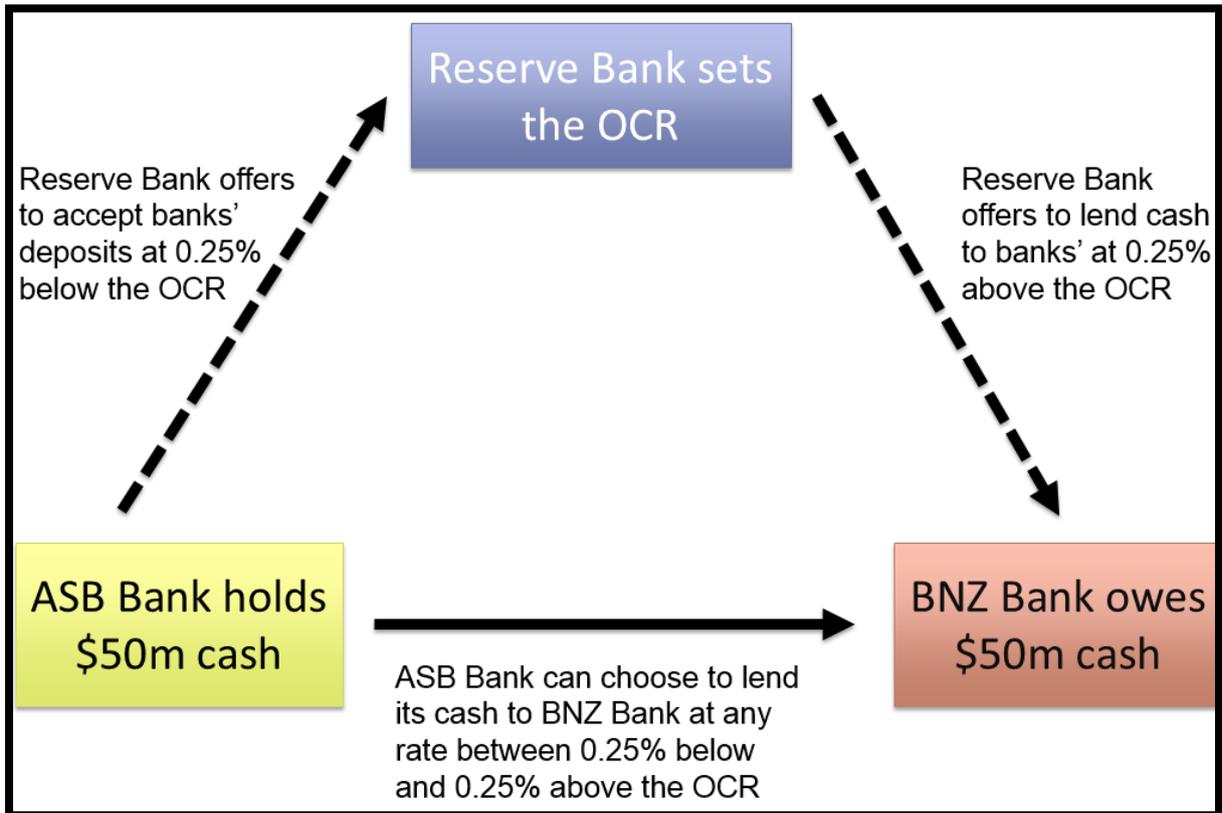
- The interest rate by the governor of the RBNZ every 6 weeks
- It determines the interest rate that banks earn on deposits with the RBNZ (settlement cash balance) as well as the interest that banks pay to borrow overnight cash from the RBNZ
- The OCR policy can be identified with a regime of interest rate targeting
- Under this regime the RBNZ sets the OCR to influence the market interest rate

### **Inter-bank lending**

- No bank can give a loan to another bank which is short of settlement cash above the upper limit of the band as they can get any amount of cash at that rate from the RBNZ (OCR + 0.25%)

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- No bank will lend to another bank which needs settlement cash below the lower limit of the band as the RBNZ will pay that amount for the money kept with them (OCR – 0.25%)



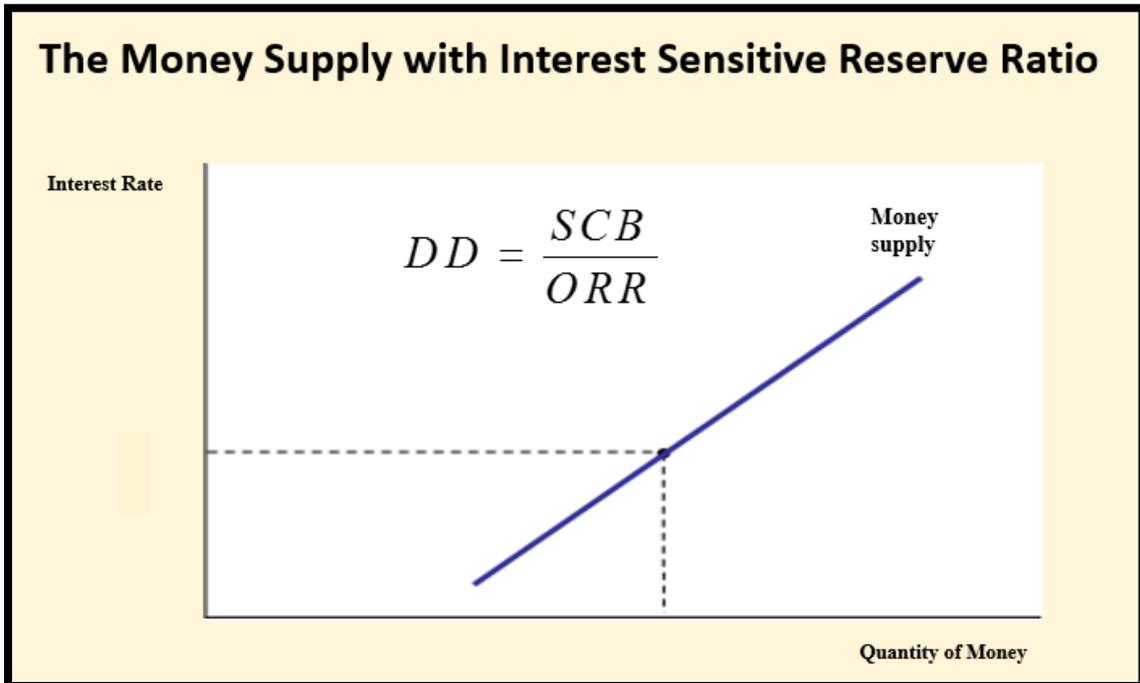
### The OCR, reserve ratio and money supply

- The ratio of settlement cash to demand deposits can be compared with the reserve ratio that the commercial banks are required to hold in a fractional reserve system

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- The trading banks optimally adjusts the ratio of settlement cash to demand deposits in response to changes in the market interest rate and the OCR

$$\text{Optimal reserve ratio} = \frac{\text{Settlement Cash}}{\text{Demand Deposits}}$$

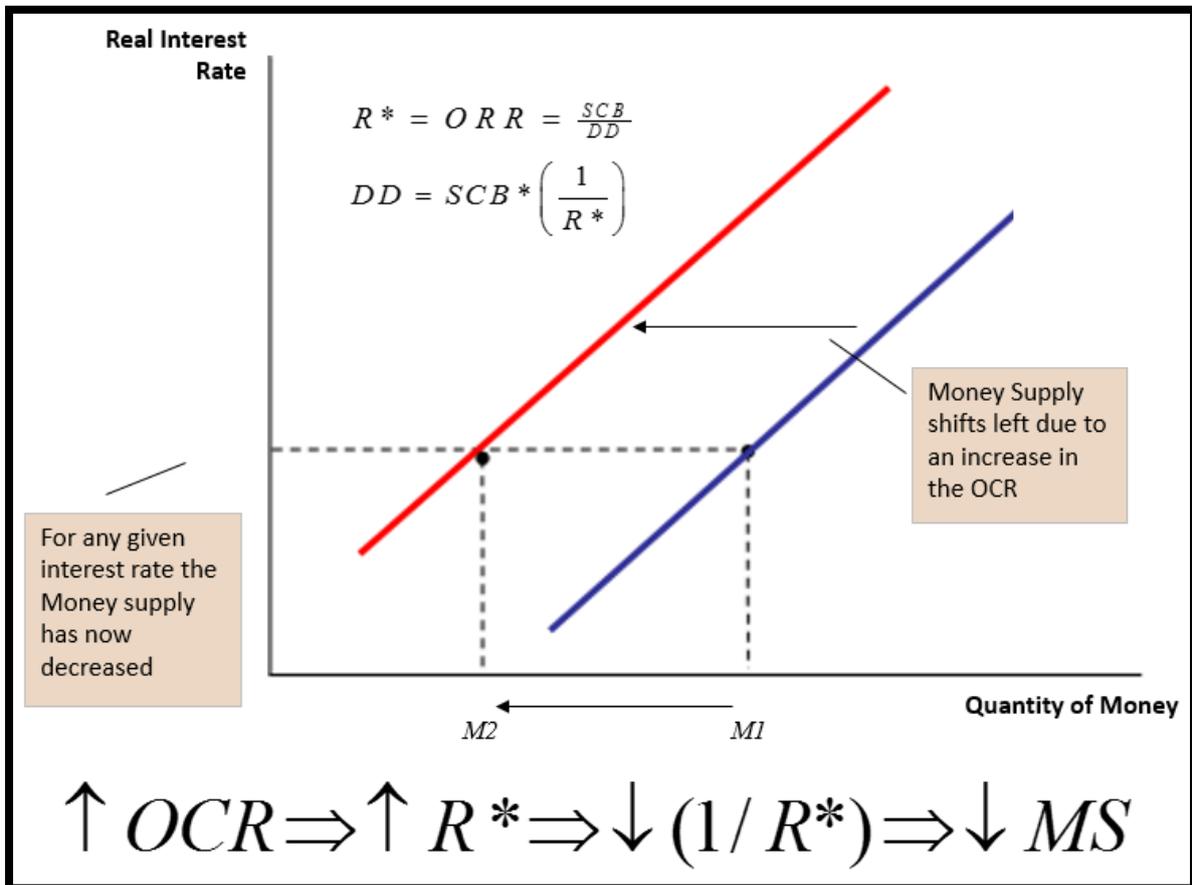


- In response to a higher interest rate banks plan to issue a larger volume of loans lowering the reserve ratio
- The money supply increases via multiple deposit creation with the multiplier being  $1/\text{Optimal reserve ratio}$
- Less reserves will mean a higher multiplier which will increase the money supply

**Negative effect of the OCR on the money supply**

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- When the RBNZ raises the OCR trading banks with surplus settlement cash earn higher interest while those with negative settlement cash pay higher interest
- In response the trading banks increase their reserve ratio and decrease the fraction of deposits they put back into the economy as new loans which therefore decreases the money supply for any given rate of interest



### OCR and interest rates

- Money demand remains unchanged so the reduced money supply due to increased OCR increases the market interest rate (nominal)
- Commercial banks in turn would try to pass the effects of higher interest rate onto their customers

### Summary

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- Money refers to assets that people regularly use to buy g/s
- Money serves three functions in an economy: a medium of exchange, a unit of account and a store of value
- Commodity money is money that has intrinsic value
- Fiat money is money without intrinsic value
- The central bank of countries such as US and UK typically control the money supply through open-market operations or by changing the reserve requirements or by changing the OCR
- The RBNZ controls the equilibrium interest rates by managing the OCR that affects money supply in the economy
- If the OCR increases, the money supply decreases and the interest rate increases
- If the OCR decreases, the money supply increases and the interest rate decreases
- When banks loan out their deposits they increase the quantity of money in the economy
- Because the RBNZ can't control how much banks lend or how much consumers deposit the RBNZ's control of the money supply is imperfect

## **Money growth and inflation**

### **Inflation**

- An increase in the overall level of prices
- Inflation is an economy-wide phenomenon that concerns the value of the economy's medium of exchange
- If the price goes up then the value of money has decreased

### **Hyperinflation**

- An extraordinarily high rate of inflation

### **Deflation**

- A decrease in the overall price level

### **Disinflation**

- Declining inflation rates
- Takes place when a deliberate policy to reduce inflation is pursued and is successful

### **Headline inflation**

- Shows the total inflation within an economy so is affected by inflationary spikes in food or energy
- Therefore it may not give an accurate picture of the current state of the economy

### **Core/underlying inflation**

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- Excludes factors such as food and energy costs and items that face volatile price movements
- Gives a more accurate picture of the state of the economy

### Quantity theory of money

- Explains the long run determinants of the price level and inflation rate

### Classical theory of inflation

- Money demand has several determinants including interest rates and the average level of prices in the economy
- People hold money because it's the medium of exchange and hence money demand depends on the exchange norm and facilities
- However by holding more money people forgo interest earnings and hence their demand inversely changes with the interest rate
- When the price level is high people will keep more money in their wallets & cheque accounts for more liquidity so this will lead to an increase in demand for the quantity of money
- If the price level increases then the value of money is lower so more money will be demanded in the economy

### Money supply dependants

- Income
- Nominal interest rate
- The price level
- The technology of exchange such as the frequency of use of credit cards and bank charges

### Monetary equilibrium in the short run

- Prices don't change
- Nominal interest rate changes

### Monetary equilibrium in the long run

- Prices are fully flexible
- Nominal interest rates are fixed due to fisher's rule for offsetting the effects of inflation

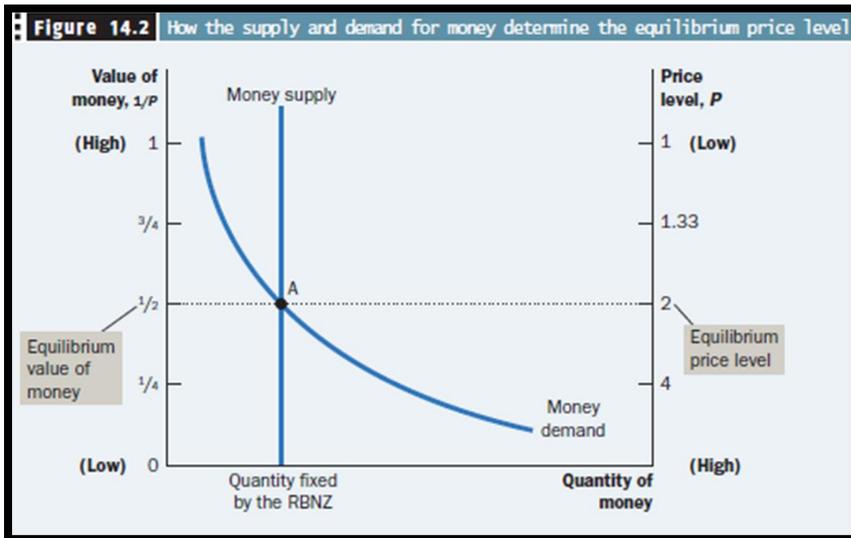
### The fisher effect

- A one-to-one adjustment of the nominal interest rate to the inflation rate
- When the rate of inflation rises the nominal interest rate rises by the same amount
- The real interest rate stays the same

### Monetary equilibrium

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

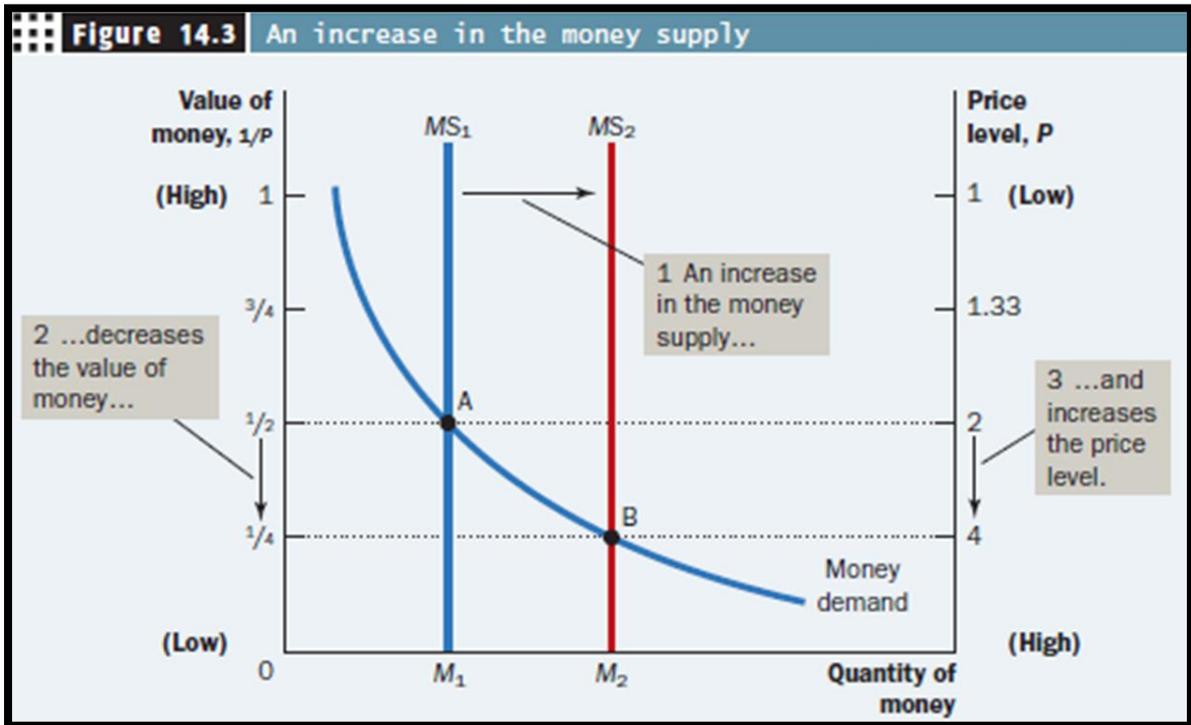
- In the long run the overall level of prices adjusts to the level at which the demand for money equals the supply
- If the price level is above equilibrium people will want to hold more money than the central bank has created, resulting in the price level falling to bring equilibrium in the market
- $P$  = the price level which is determined by the CPI
- As  $P$  increases the value of money comes down (vice versa)
- E.g.  $1/0.5 = 2$  ----->  $1/1 = 1$



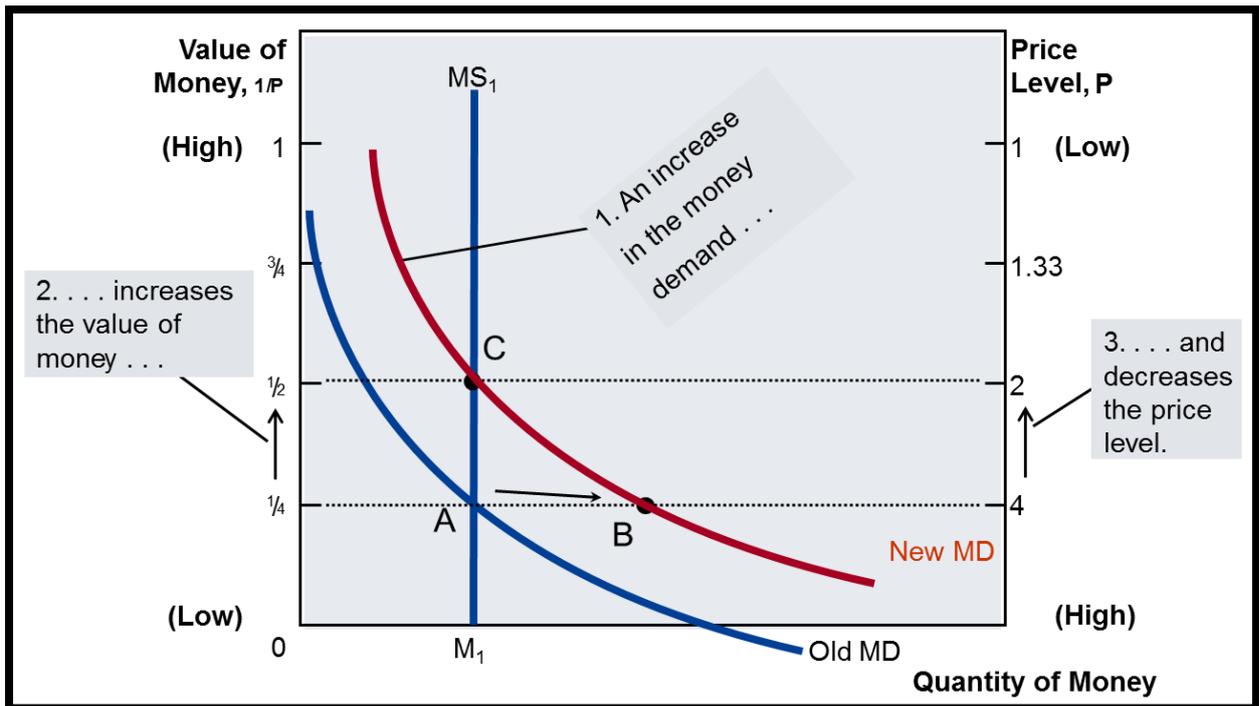
Increase in the money supply

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- Consumers buy more  $g/s$  so demand for  $g/s$  increases
- Consumers lend as they have excess cash which increases other consumers demand for  $g/s$  as loans are more readily available
- Consumers save as they have excess cash which increases other consumers demand for  $g/s$  as loans are more readily available



Increase in demand for money



### Classical theory of inflation – effects of monetary injection

- The quantity theory of money explains how the price level is determined and why it might change over time
- The quantity theory of money determines the value of money
- The primary cause of inflation is the growth in the quantity of money

### The adjustment process

- An increase in the money supply to an economy in equilibrium means the quantity of money supplied is larger than the quantity demanded
- Individuals now hold more money than they desire so they will increase consumption
- The economy's ability to produce g/s has not been altered by the increase in money supply
- The excess demand for g/s means prices must rise which results in people demanding more money as they require more to consume at the new level
- Eventually money demand will equal money supply and the economy will be in equilibrium
- The price level acts to bring supply and demand for money into equilibrium

### Nominal variables

- Variables measured in monetary units
- E.g. price level, nominal wages, nominal interest rates
- E.g. 1 Kg of wheat = \$5

### Real variables

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- Variables measured in physical units
- E.g. production, employment, real wages, real interest rates
- E.g. 1 Kg of wheat = 2 Kg of rice

### The classical dichotomy

- The separation of real and nominal variables
- Real economic variables do not change with changes in the money supply
- Changes in the money supply affect nominal variables but not real variables

### Monetary neutrality

- The irrelevance of monetary changes for real variables

### Velocity of money

- The speed at which a typical dollar coin travels around the economy from wallet to wallet
- Velocity = nominal GDP / Quantity of money

### Quantity equation

- Relates the quantity of money to the nominal value of output
- The quantity equation shows that an increase in the quantity of money in an economy must be reflected in one of the other three variables:
- The quantity of output must rise (this never happens as there is no extra goods produced)
- The velocity of money must fall (this figure is always a constant)
- The price level must rise (will always happen due to the other unaffected variables)

$$\underline{V = (P \times Y)/M} \quad \text{or} \quad \underline{M \times V = P \times Y}$$

Where:

$V$  = velocity

$P$  = the price level

$Y$  = the quantity of output

$M$  = the quantity of money

### Inflation

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- Inflation rate = growth of money supply – growth of real GDP
- Inflation results when the money supply grows faster than real GDP

### Inflation rate and the money growth rate

- When the central bank changes the quantity of money it causes proportionate changes in the nominal value of output ( $P \times Y$ )
- Because money is neutral, money does not affect output
- The economy's output of  $g/s$  ( $Y$ ) is primarily determined by factor supplies & the availability of technology
- When the money supply is doubled prices double and the value of the unit of account falls by half

### Hyperinflation

- Inflation that exceeds 50% per month
- Occurs in some countries because the govt prints too much money to pay for its spending

### Inflation tax

- When the govt raises revenue by printing money it is said to levy an inflation tax
- An inflation tax is like a tax on everybody who holds money
- The inflation ends when the govt institutes fiscal reforms such as cuts in govt spending

### Fisher effect

- A one-to-one adjustment of the nominal interest rate to the inflation rate
- When the rate of inflation rises the nominal interest rate rises by the same amount
- The real interest rate stays the same

### The cost of inflation

#### Purchasing power

- Inflation does not itself reduce peoples real purchasing power
- This fallacy is due to a lack of understanding about neutrality of money
- Real incomes are determined by real variables
- People believe the inflation fallacy as they don't appreciate the principle of monetary neutrality
- Inflation fallacy is where people forget that their wages go up with inflation as the services they are selling also go up in price so their wages rise with prices

#### Shoe leather cost

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

- The resources wasted when inflation encourages people to reduce their money holdings
- Inflation reduces the real value of money so people have an incentive to minimise their cash holdings
- Less cash requires more frequent trips to the bank to withdraw money from interest bearing accounts
- The actual cost of reducing your money holdings is the time and convenience you must sacrifice to keep less money on your hand
- Also with more frequent visits to the bank this waste production time

### Menu costs

- The costs of adjusting prices
- During inflationary times its necessary to update price lists
- This is a resource consuming process that takes away from other productive activities

### Relative-price variability and the misallocation of resources

- Inflation distorts relative prices
- Consumer decisions are distorted and markets are less able to allocate resources to their best use
- E.g. firms investing into restaurants due to high demand from consumers which isn't the best allocation of resources as this demand is only short term

### Inflation-induced tax distortions

- Inflation exaggerates the size of capital gains and increases the tax burden on this type of income
- With progressive taxation, capital gains are taxed more heavily
- Tax treatment on capital gains discourages savings
- E.g. buy \$10 worth of shares in 1990 and sell it in 2000 at \$50 so earnings is \$40 & this is taxed as capital gains. But if the price level has doubled during that period, then \$10 invested is equal to \$20 purchasing power in 2000 so the real gain in purchasing power is only \$30
- The income tax treats nominal interest earned on savings as income even though part of the nominal interest rate merely compensates for inflation
- The after tax real interest rate falls making saving less attractive

<b>Table 14.1</b> How inflation raises the tax burden on saving		
	Economy A (price stability)	Economy B (inflation)
Real interest rate	4%	4%
Inflation rate	0	8
Nominal interest rate (real interest rate – inflation rate)	4	12
Reduced interest due to 25 per cent tax (0.25 × nominal interest rate)	1	3
After-tax nominal interest rate (0.75 × nominal interest rate)	3	9
After-tax real interest rate (after-tax nominal interest rate – inflation rate)	3	1

### Fiscal drag

- When your wages go up due to being adjusted for inflation then you end up paying more tax as you are now in a higher tax bracket however in real terms you are not earning any more money so you are now worse off
- Solutions to solve this is to index the tax system which takes into account inflation or only tax the real rate of interest income

### Cost of inflation – confusion and inconvenience

- When the RBNZ increases the money supply and creates inflation it erodes the real value of the unit of account
- Inflation causes dollars at different times to have different real values
- Therefore with rising prices its more difficult to compare real revenues, costs and profits over time
- E.g. when you are looking at investing in a company you look at financial statements however all those figures are inflated so don't reflect the true picture of the company and therefore the investment may not be as worthwhile which leads to misallocation of resources as investment is in the wrong company

### Unexpected inflation – Arbitrary distribution of wealth

- Unexpected inflation leads to an arbitrary redistribution of wealth
- E.g. borrowers gain and savers lose

## Summary

- The overall level of prices in an economy is adjusted to bring money supply and money demand into balance
- When the central bank increases the supply of money it causes the price level to rise
- Persistent growth in the quantity of money supplied leads to continuing inflation
- The principle of money neutrality is that changes in the quantity of money influence nominal variables but not real variables
- A govt can pay for its spending simply by printing more money which can result in an inflation tax and hyperinflation
- According to the fisher effect when inflation rates rises the nominal interest rate rises by the same amount and the real interest rate stays the same
- Many people think that inflation makes them poorer because it raises the cost of what they buy however this view is a fallacy because inflation also raises nominal incomes
- Six costs of inflation: shoe leather cost, menu costs, increased variability of relative prices, unintended tax liability changes, confusion and inconvenience, arbitrary redistribution of wealth

## Open economy macroeconomics

### Closed economy

- One that does not interact with other economies in the world
- There are no exports, imports or capital flows
- E.g. North Korea

### Open economy

- One that interacts freely with other economies around the world
- Buys and sells g/s in world product markets
- Buys and sells capital assets in world financial markets
- E.g. NZ, Australia, USA, China

### Exports

- G/s that are produced domestically and sold abroad

### Imports

- G/s that are produced abroad and sold domestically

### Net exports/Trade balance

- The value of a nation's exports minus the value of its imports

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Trade deficit

- Imports > Exports
- Negative net exports

### Trade surplus

- Exports > Imports
- Positive net exports

### Balanced trade

- Exports = Imports
- When net exports are 0

### Factors that affect net exports

- Tastes of consumers for domestic and foreign goods
- Prices of goods at home and abroad
- The exchange rates at which people can use domestic currency to buy foreign currencies
- The incomes of consumers at home and abroad
- The costs of transporting goods from country to country
- The policies of the govt towards international trade e.g. protection, tariffs

### Reasons for increases in international trade

- Better and faster transport
- Better communication systems
- Goods are smaller (electronics) compared to older bulky goods (Steel)
- Trade agreements (WTO, NAFTA, CER, EU)

### Balance of payments

- Measures all international transactions
- Recorded at time of change of ownership or when service is performed
- It consists of:

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Current account

- Records transactions relating to:
  1. Merchandise trade (balance on goods) – export and import of goods
  2. Services trade (Balance on services) – export and import of services
  3. International investment income (Balance on income) – Foreign investment
  4. Current transfers (Balance on current transfers)
- $(1) + (2) = \text{trade balance}$
- $(2) + (3) + (4) = \text{invisibles balance}$
- Current account combines:
  1. An imbalance between a country's net exports
  2. An imbalance between its receipts of income and transfers from abroad
  3. Its payments of income and transfers to abroad (Net foreign income)
- If NZ exports more than it imports it will receive a net inflow of payments from abroad
- If NZ'ers earn less income from properties and assets they own abroad than what foreigners earn from their assets and properties in NZ it will cause a net outflow of payments to abroad
- Receipts increase NZ assets or reduce liabilities
- Payments increase liabilities or reduce assets

### Net foreign income

- The sum of net earnings & the net current transfers to NZ from abroad
- It has played a significant role in determining the current account balance of the NZ economy

### Capital account (Financial account)

- Measures an imbalance between the amount of foreign assets bought by domestic residents and the amount of domestic assets bought by foreigners
- It records changes in financial liabilities and assets
- It records sales and purchases of fixed assets
- Surplus means an increase in liabilities or reduction in assets arising from a current account deficit
- Deficit means an increase in assets or reduction in liabilities arising from a current account surplus
- Surplus indicates ways in which NZ's current account deficit is being financed from the savings of foreigners (comprised of FDI, FPI, trade credits, loans)
- When foreigners buy NZ dollars or bonds this represents a financial capital inflow to NZ
- When the NZ banks buy US govt bonds it represents a financial capital outflow
- When NZ helps Fiji to build its roads this constitutes a capital transfer from NZ to Fiji

### Relation between current and capital accounts

- Current account deficit is matched by a capital account surplus
- Current account surplus is matched by a capital account deficit

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### International investment income

- Includes dividends and interest from FDI, FPI, loans, trade credits, direct investors share of retained earnings
- Outflows relating to foreign investment in NZ tend to rise or fall when the NZ economy is buoyant or depressed
- Inflows relating to NZ investment abroad rise or fall when overseas economic conditions are buoyant or depressed

### Balance on international investment income

- Persistent large deficit is a major factor in the large invisibles deficit for NZ
- This reflects a heavy dependence over long periods on foreign investment and overseas borrowing to finance current account deficits

### Persistent current account deficit

- Results from on-going capital inflows
- Which tends to add to the investment income deficit
- Which tends to further entrench the current account deficit

### External debt and foreign investment

- Rise in overseas debt reflects the extent to which the nation is spending more than it earns so domestic savings is being supplemented by foreign savings to finance our borrowed lifestyle e.g. housing asset bubble

### Benefits of foreign direct investment

- Provides an additional source of capital for economic development
- Access to markets through integration of intentional production networks (complements liberalisation of trade)
- Access to technology

### Ways to limit foreign investment

- Bring national expenditure in line with national earnings (accept lower standard of living)
- Increase the proportion of domestic investment financed from domestic savings

### Main causes of external debt

- Rising overseas claims caused by persistent current account deficits
- Ready availability of overseas capital has encouraged national overspending (living beyond our means)

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Sustainability of borrowing

- Borrowing for sound investment generates income to repay the debt and allows future living standards to rise
- Borrowing to pay for groceries allows current living standards to rise but does not generate income to repay the debt (living standards may have to fall when the debt has to be repaid)
- Borrowing too much which we are unable to pay back will lower our credit ratings in the international financial markets

### Risks with borrowing too much from other nations & having a decreased credit rating

- Foreigners may lose confidence
- So borrowing costs may increase
- This will lead to a reduction of capital and or capital flight can occur

### Current account balance

- Payments received from exports minus payments for imports plus net foreign income
- $CAB = NX + NFI$

### Capital account balance

- Payments received from foreigners who purchase domestic assets and payments made to foreigners for buying foreign assets
- Capital account balance is measured by the net capital outflow
- Net capital outflow = capital outflow – capital inflow

### Balance of payments equilibrium

- The sum of the current account balance and the capital account balance must equal 0 in a balance of payments equilibrium
- $CAB = NCO$

### Net capital outflow

- The purchase of foreign assets by domestic residents minus the purchase of domestic assets by foreigners
- Capital outflow e.g. NZ residents buying stock in Toyota
- Capital inflow e.g. Korean people buy houses in Auckland
- Net capital outflow per year equals total capital outflow minus total capital inflow during a year

**Variables that influence net capital outflow**

- The real interest rate being paid on foreign assets
- The real interest rate being paid on domestic assets
- The perceived economic and political risks of holding assets abroad
- The govt policies that affect foreign ownership of domestic assets

**Relationship between saving, investment and the NCO**

- Because net exports (NX) plus net foreign income (NFI) also equals the current account balance and the current account balance equals net capital outflow when the balance of payment equilibrium holds
- This leads to  $S = I + NCO$
- Savings = domestic investment + net capital outflow

**Is a current account deficit the result of low savings?**

- Capital inflow and current account deficit are two sides of the same coin since  $CAB = NCO$
- This means that low savings does not contribute to a negative current account balance or a current account deficit
- If savings increases then capital inflow falls and the current account deficit falls with it
- If savings exceeds investment then the country would have a current account surplus
- E.g. China, Japan and other Asian countries with high savings rate also enjoy current account surpluses

**International flows of g/s**

Table 15.1 International flows of goods and capital: Summary		
Current account deficit	Balanced current account	Current account surplus
$CAB < 0$	$CAB = 0$	$CAB > 0$
$YD < C + I + G$	$YD = C + I + G$	$YD > C + I + G$
Saving < Investment	Saving = Investment	Saving > Investment
Net capital outflow < 0	Net capital outflow = 0	Net capital outflow > 0

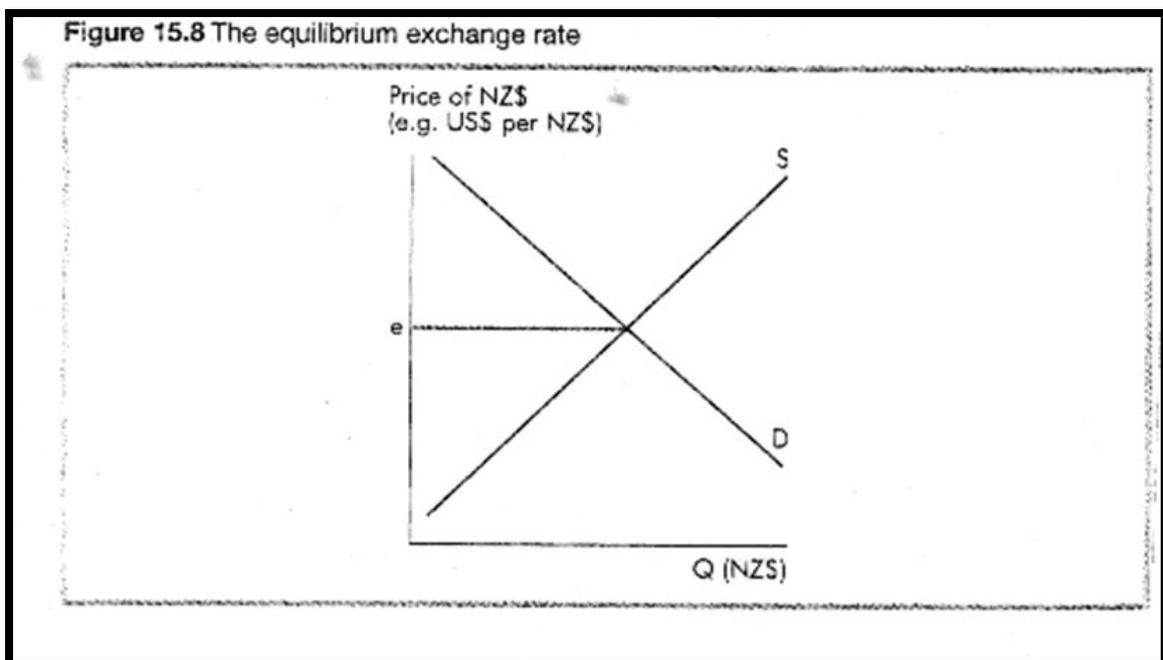
**Exchange rates**

- The price at which one currency exchanges for another
- NZ's exchange rate is the price of NZ dollar measured in foreign currency
- E.g. \$1 NZ = \$0.45 US

### Trade-weighted index

- Measures the value of NZ dollar in terms of weighted averages of other currencies of major trading partners
- The TWI compares the NZ dollar to our major trading partners each weighted to reflect the currency's share of NZ's merchandise trade and their share of the five-country aggregate GDP
- It's an alternative to quoting the price of NZ dollars in terms of individual foreign currencies
- The weightings are based on importance of overseas trade transactions and this provides a more balanced measure of the value of the NZ dollar over time

### Equilibrium exchange rate



### Freely floating exchange rate

- Exchange rate is free to settle at equilibrium level
- It adjusts continually to maintain equilibrium as demand and supply changes
- Clean float means no govt intervention

### Fixed exchange rate

- Exchange rate set at pre-announced level
- Generally kept above or below equilibrium
- It may be pegged to one currency or to a currency basket (e.g. TWI)
- Intervention or policy action is needed to hold rates at pre-determined levels

### **Managed exchange rate**

- Also called dirty float
- No pre-determined fixed rate
- Intervention is aimed at influencing direction, size or speed of exchange rate movements

### **Currency policy variations**

- Currency band – exchange rate allowed to float within pre-announced rates
- Crawling peg – fixed rate subject to frequent small changes usually aimed at offsetting inflation differentials with trading partners

### **Depreciation**

- Fall in the price of the NZ dollar
- Rise in the price of foreign currency
- Is described as a devaluation of currency in fixed exchange rate systems

### **Appreciation**

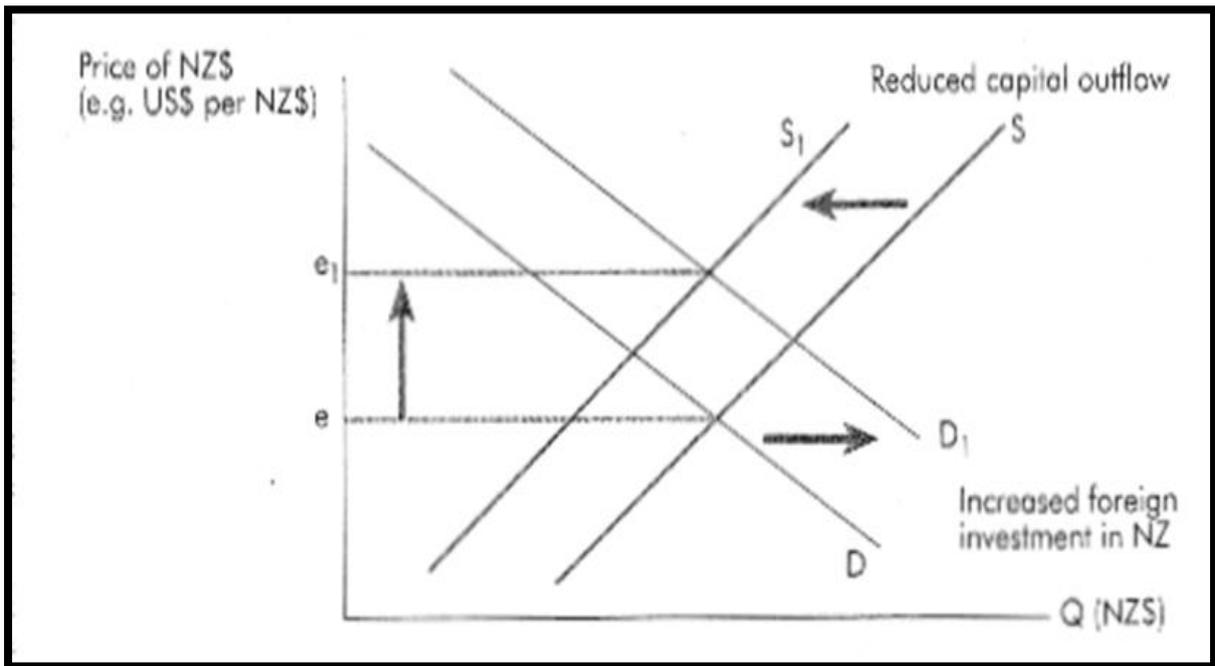
- Rise in the price of the NZ dollar
- Fall in the price of foreign currency
- Is described as a revaluation of currency in fixed exchange rate systems

### **Factors influencing equilibrium exchange rates**

- Trade
- Relative interest rates
- Relative rates of inflation
- Level of prosperity of our trading partners

### Interest rate differentials

- Rise in NZ interest rates
  - ❖ Demand for NZ dollar rises as foreign investors will be more inclined to invest in NZ
  - ❖ Supply of NZ dollar falls as NZ investors are less inclined to invest overseas
  - ❖ Equilibrium price of NZ dollar rises as the exchange rate appreciates
- Fall in NZ interest rates
  - ❖ Demand for NZ dollar falls as foreign investors will be less inclined to invest in NZ
  - ❖ Supply of NZ dollar rises as NZ investors are more inclined to invest overseas
  - ❖ Equilibrium price of NZ dollar falls as the exchange rate depreciates

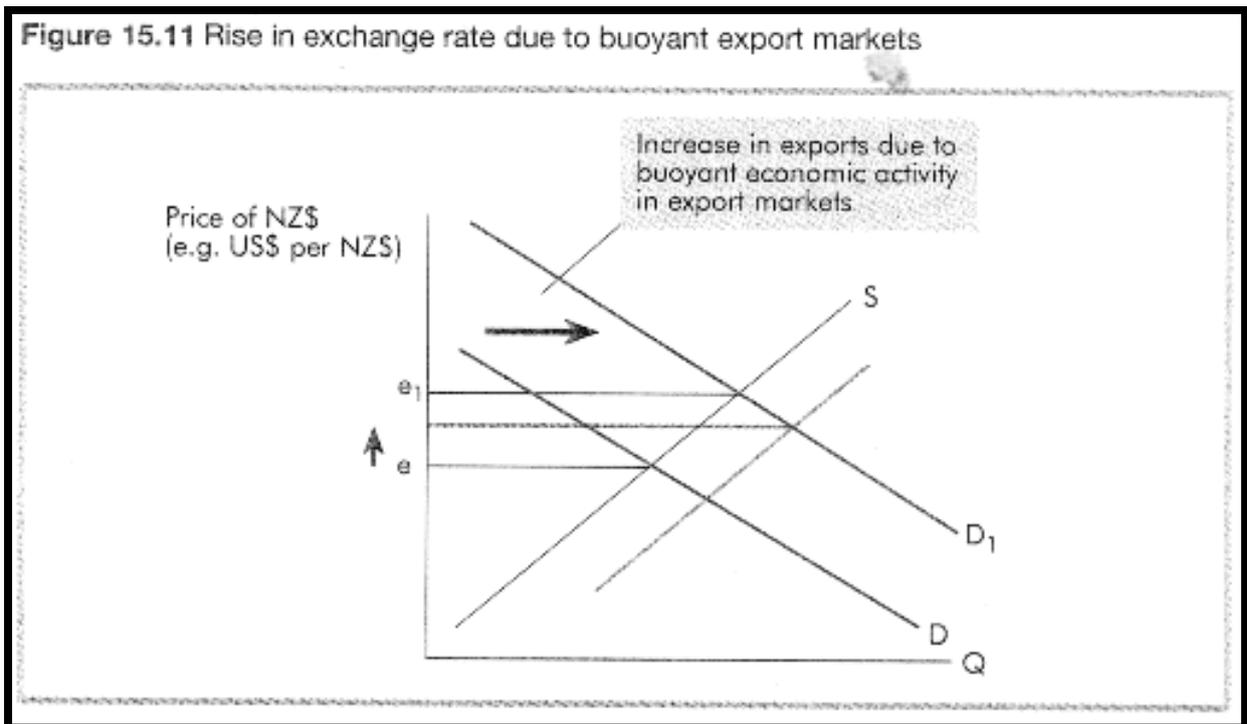


### Monetary policy influence on interest rates and the exchange rate

- Raise interest rates to stop exchange rates or encourage it to rise
- Lower interest rates to encourage exchange rate to fall

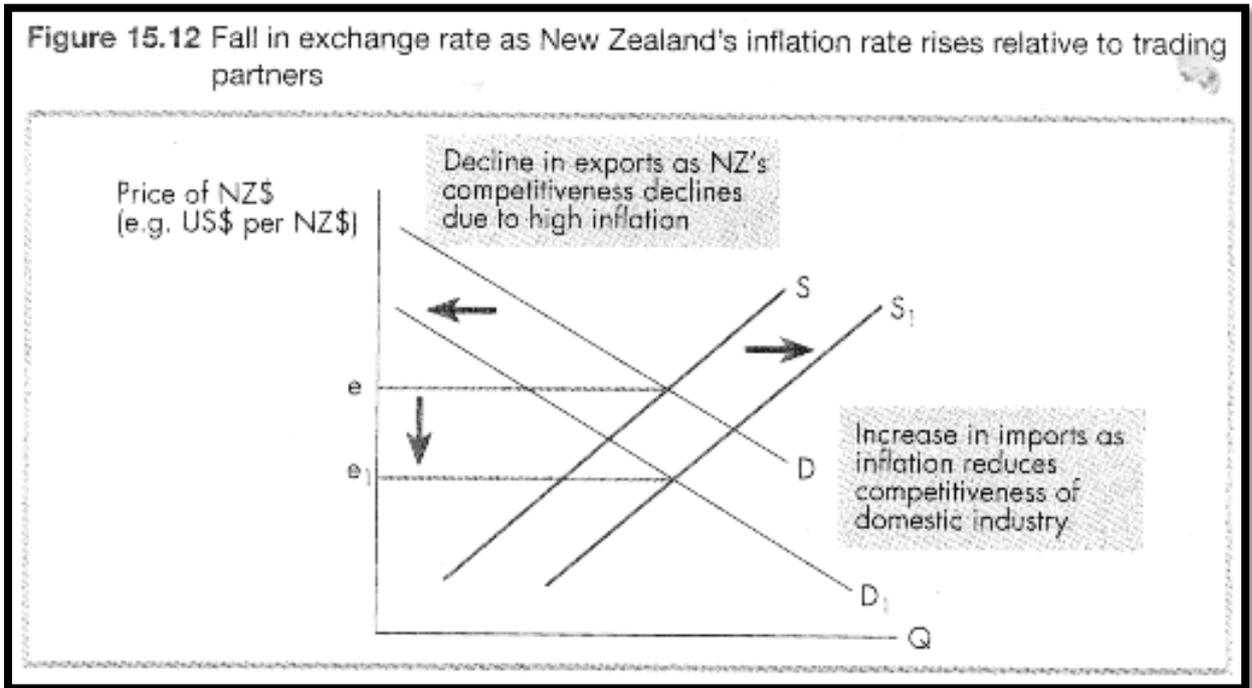
### Impact of growth rates on trade

- Faster domestic growth relative to overseas growth
  - ❖ Stimulates imports
  - ❖ Increase the supply of the NZ dollar
  - ❖ During recessions imports and the supply of the NZ dollar will fall
- Faster overseas growth
  - ❖ Stimulates exports
  - ❖ Increases the demand for the NZ dollar
  - ❖ Relative prosperity for our trading partners will mean they are more likely to buy our exports as they are more prosperous



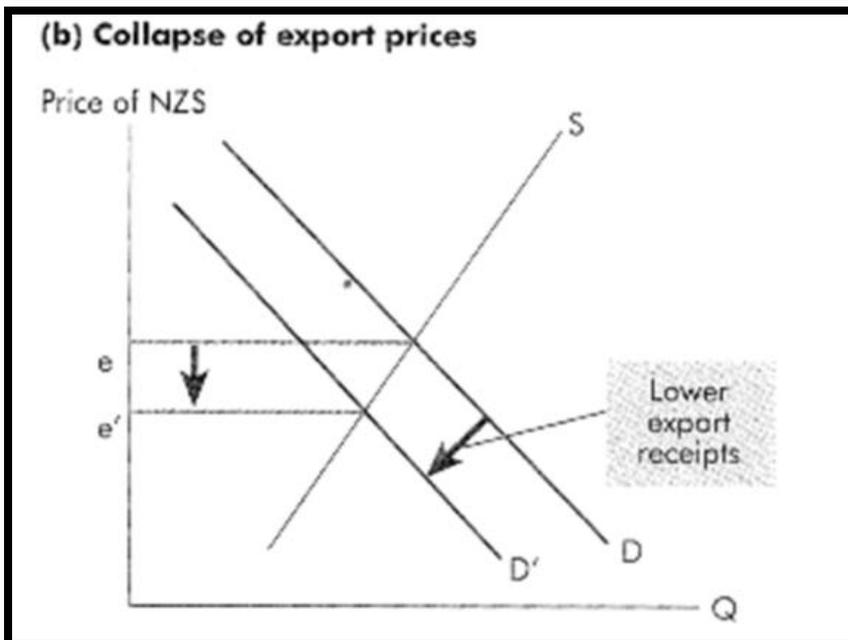
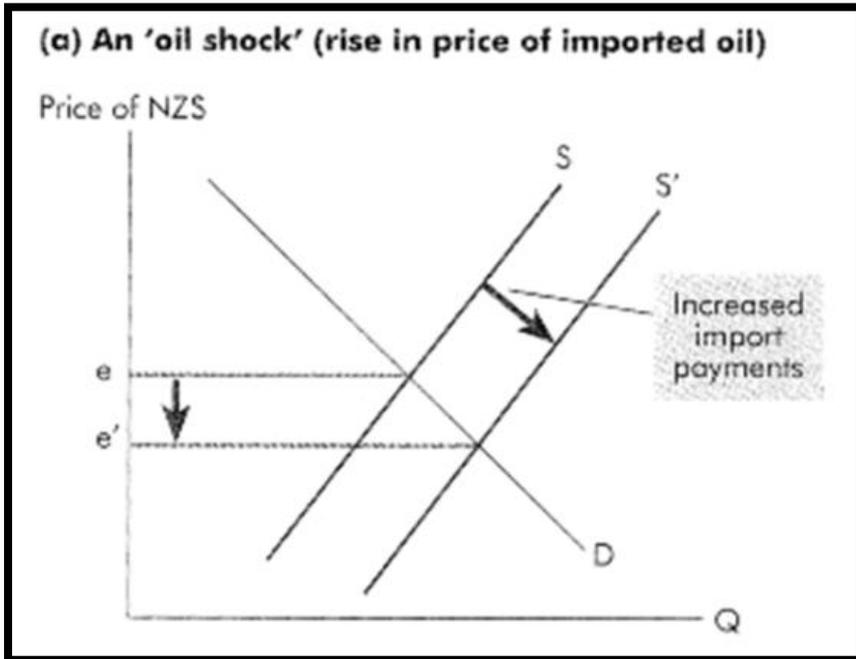
### Inflation differentials

- In the long run identical goods should sell at identical prices after allowing for different currency values so the exchange rate should reflect this
- However high inflation in NZ reduces exports and stimulates imports which leads to a decrease in demand for the NZ dollar, increase in supply of the NZ dollar and a fall in the equilibrium exchange rate



Terms of trade shocks

- Sudden rise in import prices
  - ❖ Supply of NZ dollar rises
  - ❖ Equilibrium exchange rate fall
  - ❖ E.g. oil shock
- Sudden collapse of export markets
  - ❖ Demand for NZ dollar falls
  - ❖ Equilibrium exchange rate falls



### Stock market and economic growth

- Importance of stock markets in international currency movements has risen relative to money markets
- Expectations of strong growth tends to increase demand for domestic currency due to higher expected profits and higher stock prices

### Nominal exchange rates

- The rate at which a person can trade the currency of one country for the currency of another
- The nominal exchange rate is expressed in two ways: units of foreign currency per NZ dollar and units of NZ dollars per one unit of the foreign currency
- E.g. 1 NZ dollar = 80 Japanese yen

### Appreciation

- Increase in the value of a currency as measured by the amount of foreign currency it can buy

### Depreciation

- A decrease in the value of a currency as measured by the amount of foreign currency it can buy

### Real exchange rates

- The rate at which a country trades its g/s with another country
- It compares the prices of domestic goods and foreign goods in the domestic economy
- It is a measure of international competitiveness and relative purchasing power
- It adjusts the nominal exchange rate for any inflation differential between trading partners
- The real exchange rate depends on the nominal exchange rate and the prices of goods in the two countries measured in local currencies
- Unlike nominal exchange rates the real exchange rate is expressed as units of foreign items per unit of domestic items
- E.g. a 25kg bag of Australian rice is A\$25 and a 25kg bag of Thai rice is 750 baht
- The nominal exchange rate is 30 baht per Australian dollar
- The real exchange rate is 2kg of Thai rice costs 1kg of Australian rice

$$\text{Real exchange rate} = \frac{\text{Nominal exchange rate} \times \text{Domestic price}}{\text{Foreign price}}$$

### **Rise in real exchange rate**

- NZ loses its competitiveness
- Happens when NZ inflation exceeds trading partners inflation
- Happens when the nominal exchange rate rises (NZ dollar appreciates)

### **Fall in real exchange rate**

- NZ gains competitiveness
- Happens when NZ inflation is lower than trading partners inflation
- Happens when the nominal exchange rate falls (NZ dollar depreciates)

### **Depreciation in NZ real exchange rate**

- Means all NZ goods have become relatively cheaper when compared with foreign goods
- This encourages foreigners to buy more NZ goods
- It also means an appreciation of real foreign currency which discourages NZ'ers to buy foreign goods
- As a result NZ exports rise and imports falls which in turn raises net exports

### **Appreciation in NZ real exchange rate**

- Means all NZ goods have become relatively expensive when compared with foreign goods
- This encourages foreigners to buy less NZ goods
- It also means a depreciation of real foreign currency which encourages NZ'ers to buy foreign goods
- As a result NZ exports decrease and imports rise which in turn decreases net exports

### **Purchasing power parity**

- A unit of any given currency should be able to buy the same quantity of goods in all countries
- PPP is based on the law of one price which says that a good must sell for the same price in all locations
- If the law of one price was not true then unexploited profit opportunities would exist
- The process of taking advantage of differences in prices in different markets is called arbitrage (buying in the cheap place and selling in the expensive place)
- If arbitrage occurs then eventually prices that are different in two markets will converge
- International differences in prices cause only the nominal exchange rates to move and not the domestic prices

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Implications with PPP

- If the purchasing power of the dollar is always the same at home and abroad then the nominal exchange rate cannot change
- The nominal exchange rate between the currencies of two countries must reflect the different price levels in those countries
- When the central bank prints large quantities of money, money loses value both in terms of the g/s it can buy and the amount of other currencies it can buy

### Limitations of PPP

- Many g/s are not easily traded from one country to another
- Tradable goods are not always perfect substitutes when they are produced in different countries e.g. German and NZ beer have different tastes

### Factors that affect the exchange rate and interest rate

- Govt budget deficit
- Trade policies
- Political stabilities

### Govt budget deficit – effect on loanable funds market

- Reduces national savings and hence the supply of loanable funds
- This drives up the interest rate and crowds out domestic investment which cause net capital outflow to fall (NZ investment abroad decreases and foreign investment in NZ increases)
- With higher rates of interest borrowers borrow less which is represented as a movement along the demand curve for loanable funds to the left
- Households and firms reduce their purchase of capital goods & in a closed economy, deficits crowd out domestic investment

### Govt budget deficit – effect on net capital outflow

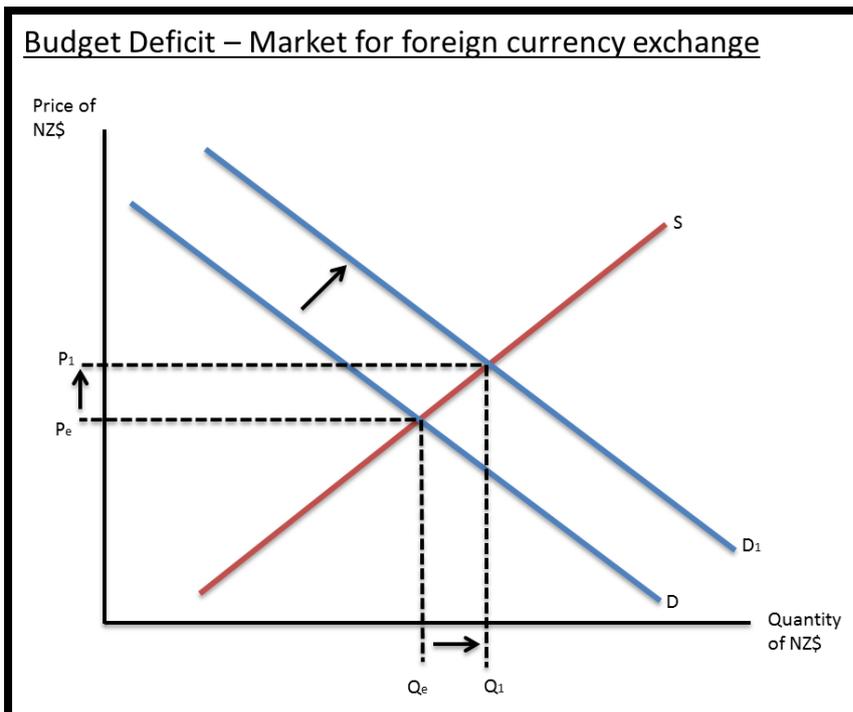
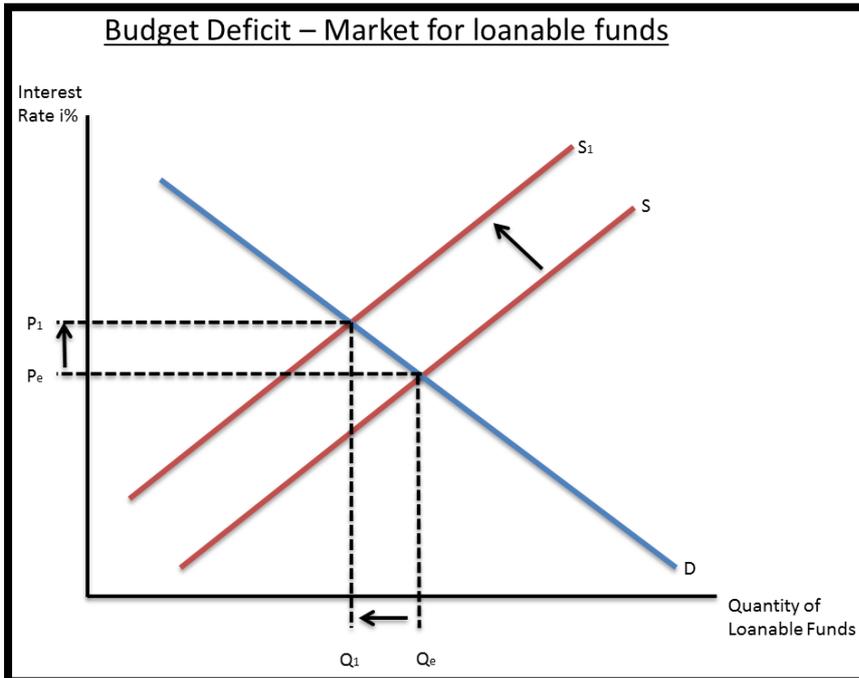
- Higher interest rates reduce net capital outflow
- NZ investors cut back on their purchase of foreign capital
- Foreign investors buy NZ bonds and other assets which yield a higher interest rate

### Govt budget deficit – effect on foreign currency exchange market

- A decrease in NCO reduces the supply of NZ dollars in the international market
- This causes the real exchange rate to appreciate and the CAB to deteriorate

**Govt budget deficit effect in general**

- When a country runs a budget deficit there is less loanable funds which increases the rate of interest
- Higher rates of interest will result in overseas people buying NZ bonds which increases the demand for NZ dollar so the NZ dollar appreciates
- This results in reduced exports and increased imports which results in a decrease in net exports and a trade deficit
- This process is known as the twin deficits



### Effect of a budget deficit in a small open economy

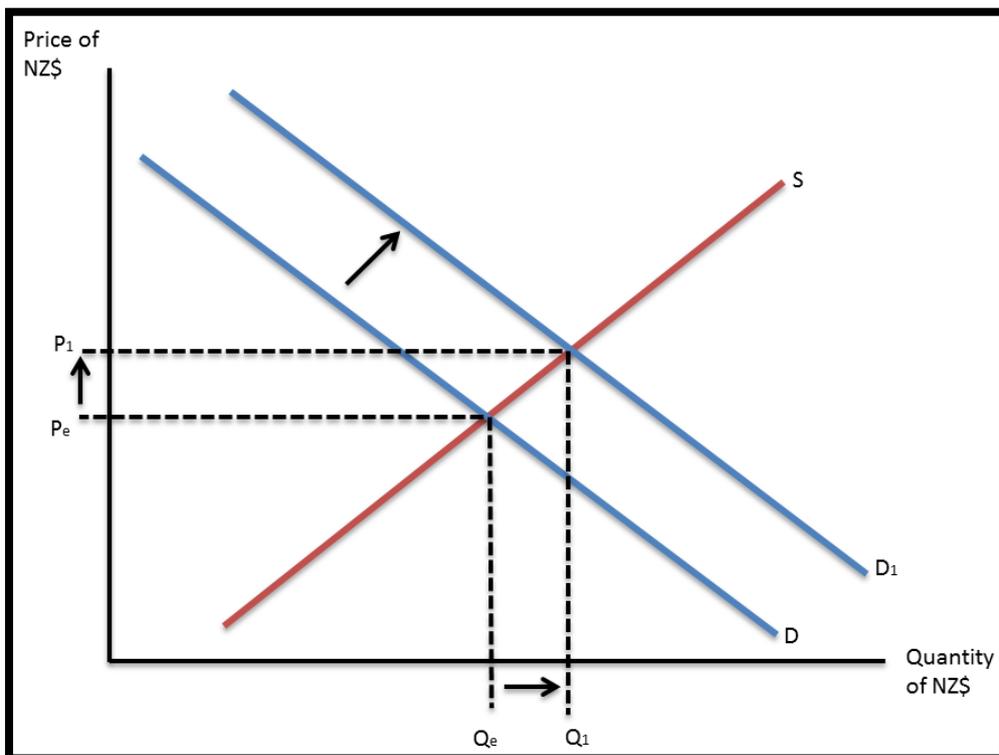
- Reduction in national savings
- However the effect on supply of loanable funds is negligible since the reduction in saving is always offset by an increased inflow of funds from abroad
- Hence the interest rate does not change and no crowd out of domestic investment occurs

### Trade policy

- A govt policy that directly influences the quantity of g/s that a country imports or exports
- E.g. tariff – tax on imported goods
- E.g. import quota – limit on the quantity of a good produced abroad and sold domestically
- E.g. export subsidy – cash payments to exporters per unit of export
- Because trade policies don't change national saving or domestic investment trade policies do not affect the NCO or CAB
- For a given level of national savings and domestic investment the real exchange rate adjusts to keep the trade balance the same
- Therefore trade policies have a greater effect on microeconomic than on macroeconomic markets

### Effects of a subsidy, import tax & import quota

- For any given exchange rate exports increase, imports decrease and therefore net exports rise
- Consequently international demand for a country's currency increases

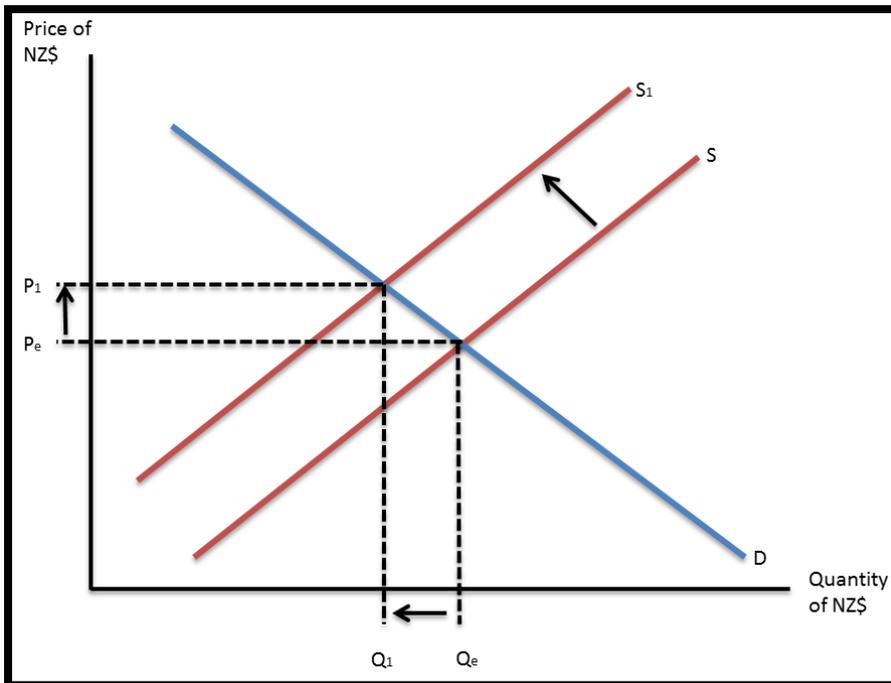


### Effects of promoting trade

- There is no change in the interest rate because nothing happens in the loanable funds market
- There will be no change in net exports and the CAB

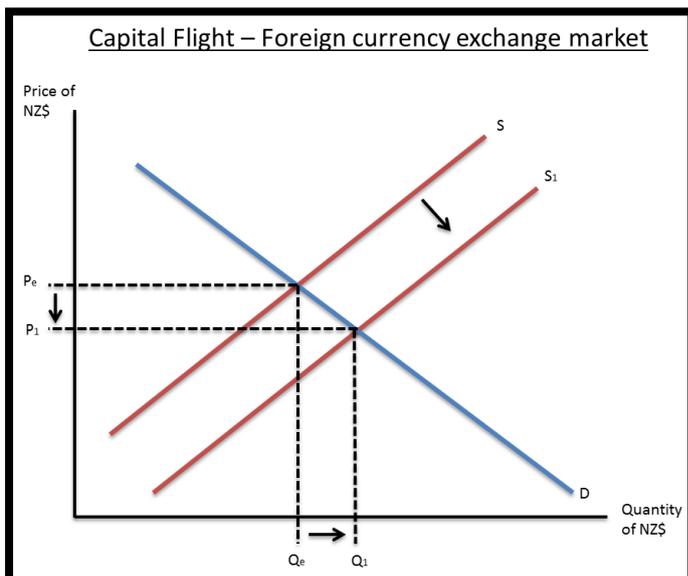
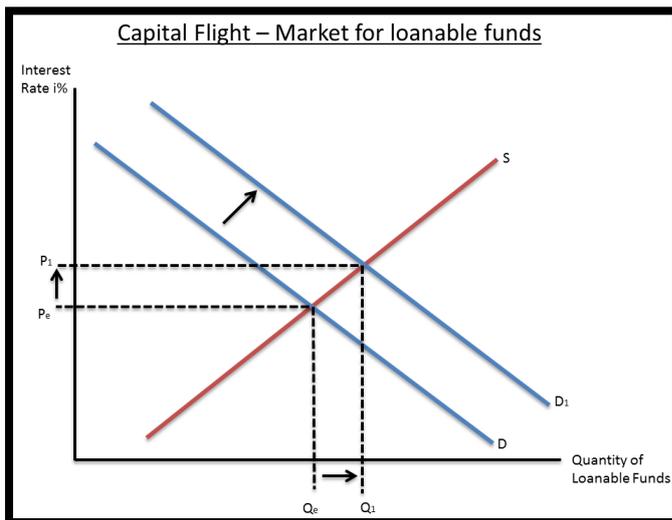
### Effects of trade promotion

- An appreciate of the dollar in the foreign exchange market encourages imports and discourages exports
- This offsets the initial increase in net exports due to trade-promoting policies



## Capital flight

- A large and sudden reduction in the demand for assets located in a country
- Capital flight has its largest impact on the country which the capital is fleeing but also affects other countries
- If investors become concerned about the safety of their investments capital can quickly leave an economy
- Interest rates increase and the domestic currency depreciates
- Demand for loanable funds increase to take money out so rate of interest goes up
- However the supply of dollars increase in the foreign exchange market due to panic and so the dollar depreciates
- Usually when the interest rate goes up capital will inflow to a country however due to the panic situation capital flows out
- E.g. when Mexican assets were sold due to political instability the proceeds were used to buy USA assets which increased the Mexican NCO and therefore a greater demand for loanable funds to finance these purchases which in return increased the supply of Mexican dollars on the foreign exchange market



# **Aggregate demand and supply**

## **Recession**

- A period of declining real incomes and rising unemployment
- Recession is a situation where there is insufficient demand so output of the economy is not sold which results in a cut back in production by firms which then results in unemployment
- A depression is a severe recession

## **Facts about economic fluctuations**

- Economic fluctuations are irregular and unpredictable
- Most macroeconomic variables fluctuate together
- As output falls unemployment rises
- Net exports and outputs tend to move in the opposite direction

## **Macroeconomic variables**

- Most macroeconomic variables that measure some type of income or production fluctuate closely together
- Although many macroeconomic variables fluctuate together they fluctuate by different amounts

## **Decreased output and increased unemployment**

- Changes in real GDP are inversely related to changes in the unemployment rate
- During times of recession unemployment rises substantially

## **Net exports and outputs moving in opposite directions**

- Output has a weak negative correlation with changes in net exports
- When real GDP declines, net exports increase and vice versa
- The relationship depends on what caused the original change in GDP

## **Investment spending**

- Investment spending varies greatly over the business cycle
- When economic conditions decrease, much of the decline is attributable to a reduction in capital spending e.g. building new factories

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Effects of a recession

- When GDP falls in a recession so do personal incomes, corporate profits, consumer spending, industrial production, retail sales, house sales, car sales etc.
- This can be represented on the circular flow as a vicious cycle that affects everything as a recession is an economy wide phenomenon
- As production falls unemployment rises as production is related to utilisation of labour

### Short run economic fluctuations

- Most economist believe that classical dichotomy theory describes the world in the long run but not short run
- Changes in the money supply affect nominal variables but not real variables in the long run
- The assumption of monetary neutrality is not appropriate when studying year to year changes in the economy
- In the short run real & nominal variables are interconnected
- Therefore to understand the short run we have to abandon monetary neutrality and classical dichotomy

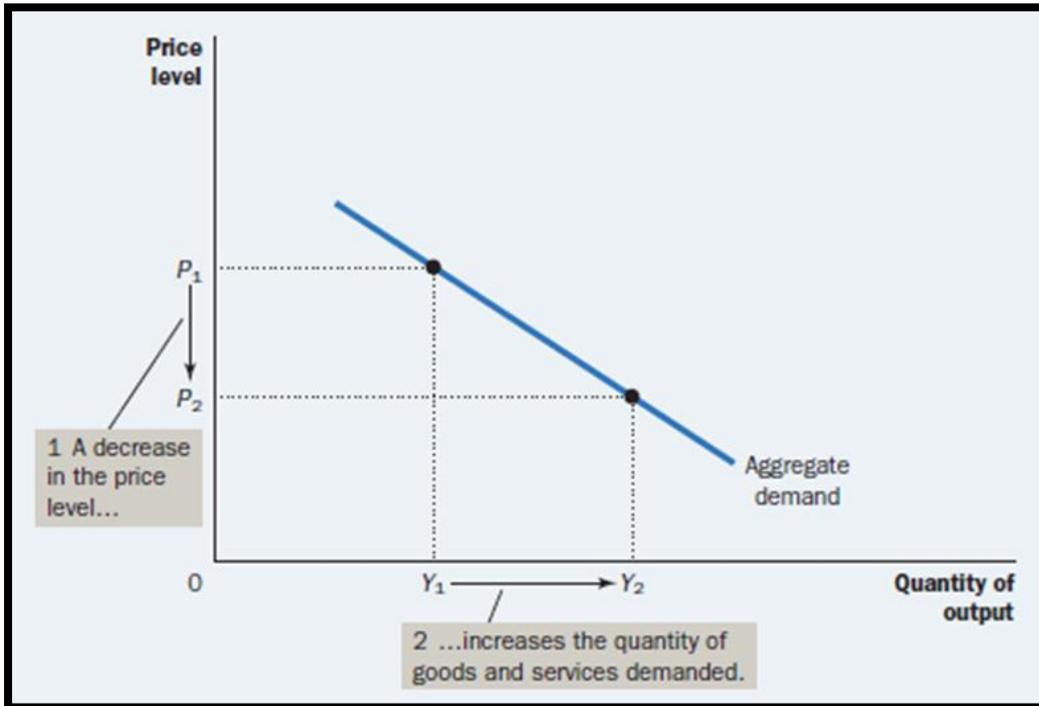
### The model of aggregate demand and supply

- Economists use the model of aggregate demand and supply to explain short run fluctuations in economic activity around its long-run trend
- Two variables are used to develop this model to analyse the short run fluctuations
  1. The economy's output of goods measured by real GDP
  2. The overall price level measured by the CPI or the GDP deflator
- Output is a real variable whereas price level is a nominal variable
- By focusing on the relationship between these 2 variables we are highlighting the breakdown of the classical dichotomy & monetary neutrality

### Aggregate demand curve

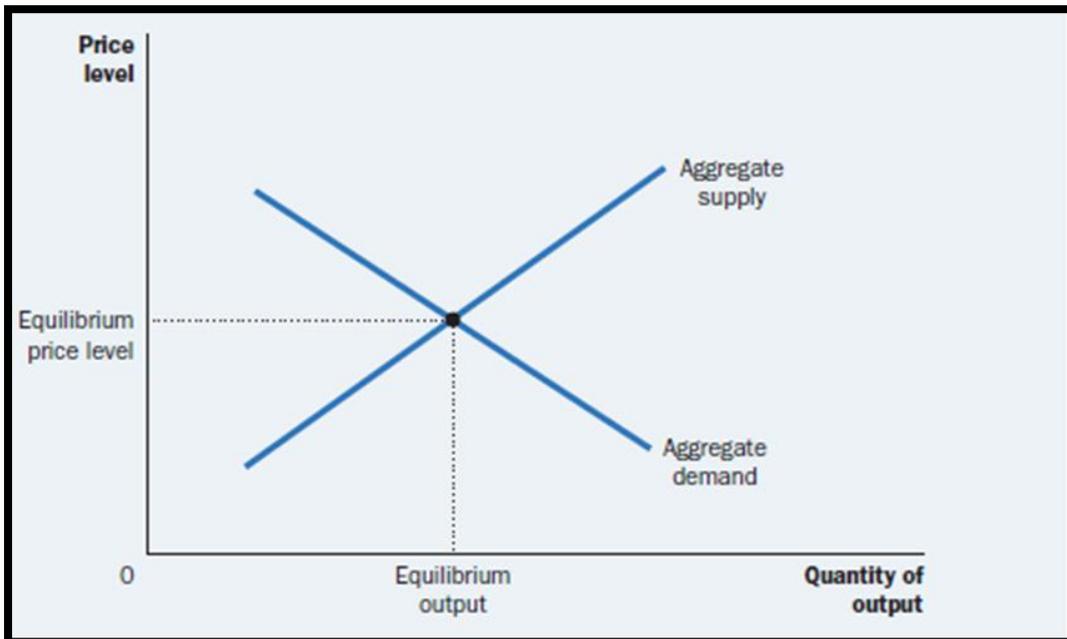
- Shows the quantity of g/s that households, firms and the govt want to buy at each price level
- The 4 components of GDP contribute to the aggregate demand for g/s
- G is a fixed policy variable (it depends on the type of policy e.g. fiscal policy)
- C, I, NX all depend on economic variables

$$Y(AD) = C + I + G + NX$$



### Aggregate supply curve

- Shows the quantity of g/s that firms choose to produce and sell at each price



### Reasons why the aggregate demand curve slopes downwards

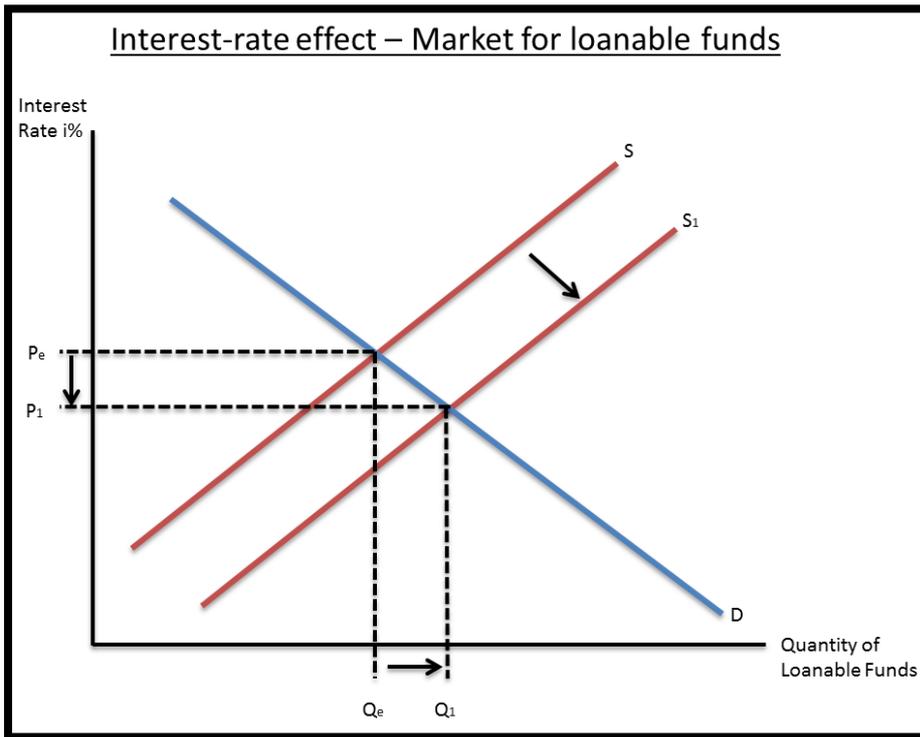
- Wealth effect – price level and consumption
- Interest rate effect – price level and investment
- Exchange rate effect – price level and net exports

### The wealth effect

- A decrease in the price level makes consumers feel more wealthy which in turn encourages them to spend more
- This increase in consumer spending means larger quantities of g/s demanded

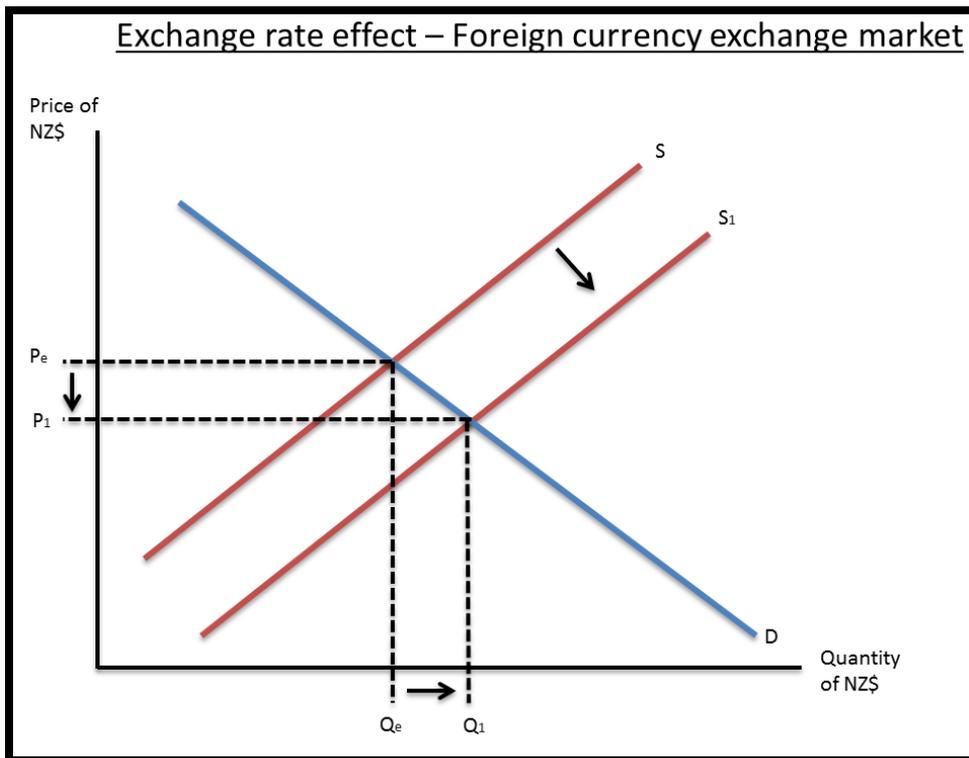
### Interest-rate effect

- When the price level falls people want less money and may try to lend some of it
- So they use excess money to buy bonds or earn interest in a savings account
- This increase in savings leads to more loanable funds which lowers the interest rate so investment increases
- A lower price level reduces the interest rate which encourages greater spending on investment goods
- This increase in investment spending means a larger quantity of g/s demanded



### Exchange rate effect

- A lower price level in NZ (less inflation) leads to a lower rate of interest & NZ investors will seek higher returns by investing overseas e.g. selling NZ bonds to buy Australian bonds
- This increases the supply of NZ dollars to the foreign exchange market which then depreciates the value of the NZ dollar causing exports to rise and imports to decline
- When a fall in the NZ price level causes NZ interest rates to fall then the real exchange rate depreciates which stimulates NZ net exports
- The increase in net export spending means a larger quantity of g/s demanded



### Summary of AD curve – reasons why decreased prices increases the demand of g/s

1. Pigou effect – consumers are wealthier which stimulates the demand for consumption goods
2. Keynes effect – interest rate falls which stimulates the demand for investment goods
3. Mundell-Fleming effect – currency depreciates which stimulates the demand for net exports

### Shifts of the AD curve

- Consumption – Saving for retirement, shift AD to the left
- Investment – Firms decide to invest in faster computers, AD shifts to the right
- Govt purchases – After a war gov't spends less on defence, AD shifts to the left (fiscal policy)
- Net exports – Boom or currency depreciation, AD shifts to the right

### Shifts arising from consumption

- If NZer's become more concerned with saving for retirement and reduce current consumption AD will decline
- If the govt cut taxes it encourages people to save more resulting in an increase in AD

### Shifts arising from investment

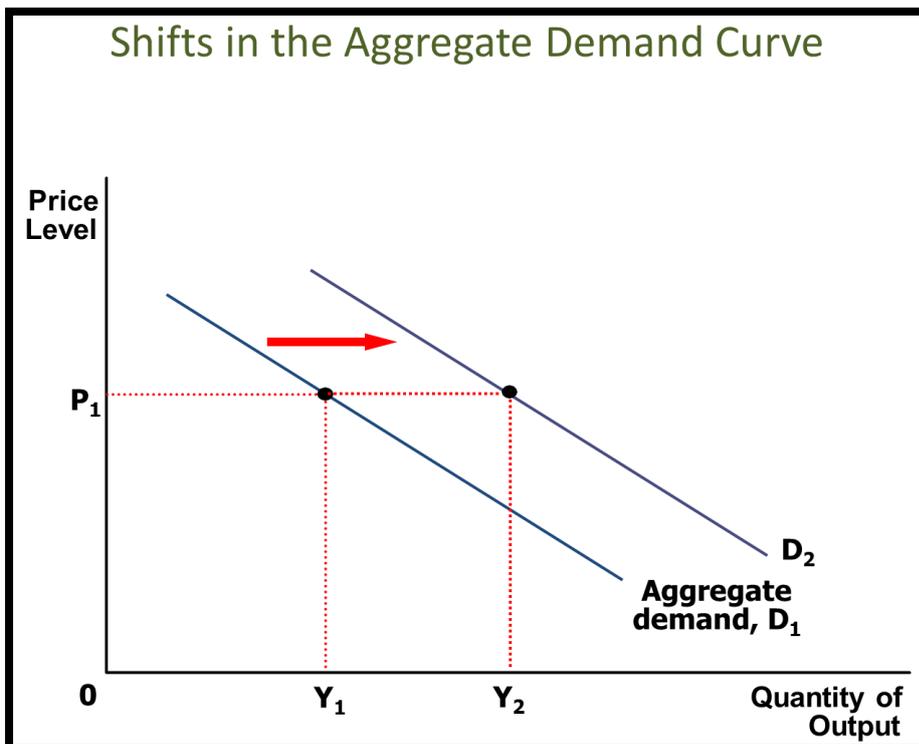
- If firms become pessimistic about future business conditions they may cut back on investment spending shifting AD to the left
- An investment tax credit increases the quantity of investment goods that firms demand which results in an increase in AD
- An increase in the supply of money lowers the interest rate in the short run which leads to more investment spending which causes an increase in AD

### Shifts arising from govt purchases

- If the NZ govt decides to reduce purchases of construction materials for building new roads AD will fall

### Shifts arising from net exports

- When Asia experiences a recession it buys fewer g/s from NZ which lowers net exports so AD will shift left
- If the value of the NZ dollar increases, NZ goods become more expensive to foreigners so AD shifts to the left

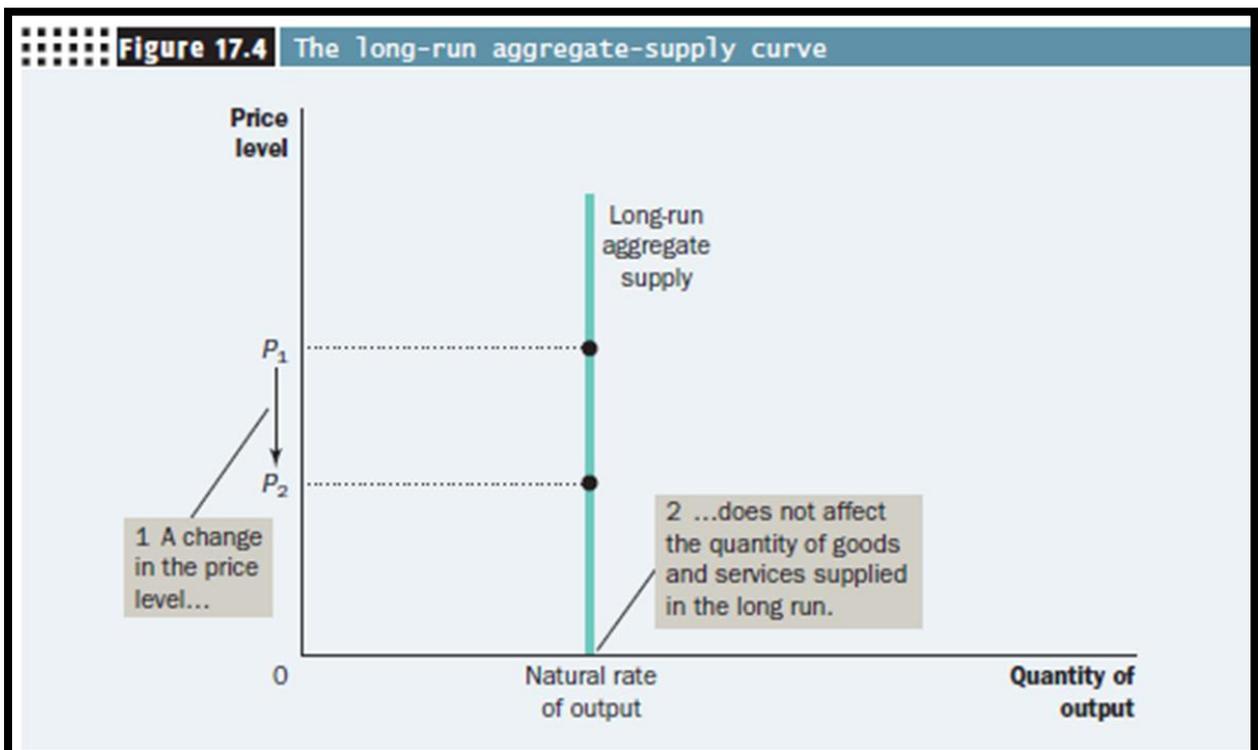


## Aggregate supply curve

- In the short run the AS curve is upward sloping
- In the long run the AS curve is vertical

## Why LRAS is vertical

- In the long run an economy's production of g/s depends on its supplies of labour, capital, natural resources and technology
- The price level does not affect these variables in the long run
- The LRAS curve is vertical at the natural rate of output
- This level of production is also referred to as potential output or full-employment output when the economy is working at full capacity
- The LRAS is an application of the classical dichotomy & monetary neutrality
- For specific products (e.g. ice cream) there is an upward sloping supply curve as more resources can be diverted to increase supply but overall production in an economy cannot increase when all prices rise



## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Why LRAS curve shifts

- Any changes in the economy that alters the natural rate of output shifts the LRAS curve
- The shifts may be categorised according to various factors in the classical model that affect output
- Factors: labour, capital, natural resources, technological knowledge, govt policy, saving, investment, education, technology, international trade which increases the ability of the economy to produce g/s
- If the natural rate of unemployment goes down LRAS will shift right as more people are working
- If the minimum wage rate is raised the natural rate of unemployment will rise so LRAS shifts to the left
- Changes to the unemployment benefit will make people look for jobs & LRAS shifts to the right

### Shifts arising from changes in labour

- Increases in immigration increase the number of workers available so the LRAS curve shifts right
- Any change in the natural rate of unemployment will alter LRAS

### Shifts arising from changes in capital

- An increase in the economy's capital stock raises productivity and thus shifts LRAS to the right
- An increase in the economy's human capital stock raises productivity and thus shifts LRAS to the right

### Shifts arising from changes in natural resources

- A discovery of new minerals increases LRAS
- A change in weather patterns that make farming more difficult shifts LRAS left
- A change in the availability of imported resources will affect LRAS

### Shifts arising from changes in technological knowledge

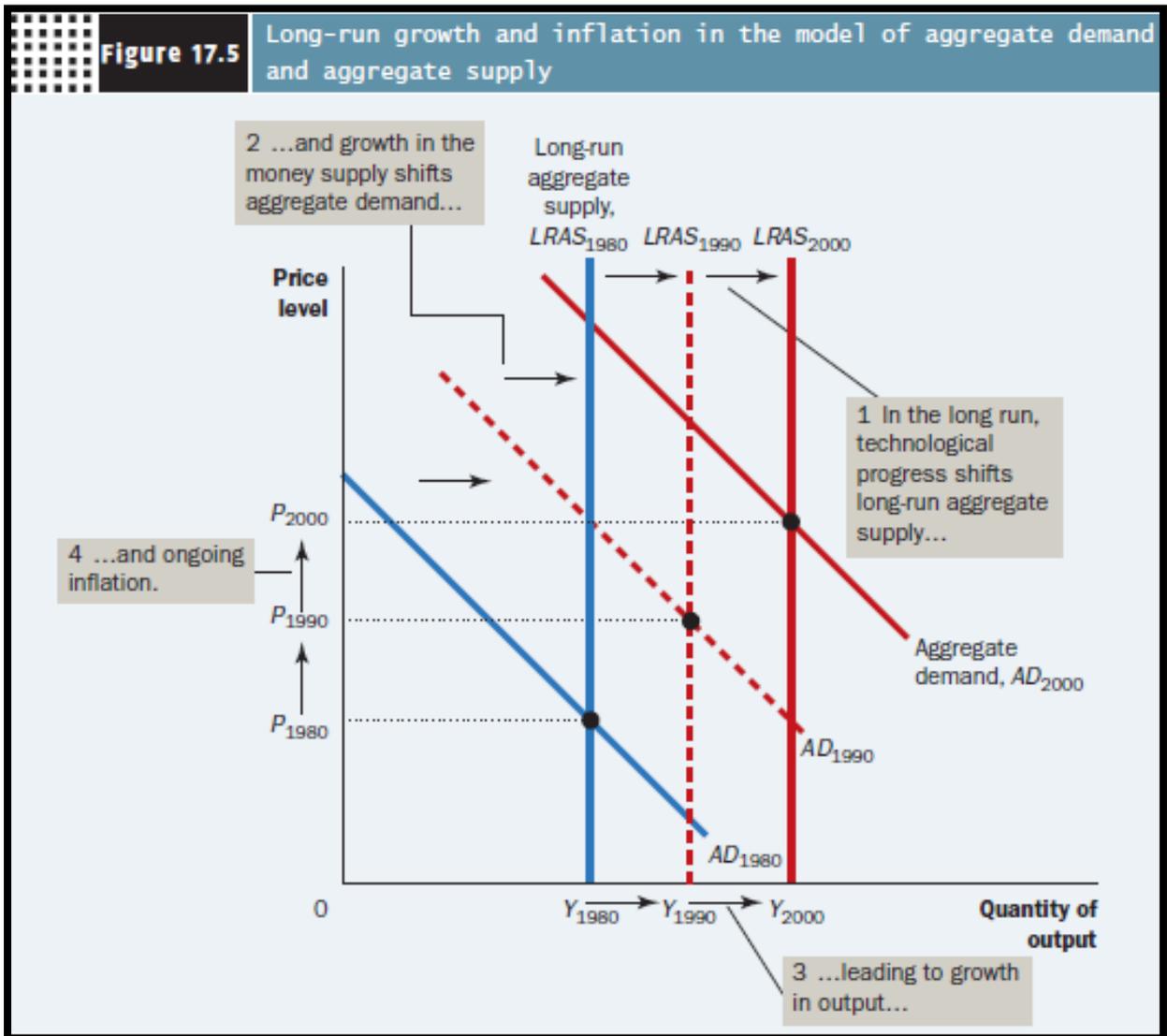
- The invention of the computer has allowed us to produce more g/s from any given level of resources which shifts LRAS left
- Opening up international trade has a similar effect to inventing new production processes therefore shifts LRAS to the right

### Shifts arising from govt policies

- Economic reforms introduced in NZ reduced the cost of resource allocation which led to an economy wide gain in efficiency which led to an increase in productivity and real wages which led to a growth in innovative activities by self-employed people

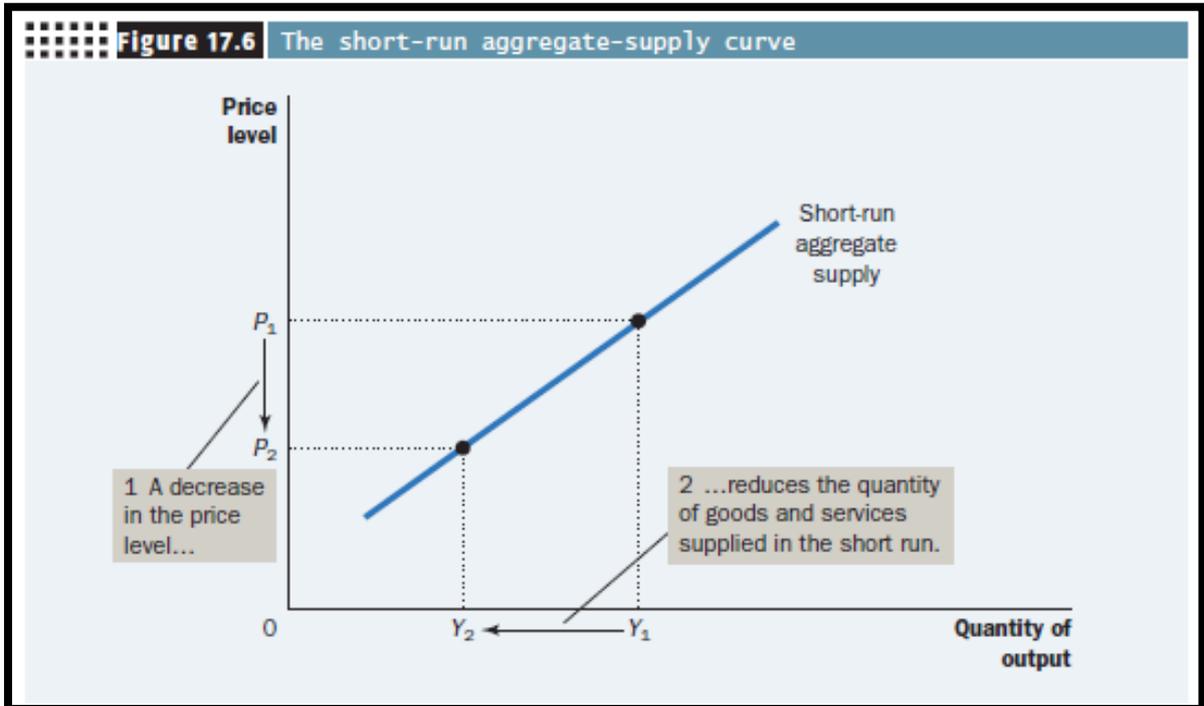
Technological progress and monetary policy

- Technological progress shifts LRAS to the right
- The RBNZ increases the money supply over time which raises AD
- Keynes effect – Increased money supply leads to decreased interest rates with leads to increased investment and therefore an increase in income and AD
- The result is growth in output and continuing inflation



### Why AS slopes upwards in the short run

- In the short run an increase in the overall level of prices in the economy tends to raise the quantity of g/s supplied
- A decrease in the level of prices tends to reduce the quantity of g/s supplied
- Short run AS curve can be explained by sticky-wage, sticky price & misperceptions theory



### Sticky wage theory

- Nominal wages are slow to adjust or are sticky in the short run
- Wages don't adjust immediately to a fall in the price level
- A lower price level makes employment and production less profitable
- This induces firms to reduce the quantity of g/s supplied
- If a firm has agreed to pay workers a certain nominal wage based on the expected price level & then the price falls below the expected level then wages will remain stuck at equilibrium quantity so the real wages rise above the level planned by the firm
- Because wages are a large part of a firm's costs this will lead to the firm hiring less labour and supplying less g/s

### Sticky price theory

- Prices of some g/s adjust sluggishly in response to changing economic conditions due to menu costs
- An unexpected fall in the price level leaves some firms with higher than desired prices
- This depresses sales which induces firms to reduce the quantity of g/s they produce
- A contraction of money supply will reduce prices & those firms that don't reduce prices will lag behind so sales will decline and firms will cut back on production and employment

### Misperceptions theory

- Changes in the overall price level temporarily mislead suppliers about what is happening in the markets which they sell their output
- A lower price level causes misperceptions about relative prices
- These misperceptions induce suppliers to decrease the quantity of g/s supplied
- E.g. wheat farmers first notice their prices falling before they notice other prices falling so they respond by cutting back on supplies
- Workers only see their nominal wages falling but not the fall in prices of goods they purchase (they don't see the real effect) so they reduce their supply of labour as they feel the reward is insufficient
- Eventually as people adjust their expectations misperceptions are corrected so nominal wages adjust and prices become unstuck which leads to the vertical LRAS curve

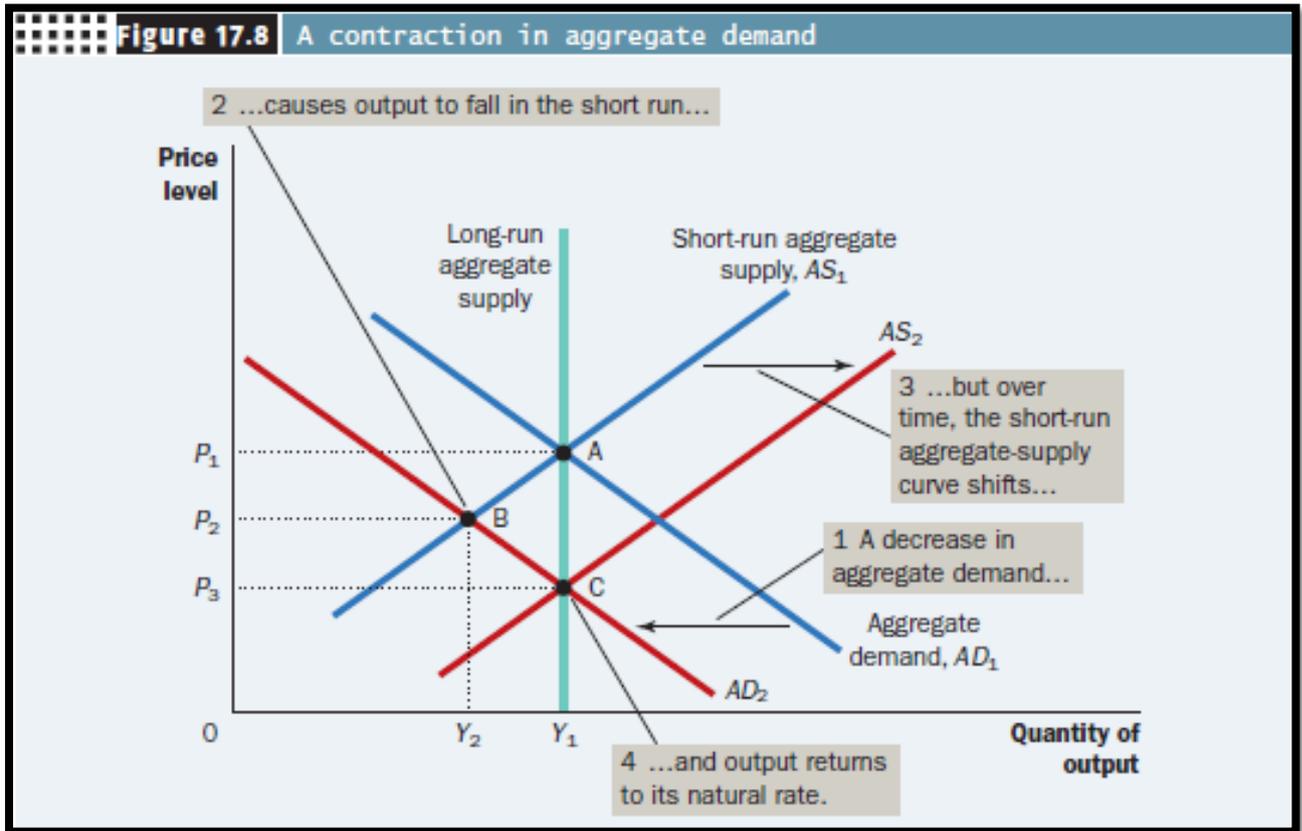
### Why short run AS curve shifts

- Factors: labour, capital, natural resources, technology, expected price level
- An increase in the expected price level reduces the quantity of g/s supplied and shifts the short-run AS curve to the left
- A decrease in the expected price level raises the quantity of g/s supplied and shifts the short run AS curve to the right

### Shifts in AD

- In the short run shifts in AD cause fluctuations in the economy's output of g/s
- In the long run shifts in AD affect the overall price level but don't affect output

Contractions in AD

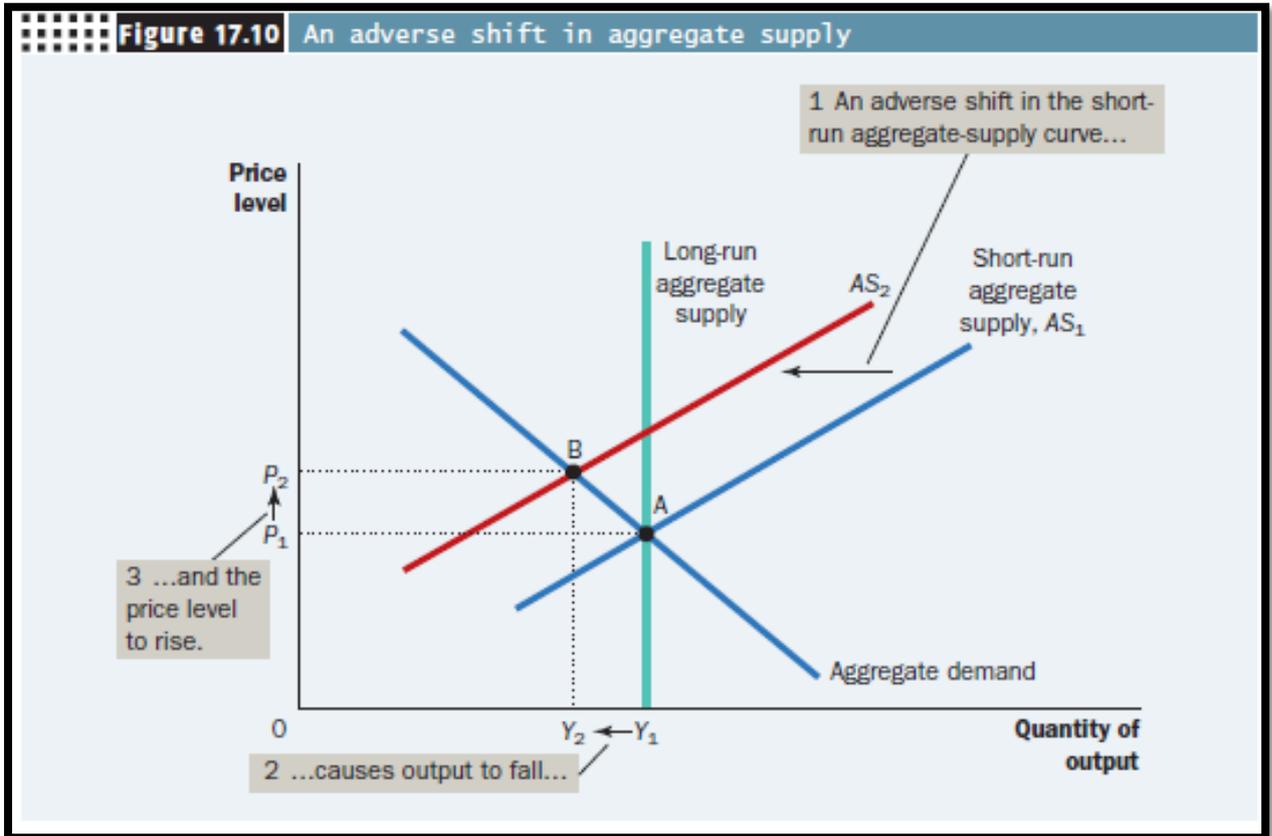


Problems with using fiscal policy

- There is a time lag between implementing policies and when it takes effect in the economy
- Policies are never precise (they always over shoot or under shoot)
- Therefore we never get the most ideal outcome we can only achieve the best possible outcome

### Adverse shift in AS

- A decrease in one of the determinants of AS shifts the AS curve to the left
- This results in output falling below the natural rate of employment so unemployment rises and prices rise
- This was particularly seen during the formation of OPEC where oil prices rose drastically

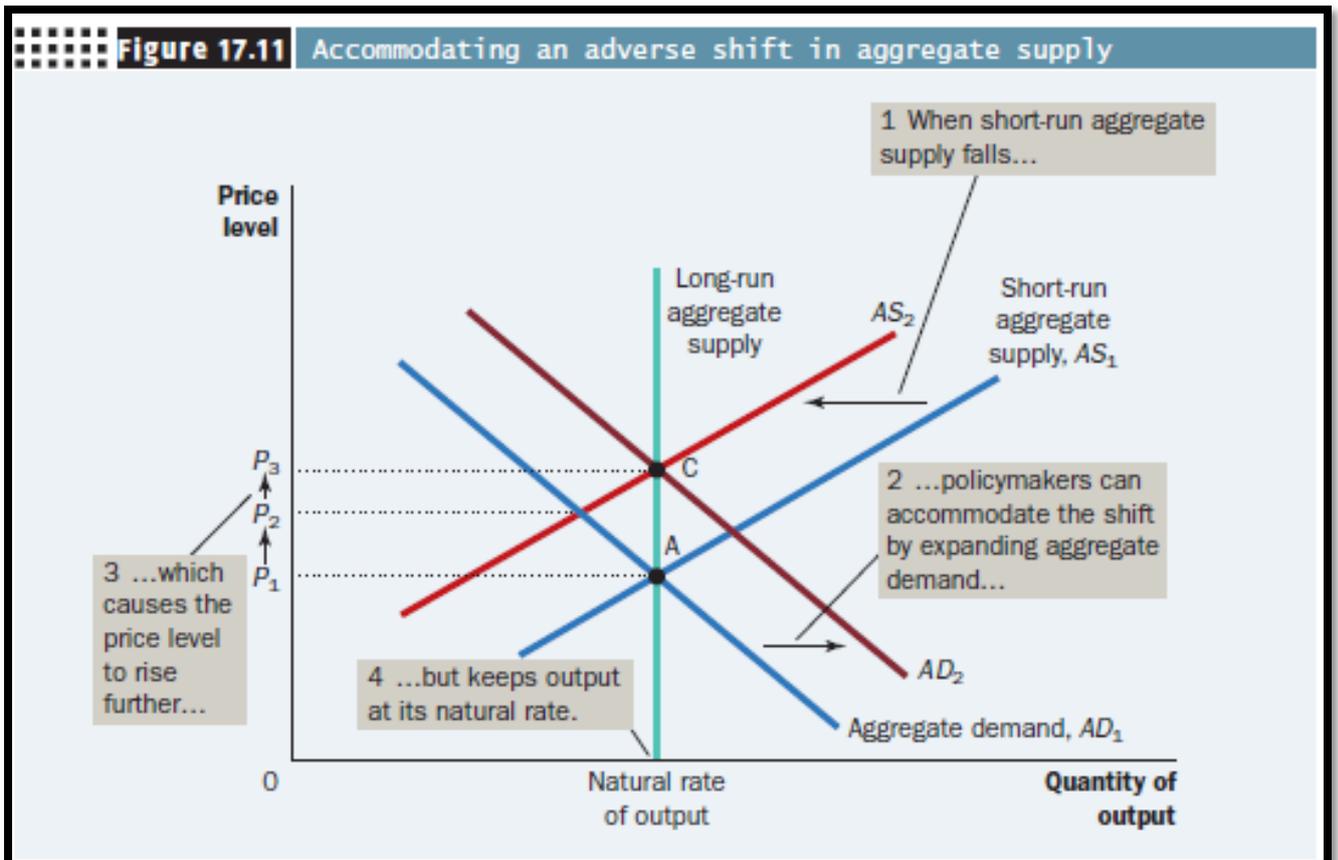


### Solutions to solve an adverse shift in aggregate supply

1. Expansionary fiscal policy which shifts AD to the right however this leads to inflation
2. Contractionary fiscal policy which shifts AD to the left however this causes unemployment
3. Do nothing policy which lets the economy recover on its own (best possible policy)

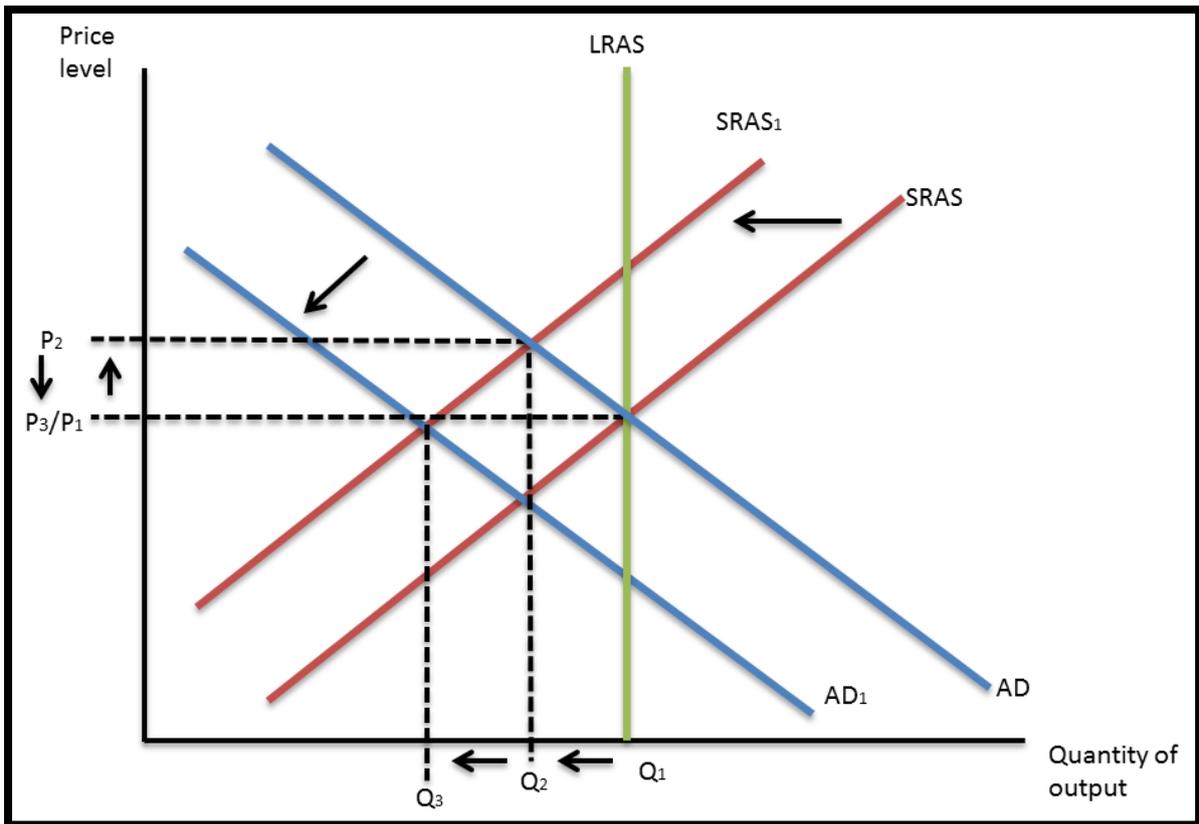
Expansionary fiscal policy

- Decreased AS due to increased oil prices which results in increased prices and increased unemployment
- Govt use fiscal policy to increase AD which increases employment and output back to long run equilibrium
- However this results in inflation which requires another policy to combat the effects



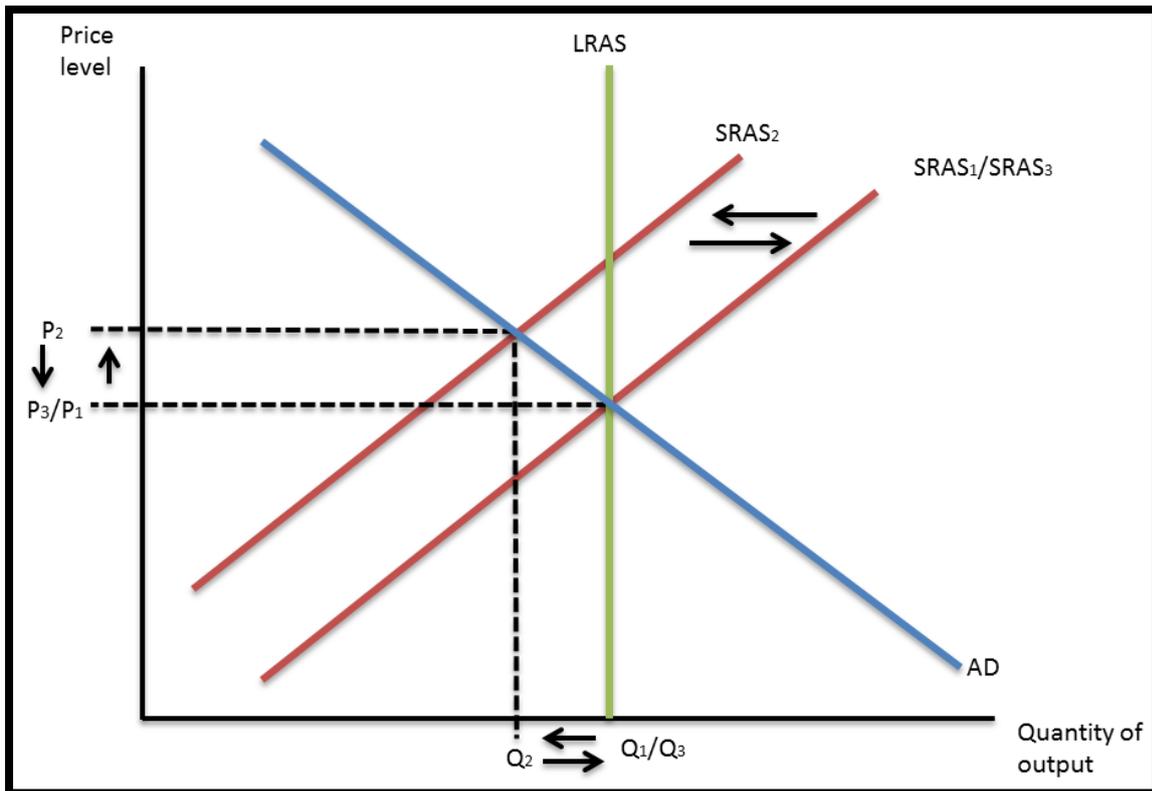
### Contractionary fiscal policy

- Decreased AS due to increased oil prices which causes increased prices and increased unemployment
- Govt use fiscal policy to decrease AD which decreases prices back to long run equilibrium
- However this results in unemployment and decreased output which requires another policy to combat the effects



### Do nothing policy

- Decreased AS due to increased oil prices which causes increased prices and increased unemployment
- AS will naturally combat this by increasing and shifting left due to lower expectations of wages from workers (due to unemployment they are willing to work at lower wages)
- This results in AS shifting back to equilibrium and the economy is recovered



### Stagflation

- Adverse shifts in AS supply cause stagflation which is a period of recession and inflation where output falls and prices rise
- Policy makers who can influence AD cannot offset the adverse effects caused by stagflation

### Reasons for decreased AS

- Output can fall suddenly due to a rise in costs arising from adverse weather conditions which destroy crops and results in food prices going up
- Similarly a war in the middle east can result in oil prices going up which will shift AS to the left

### Policy responses to a recession

- Policy 1: do nothing and wait for prices and wages to adjust (ideal policy)
- Policy 2: take action to increase AD by using monetary and fiscal policy

## Summary

- All societies experience short-run economic fluctuations around long run trends
- These fluctuations are irregular and largely unpredictable
- When recessions occur real GDP and other measures of income, spending and production fall and unemployment rises
- Economists analyse short run economic fluctuations using the AD and AS model
- According to the model of AD and AS the output of  $g/s$  and the overall price level adjust to balance AD and AS
- The AD curve slopes downwards due to: wealth effect, interest rate effect and exchange rate effect
- Any event or policy that changes consumption, investment, govt purchases or net exports at a given price level will shift AD
- In the long run the AS curve is vertical and in the short run it is upward sloping
- The AS curve slopes upwards due to: misperceptions theory, sticky wage theory and sticky price theory
- Events that alter the economy's ability to produce output will shift the short run AS curve
- The position of the short run AS curve depends on the expected price level
- Possible causes of economic fluctuations are a shift of AD or AS
- Stagflation is a period of falling output and rising prices
- Rational expectations help us to understand why the do nothing policy works the best (we have learnt over time to expect prices to rise e.g. oil)

## **The influence of monetary and fiscal policy on aggregate demand**

### How monetary policy influences AD

- When desired spending changes AD shifts causing short run fluctuations in output and employment
- Monetary and fiscal policy are sometimes used to offset these shifts and stabilise the economy
- For the NZ economy the important reasons for the downward slope of the AD curve is the interest rate effect and the exchange rate effect

### The theory of liquidity preference

- Keynes developed the theory of liquidity preference in order to explain what factors determine the economy's interest rate
- The theory says that the interest rates adjust to balance the supply and demand for money
- This theory helps us to understand how monetary policy will shift the AD curve

### Liquidity preference and money supply

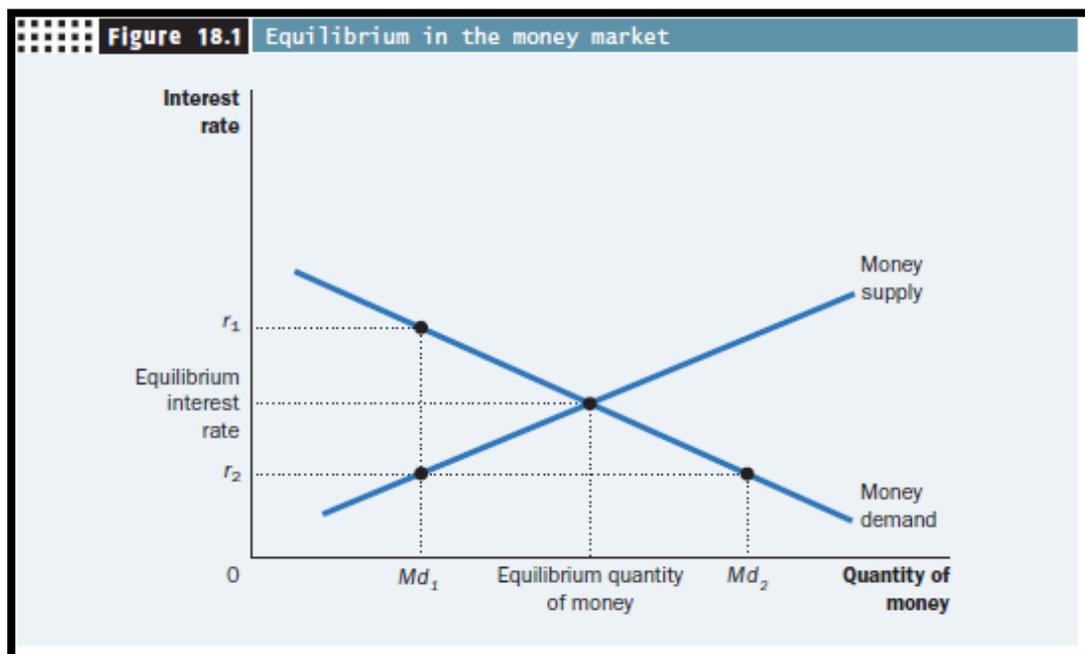
- The money supply is controlled by the central bank through:
- Open market operations, changing the reserve requirements, changing the OCR or open mouth operations/jaw-boning (central bank governor influences reactions by speaking his opinion however this only works if he has credibility)
- Money supply is a policy variable of the central bank and does not depend on other variables or the rate of interest
- Because the money supply is fixed by the central bank, the quantity of money supplied does not depend on the interest rate
- The fixed money supply curve is represented by a vertical supply curve

### Determinants of money demand

- Rate of interest
- People choosing to hold money instead of other assets that offer higher rates of return as money can be used to buy g/s
- The opportunity cost of holding money (interest that could have been earned on interest earning assets)

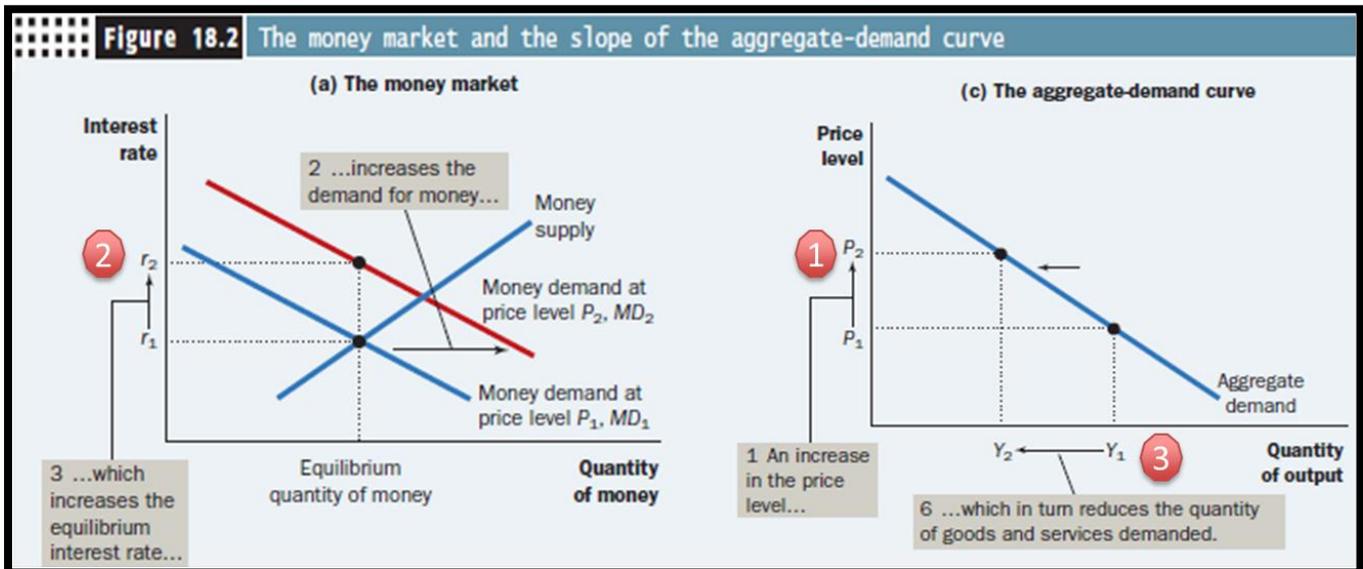
### Equilibrium in the money market

- The interest rate adjusts to balance the supply and demand for money
- There is one interest rate called the equilibrium interest rate at which the quantity of money demand equals the quantity of money supplied
- For any given price level the interest rate adjusts to balance the supply and demand for money
- The level of output responds to the AD for g/s



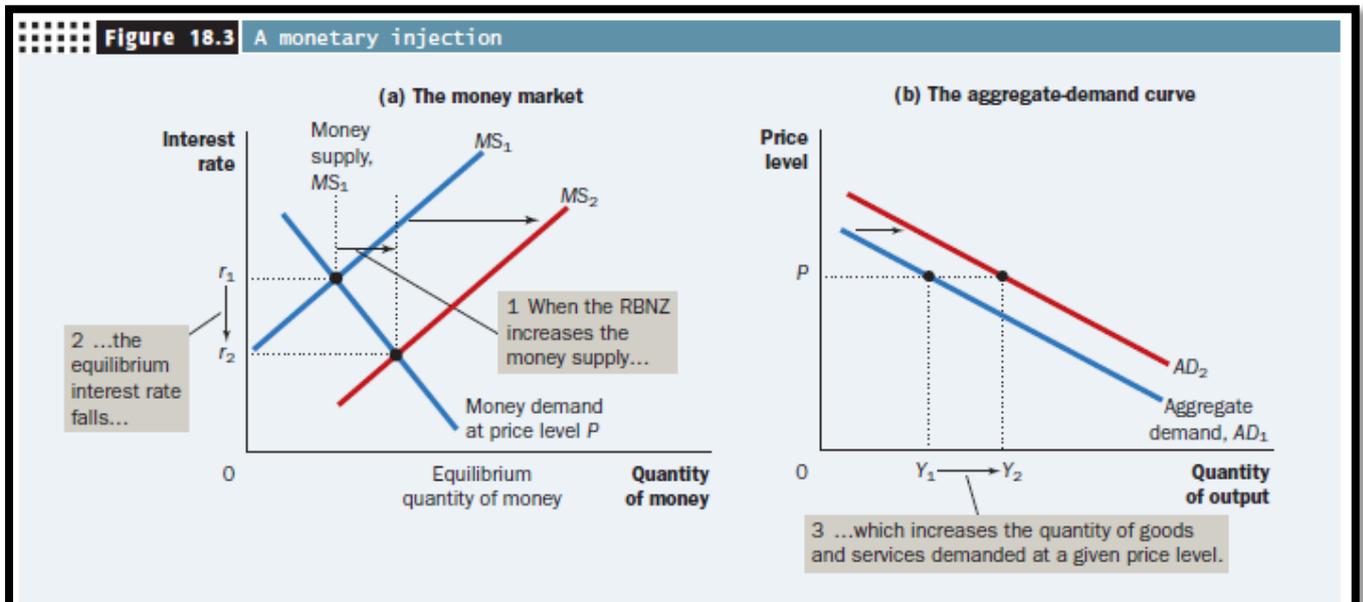
The downward slope of the AD curve

- The price level is one determinant of the quantity of money demanded
- A higher price level increases the quantity of money demanded for any given interest rate
- Higher money demand leads to a higher interest rate
- The quantity of  $g/s$  demanded falls
- The end result of this analysis is a negative relationship between the price level and the quantity of  $g/s$  demanded
- The rate of interest rises as the money supply is fixed which makes the cost of borrowing and returns to savings higher
- This leads to households investing less on houses and firms investing less on plant & equipment so people consume less and choose to save for the future
- So C & I are down due to higher price levels which increases money demand leading to a higher rate of interest and therefore reduced AD



## Monetary injection

- The central bank can shift the AD curve when it changes monetary policy
- An increase in the money supply shifts the money supply curve to the right
- Without a change in the money demand curve, the interest rate will fall
- Falling interest rates increases the quantity of g/s demanded
- The money supply curve will shift to the right with an increase in the money supply due to a change in open market operations or a change in the OCR or changing the reserve requirements
- When the RBNZ increases the money supply AD will shift right as C & I increase so AD increases
- So therefore a monetary injection lowers the rate of interest which raises AD
- A change in monetary policy that aims to expand AD is either by increasing money supply or lowering the rate of interest



## Money supply expansion

- When the central bank increases the money supply it lowers the interest rate and increases the quantity of g/s demanded at given price, shifting AD right
- When the central bank contracts the money supply it raises the interest rate and reduces the quantity of g/s demanded at any given price, shifting AD left

## Fiscal policy

- The govts choice regarding the overall level of govt purchases or taxes
- Fiscal policies influence saving, investment and growth, in the long run
- In the short run fiscal policy primarily affects AD

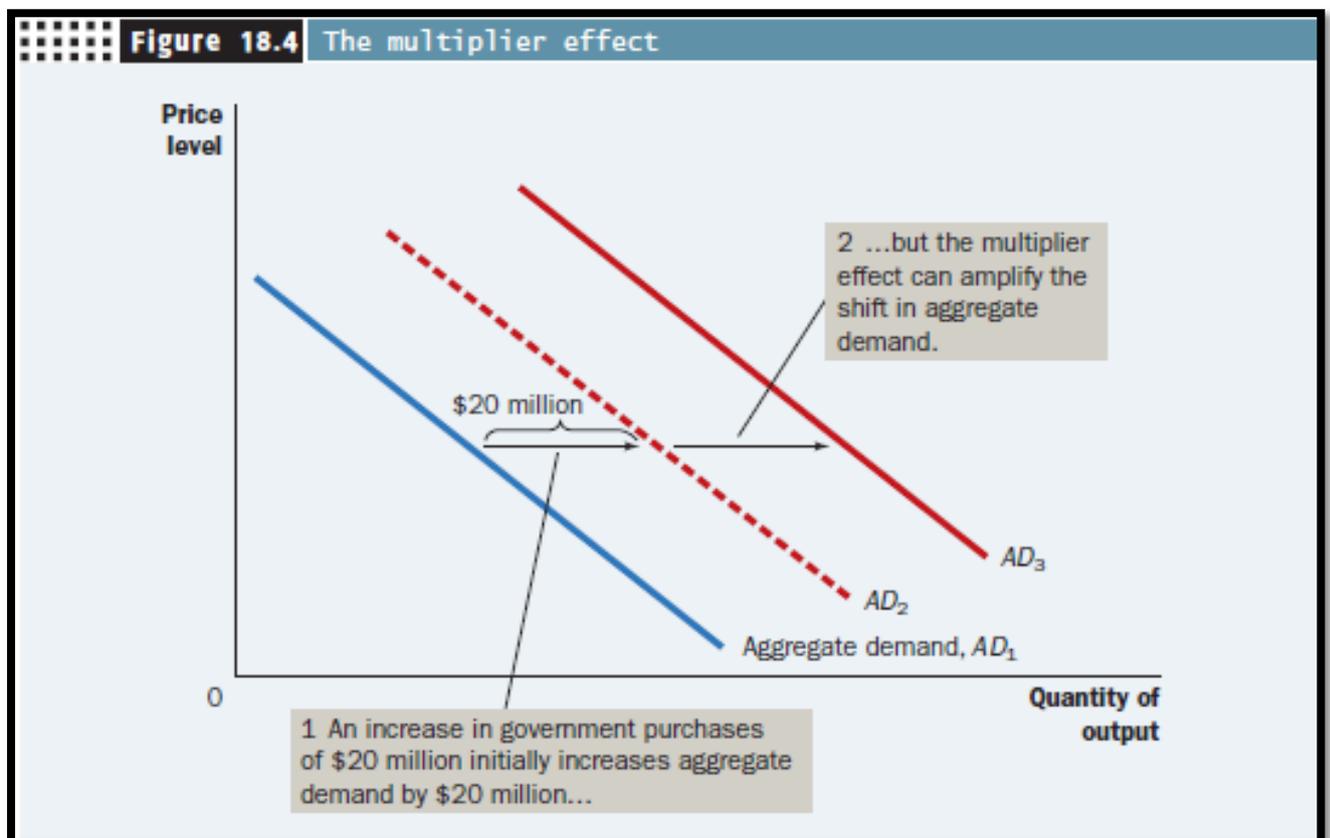
## Govt purchases

- When policy makers change the money supply or taxes, the effect on AD is indirect through the spending decisions by firms and households
- When the govt alters its own purchase of g/s it shifts the AD curve directly
- Govt purchases result in: the multiplier effect and the crowding-out effect

## Multiplier effect

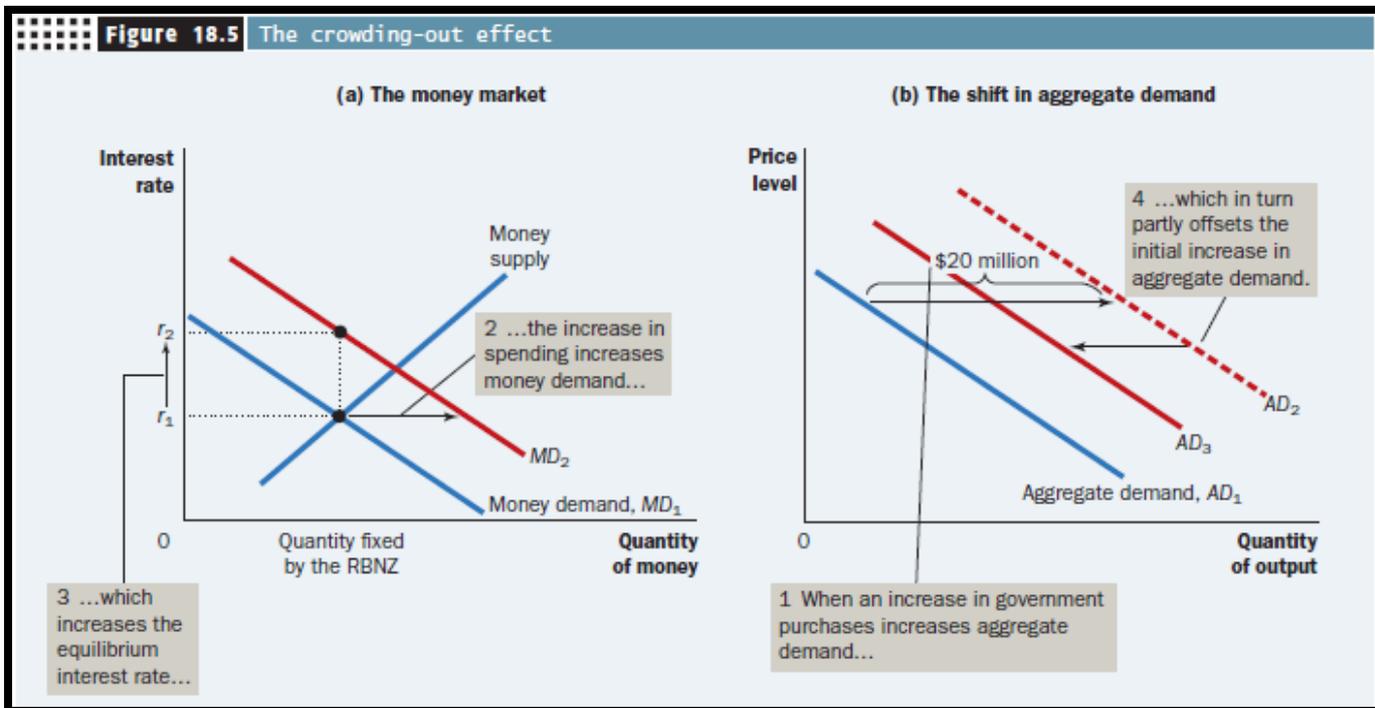
- Govt purchases are said to have a multiplier effect on AD
- Each dollar spent by the govt can raise the AD for g/s by more than a dollar
- So the multiplier effect is the additional shift in AD that results when expansionary fiscal policy increases incomes and thereby increases consumer spending
- The marginal propensity to consume is the proportion of income a consumer spends rather than saves e.g. 0.8 means you spend 80 cents on every dollar you earn
- The marginal propensity to save is the fraction of income a consumer saves rather than spends e.g. 0.2 means you save 20 cents on every dollar you earn
- $MPC + MPS = 1$  e.g.  $0.8 + 0.2 = 1$
- E.g. if MPC is 0.75 then we can say a \$20 billion increase in govt spending generates \$80 billion of increase demand ( $1 / 1 - 0.75$ ) so the multiplier is 4

$$\text{Multiplier} = 1 / (1 - MPC)$$



**The crowding-out effect**

- Fiscal policy may not affect the economy as strongly as predicted by the multiplier
- An increase in govt purchases stimulates demand but also causes the interest rate to rise which tends to choke off some of the increased demand
- This then reduces investment spending and causes consumers to save more
- This reduction in demand that results when a fiscal expansion raises the interest rate is the crowding-out effect
- The crowding out effect tends to dampen the effects of fiscal policy on AD
- The effect of how much AD shifts back due to the crowding out effect is dependent on the strength on the multiplier
- The increase in govt spending will increase demand for g/s but can also crowd out investment which will partially offset the increase in AD
- E.g. when the govt increases its purchases by \$20 billion the AD for g/s could rise by more or less than \$20 billion depending on whether the multiplier or crowding out effect is bigger



## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Changes in taxes

- When the govt cuts personal income taxes it increases households take home pay
- This allows households to save more income and spend more income which will shift AD to the right
- The size of the shift in AD resulting from a tax change is affected by the multiplier and the crowding out effect
- It is also determined by the households perception about the permanency of the tax change
- If the govt announces a tax cut of \$1000 and people think it's permanent then it is a large addition to their income so they will buy more g/s and AD will increase substantially
- If people think it is a one-off cut they will not feel wealthy so AD will only increase by a small amount

### Using policy to stabilise the economy

- Price stability has been an explicit policy of the NZ govt since the reserve bank act
- Maintaining a balanced budget has been a desirable policy of the NZ govt since the fiscal responsibility act
- Economic stabilisation has been an explicit goal of the NZ govt since the policy target agreement

### Reasons against active stabilisation policy

- Some economist argue that monetary and fiscal policy destabilises the economy
- Monetary and fiscal policy affect the economy with substantial lag
- They suggest the economy should be left to deal with the short run fluctuations on its own
- It's impossible to forecast the next recessions so policy decisions may become worthless or problematic if a recession follows

### Reasons for active stabilisation policy

- Monetary and fiscal policy should watch each other
- Keynes said govt should actively stimulate AD when it appeared insufficient to maintain production at its full employment level
- Keynes said that AD fluctuates due to irrational waves of pessimism and optimism

### Implications of the employment act

- The govt should avoid being the cause of economic fluctuations
- The govt should respond to changes in the private economy in order to stabilise AD

### Implication of the reserve bank act & fiscal responsibility act

- Monetary policies would keep AD equal to LRAS
- Fiscal policies would not be used to manage AD

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Automatic stabilisers

- Changes in fiscal policy that stimulate AD when the economy goes into recession without policy makers having to take any deliberate action
- E.g. during a recession firms profits are decreased so taxes will drop therefore tax is automatically reduced
- E.g. during a recession some people lose jobs so income tax is reduced
- Therefore the govt doesn't need expansionary fiscal policy to reduce taxes to increase AD as this is done automatically and the govt doesn't need to increase spending, as spending will increase automatically due to more people going on welfare
- Automatic stabilisers include the tax system and some forms of govt spending
- Economists oppose a rule for govts to run a balanced budget as this would prevent automatic stabilisers from working

### Summary

- Keynes proposed the theory of liquid preference to explain determinants of the interest rate
- This theory explains why the interest rate adjusts to balance the demand and supply for money
- An increase in the price level raises money demand and increases the interest rate
- A higher interest rate reduces investment and thereby the quantity of  $g/s$  demanded
- The downward sloping AD curve expresses the negative relationship between the price level and the quantity demanded
- Policy makers can influence AD with monetary policy
- An increase in the money supply will ultimately lead to the AD curve shifting right
- A decrease in the money supply will ultimately lead to the AD curve shifting left
- Policy makers can influence AD with fiscal policy
- An increase in govt purchases or a cut in taxes shifts the AD curve to the right
- A decrease in govt purchases or an increase in taxes shifts the AD curve left
- When the govt alters spending or taxes the resulting shift in AD can be larger or smaller than the fiscal change
- The multiplier effect tends to amplify the effects of fiscal policy on AD
- The crowding out effect tends to dampen the effects of fiscal policy on AD
- Because monetary and fiscal policy can influence AD the govt sometimes uses these policy instruments in an attempt to stabilise the economy
- Economists disagree about how active the govt should be in controlling the economy
- Advocates say that if the govt does not respond the result will be undesirable inflation
- Critics argue that attempts at stabilisation often becomes destabilising

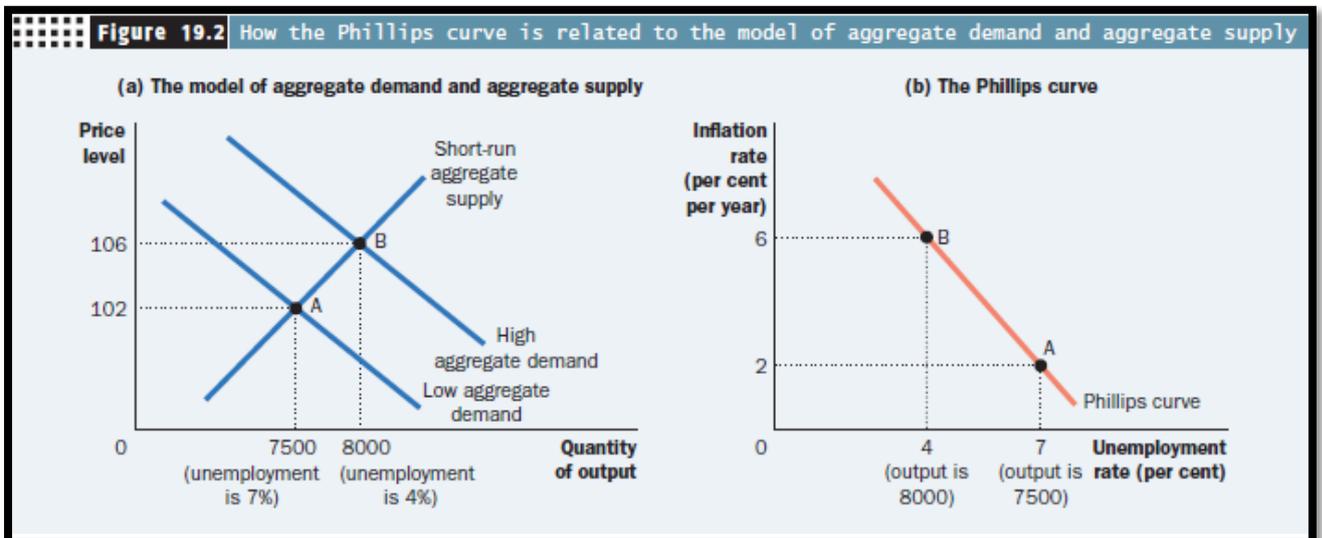
# The short trade-off between inflation and unemployment

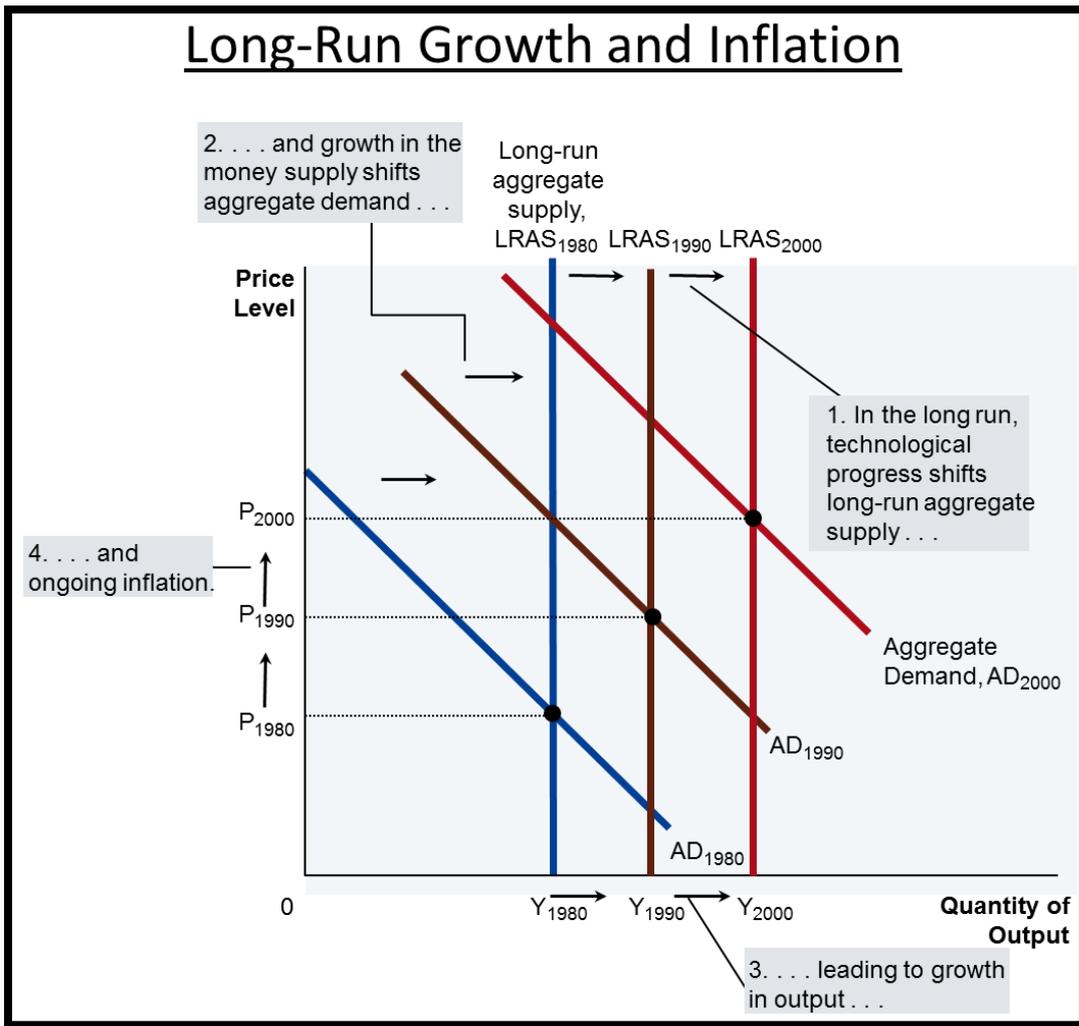
## Unemployment and inflation

- The natural rate of unemployment depends on various features of the labour market e.g. minimum wage laws, unions, efficiency wages, effectiveness of job searches
- The inflation rate depends primarily on the growth of the quantity of money controlled by the reserve bank
- Society faces a short run trade-off between unemployment and inflation
- If policy makers expand AD they can lower unemployment but only at the cost of higher inflation
- If they contract AD they can lower inflation at the cost of temporary higher unemployment

## The Phillips curve

- Illustrates the short-run combinations of unemployment and inflation that arise as shifts in the AD curve move the economy along the short-run AS curve
- The greater the AD for g/s the greater the economy's output and the higher the overall price level
- A higher level of output results in a lower level of unemployment
- A higher overall price level corresponds to a faster growth rate of AD relative to LRAS and hence a higher inflation rate



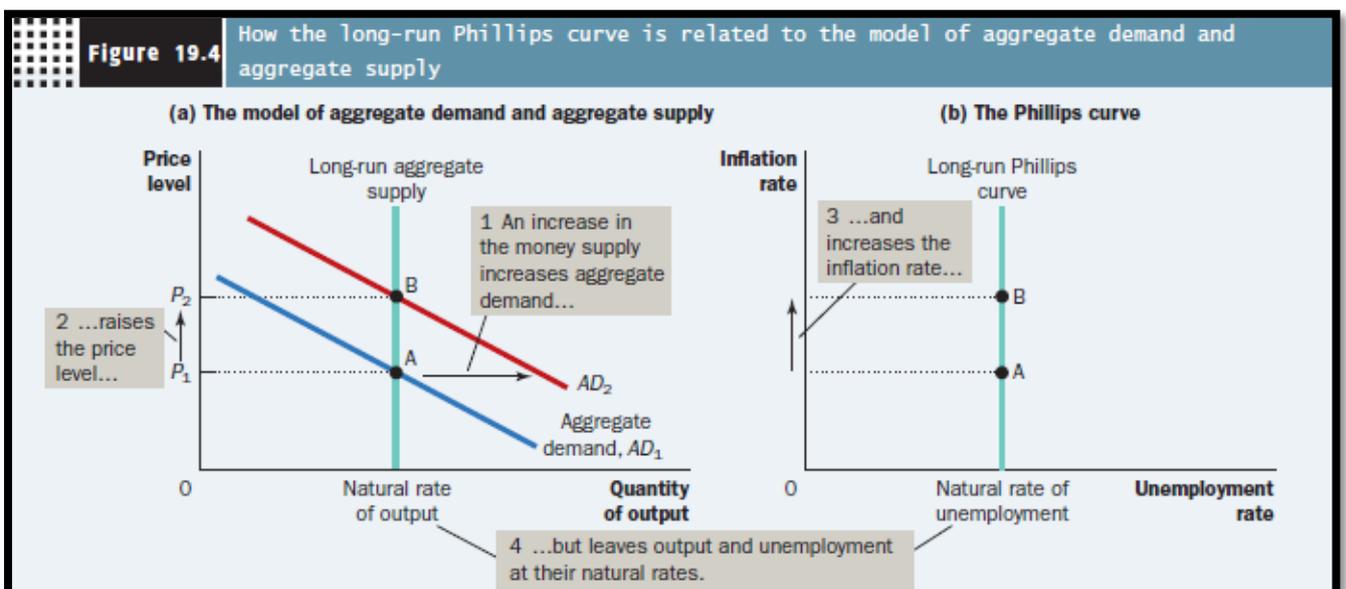
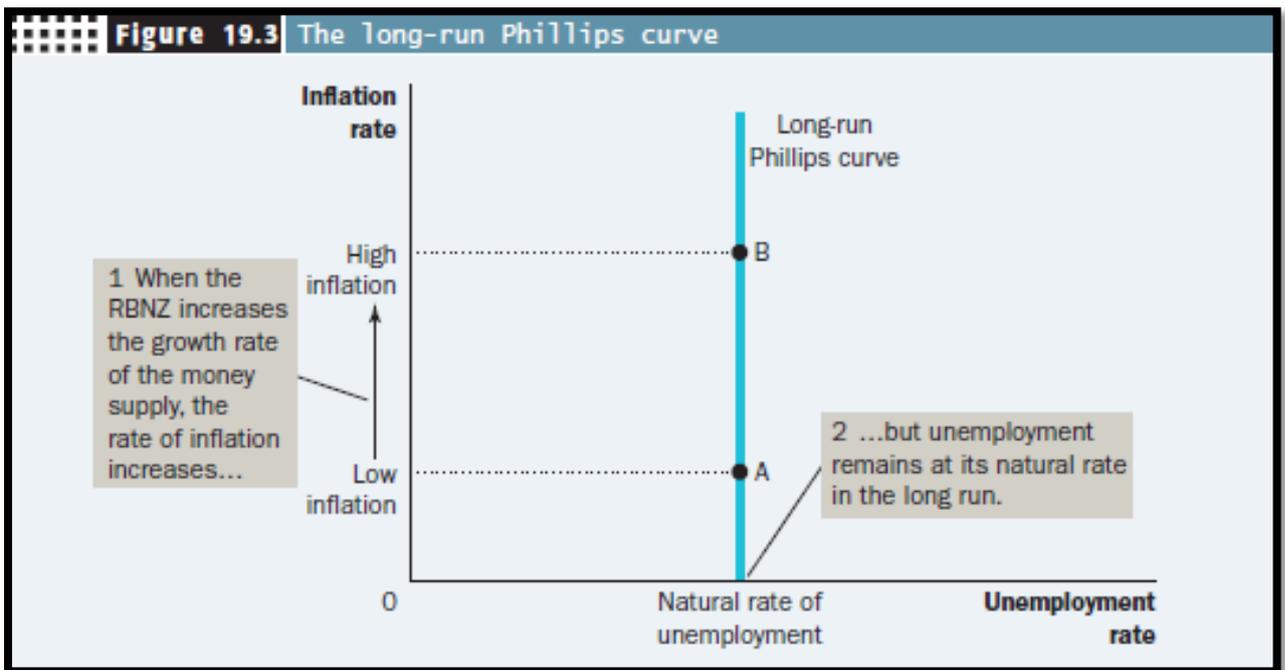


### Shifts in the Phillips curve – role of expectations

- The Phillips curve appears to offer policy makers a menu of possible inflation and unemployment outcomes
- It's impossible to achieve low inflation and high unemployment so the Phillips curve shows the trade-off
- By altering monetary or fiscal policy, policy makers can influence AD to achieve different combinations of inflation and unemployment
- Okun's law tells us that greater output means a lower rate of unemployment so an increase in AD moves the economy along the Phillips curve to a point with lower unemployment & higher inflation

### The long-run Phillips curve

- Friedman said that in the long run monetary policy cannot result in a combination of inflation and unemployment that lies on the Phillips curve
- Phelps said there is no trade-off between inflation and unemployment
- Friedman and Phelps both concluded from the AD/AS model that inflation and unemployment are unrelated in the long run
- As a result the long-run Phillips curve is vertical at the natural rate of unemployment
- Monetary policy could be effective in the short run but not in the long run
- The vertical Phillips curve is an expression of the classical idea of monetary neutrality which shows unemployment does not depend on the money supply in the long run



### Expectations and the short-run Philips curve

- Expected inflation measures how much people expect the overall price level to change
- In the long run expected inflation adjusts to changes in actual inflation
- The central banks' ability to create unexpected inflation exists only in the short run
- Once people anticipate inflation the only way to get unemployment below the natural rate is for actual inflation to be above the anticipated rate
- The economy gravitates towards the natural rate in the long run it is not constant over time
- So regardless of the monetary policy pursued by the central bank, output & unemployment are at the natural rate in the long run

### Unemployment rate

- This equation relates the unemployment rate to the natural rate of unemployment, actual inflation and expected inflation
- The difference between actual inflation and expected inflation is surprise inflation
- Therefore: unemployment rate =  $NRU - a * (\text{surprise inflation})$
- In the short run expected inflation is a given and as a result, higher inflation is associated with lower unemployment

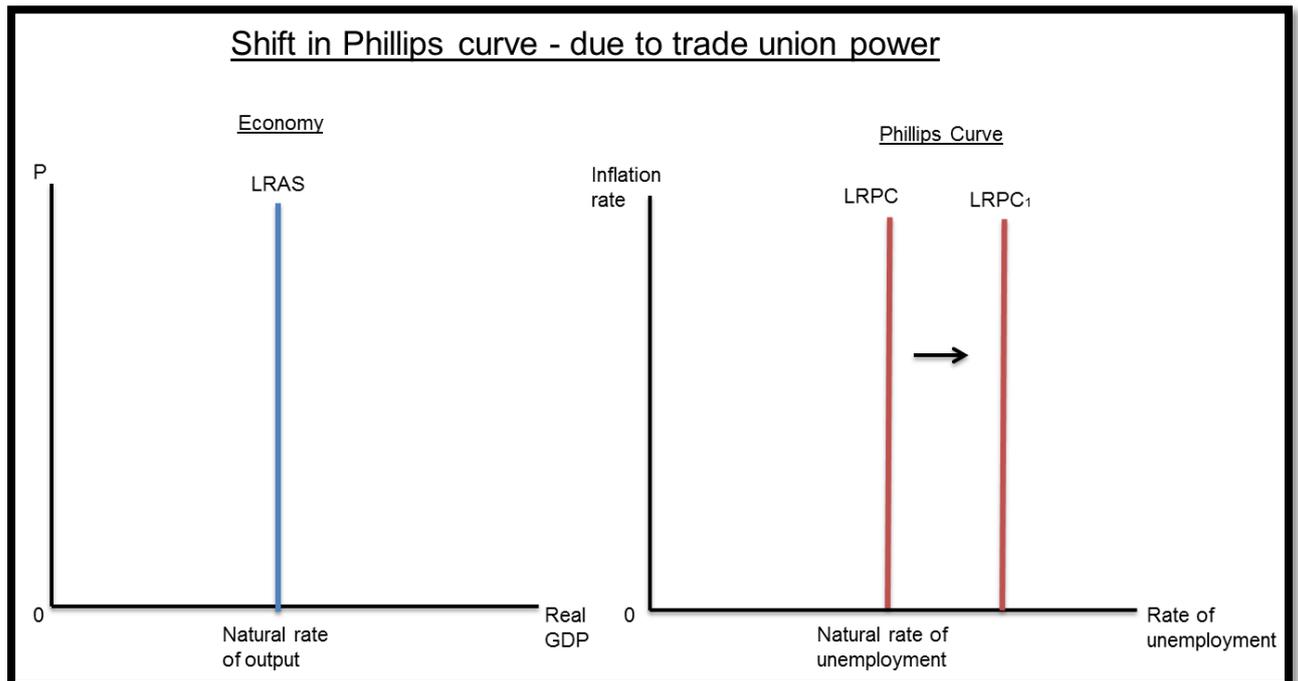
$$\text{Unemployment Rate} = \text{Natural rate of unemployment} - a \left( \frac{\text{Actual inflation} - \text{Expected inflation}}{\text{inflation}} \right)$$

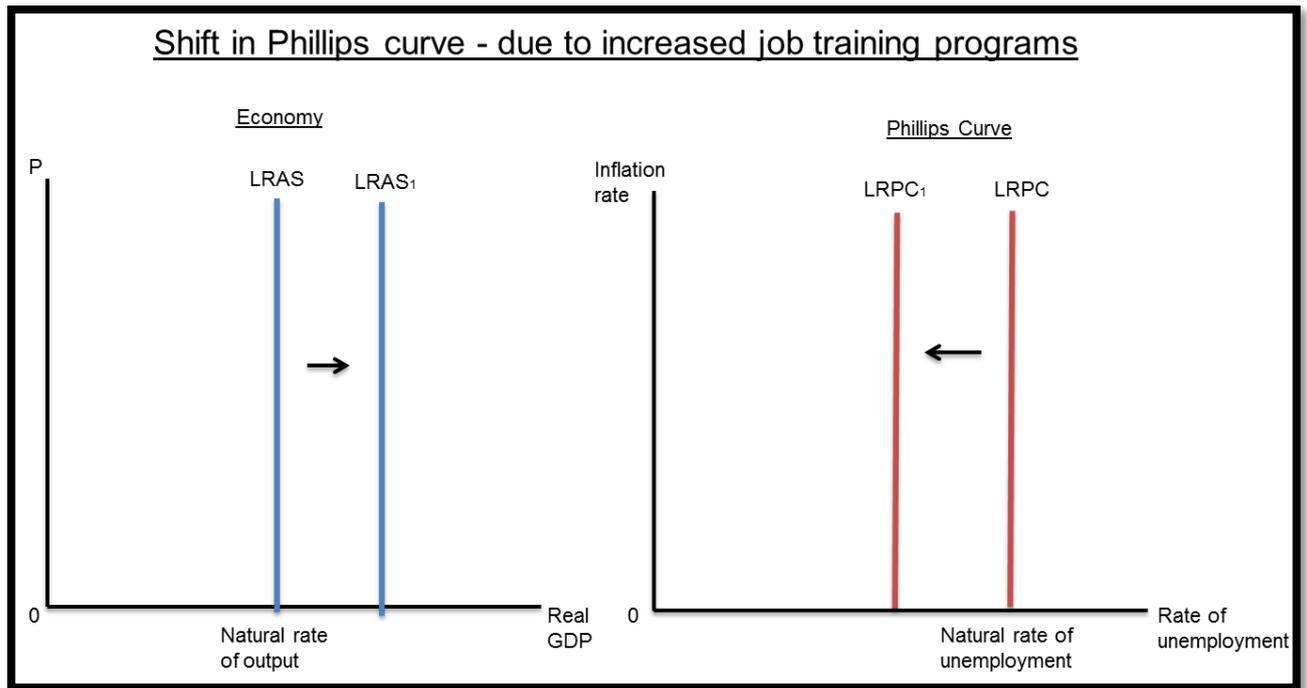
### The natural rate of unemployment

- Considered as the unemployment beyond the influence of monetary policy
- There is more than one mechanism for controlling employment and policies which improve the functioning of the labour market may help reduce the natural rate of unemployment

### Shifts in the Phillips curve

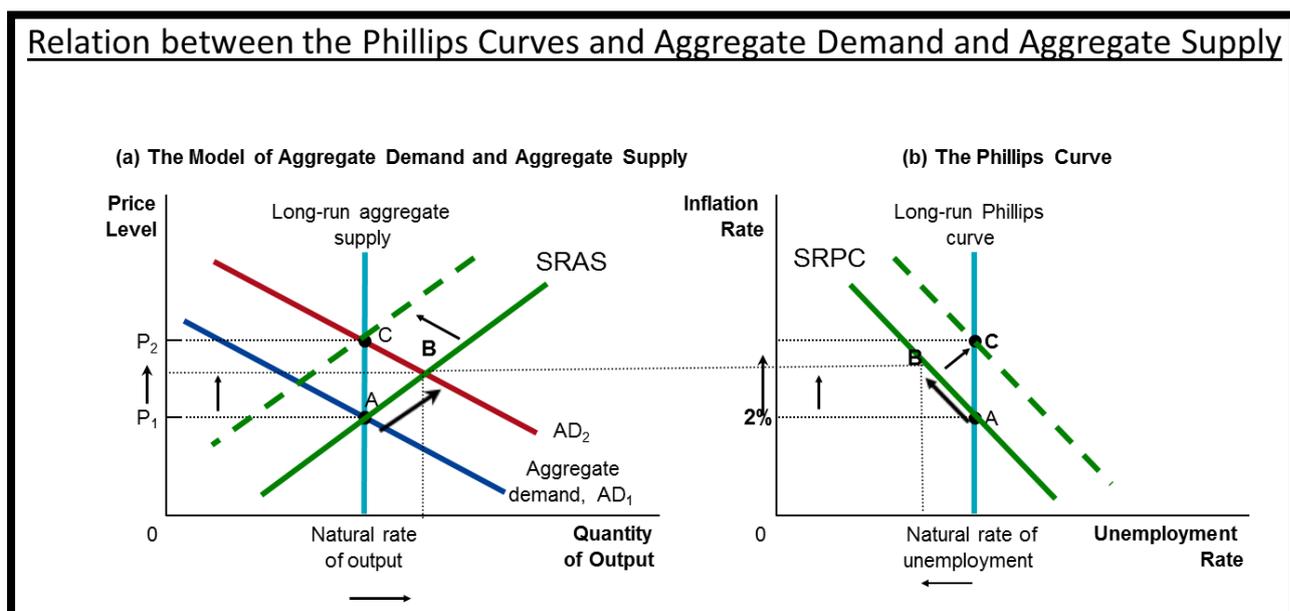
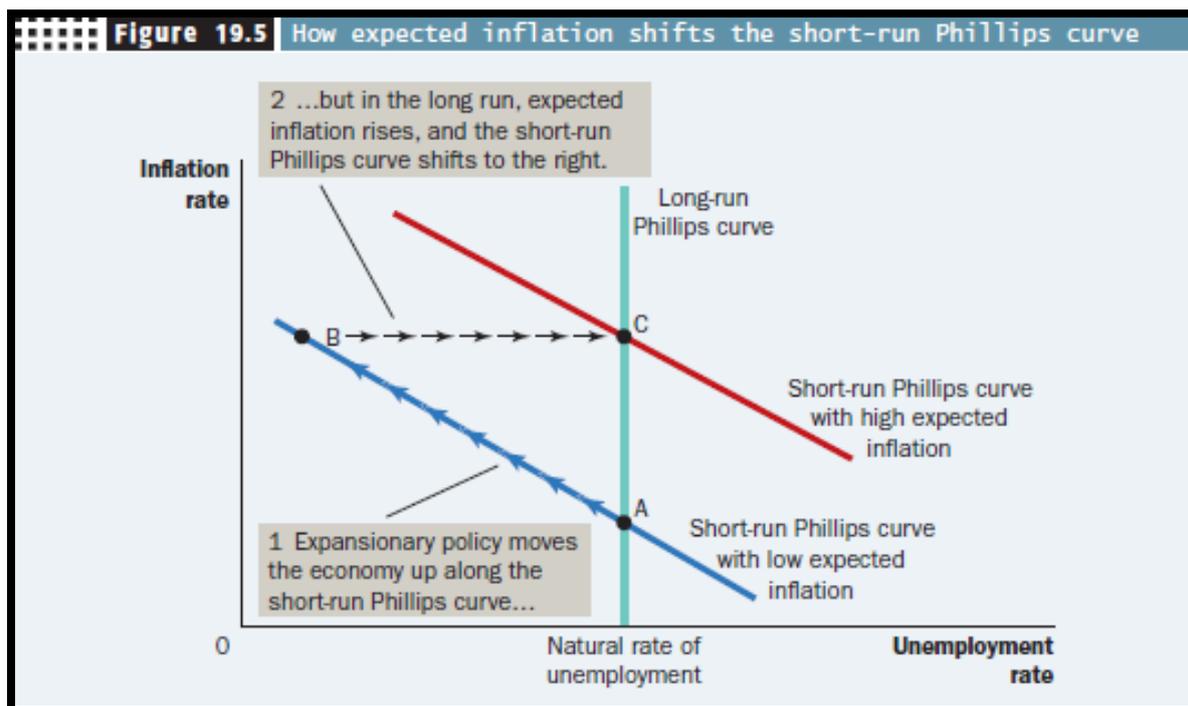
- If we print money there can be no shift in long run AS curve or the long run Phillips curve
- However there are other mechanisms and policies to shift the long run Phillips curve left and resultantly shift long run AS to the right (desirable directions which reduce unemployment and grows output/GDP)
- E.g. If trade unions are very powerful (like in NZ before 1991 – compulsory unionism) and use their market power to increase wages then the long run Phillips curve will shift right
- This will result in a rise in the natural rate of unemployment as higher wages increase labour costs so firms can't afford to hire as many workers
- To fix this increase in the natural rate of unemployment we cannot use increases in the money supply as this will have no effect on the power of unions
- So therefore the most viable solutions to improve the long run Phillips curve and shift it back to the left are: don't have minimum wages (stick to market equilibrium wages), restrict collective bargaining, and strictly control unemployment benefits
- Another way to improve the long run Phillips curve is to increase job training programs for the unemployed
- The result of this will be a decrease in unemployment and result in a shift of LRAS right as there will be more skilled people in the workforce
- So ultimately we can say that monetary policy cannot shift the long run Phillips curve, it must be done by other policies and mechanisms





### Expectations and the short run Phillips curve

- Inflation depends on the growth in the quantity of money which the central bank controls so therefore in the long run inflation and unemployment are unrelated
- Society faces a trade-off between inflation and unemployment so if monetary and fiscal policy makers expand AD they can lower unemployment in the short run but at the cost of higher inflation
- To explain the short run & long run relationship between inflation and unemployment Friedman introduced a variable called expected inflation which measures how much people expect the overall price level to change
- In the long run expected inflation adjusts to changes in actual inflation
- The central banks' ability to create unexpected inflation exists only in the short run
- Once people anticipate inflation the only way to get unemployment below the natural rate is for actual inflation to be above the anticipated rate
- The expected price level affects the perceptions of relative prices that people form and the wages and prices they set so therefore expected inflation is a factor that determines the position of short run AS
- In the short run central banks can take expected inflation as already determined and when money supply changes, AD shifts and the economy moves along a given short run AS curve

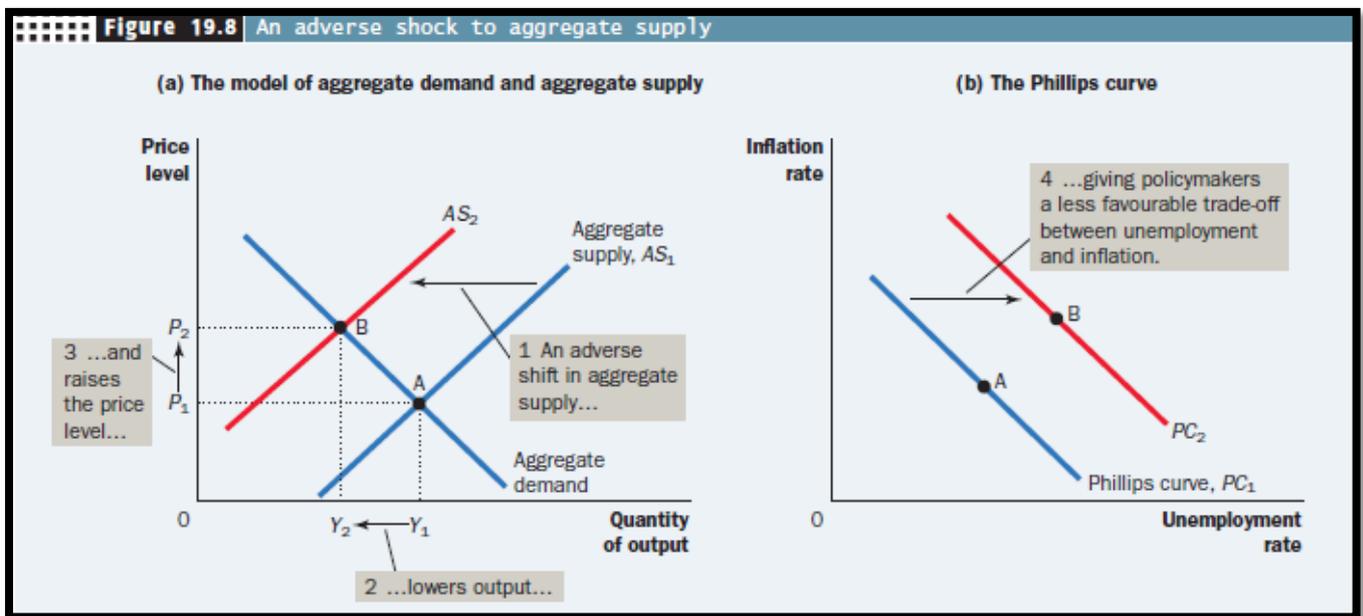


### The natural experiment for the natural-rate hypothesis

- The view that unemployment eventually returns to its natural rate regardless of the rate of inflation is called the natural-rate hypothesis
- Friedman and Phelps predicted that if policy makers take advantage of the Philips curve by choosing higher inflation in order to reduce unemployment they will only succeed temporary
- This is due to the natural rate hypothesis which says unemployment returns to its natural rate regardless of the rate of inflation

## The role of supply shocks

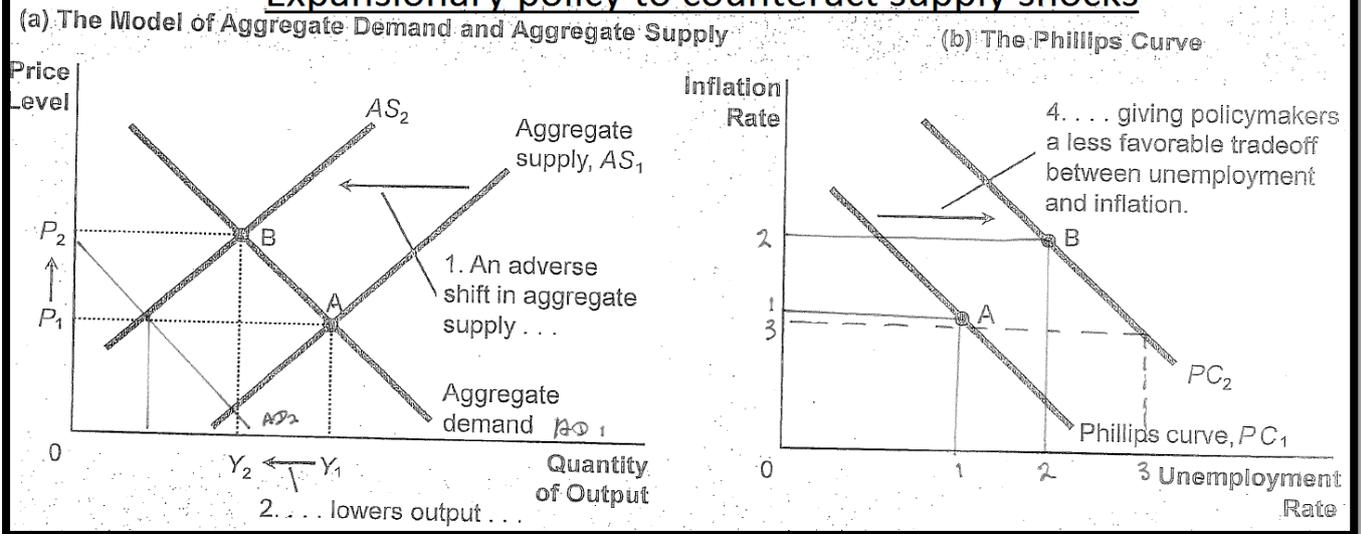
- Historical events have shown us that the short run Phillips curve can shift due to changes in expectations
- The short run Phillips curve also shifts because of shocks to AS
- Major adverse changes in AS can worsen the short run trade-off between inflation and unemployment
- An adverse supply shock gives policymakers a less favourable trade-off between inflation and unemployment
- A supply shock is an event that directly alters the firms costs and as a result the price it charges
- This shifts the economy's AS curve and as a result shifts the Philips curve



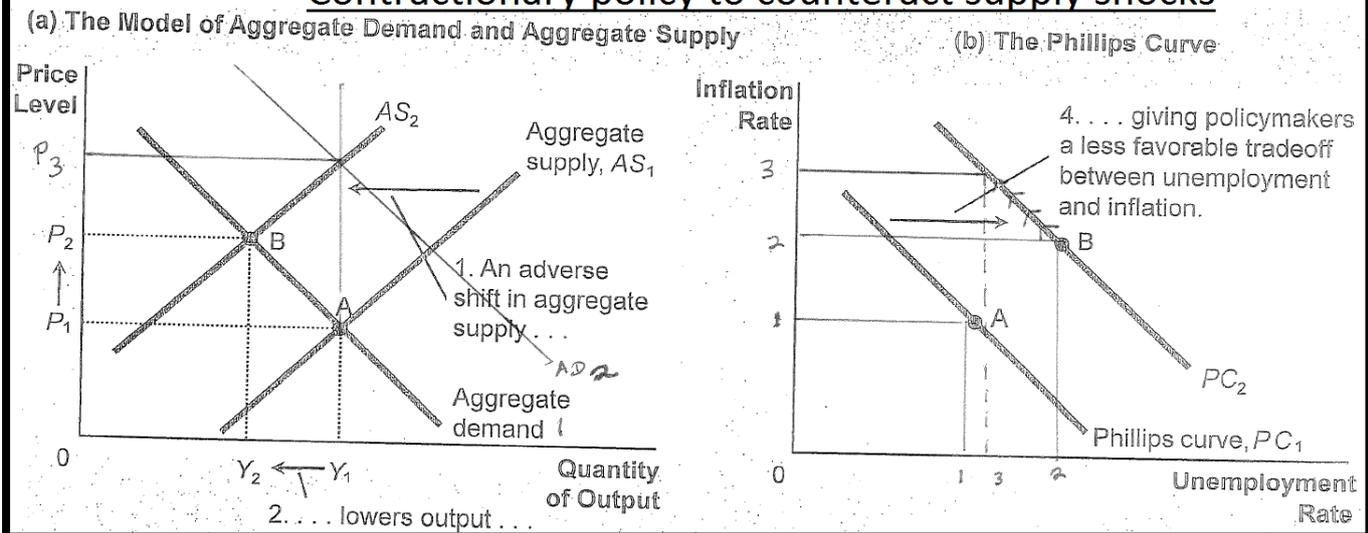
## Solutions to counteract supply shocks

1. Expansionary monetary or fiscal policy – shifts AD right which reduces unemployment however this leads to higher inflation so leads to a natural movement upwards along the Phillips curve
  2. Contractionary monetary or fiscal policy – shifts AD left which reduces inflation but unemployment is now increased so leads to a movement downwards along the Phillips curve
- These solutions all depend on the expectations of consumers
1. If people think this is a temporary abbreviation then expected inflation does not rise and the Phillips curve will resort back
  2. If people think this is permanent then it will be a new era of inflation and the Phillips curve will remain at a less desirable position

### Expansionary policy to counteract supply shocks



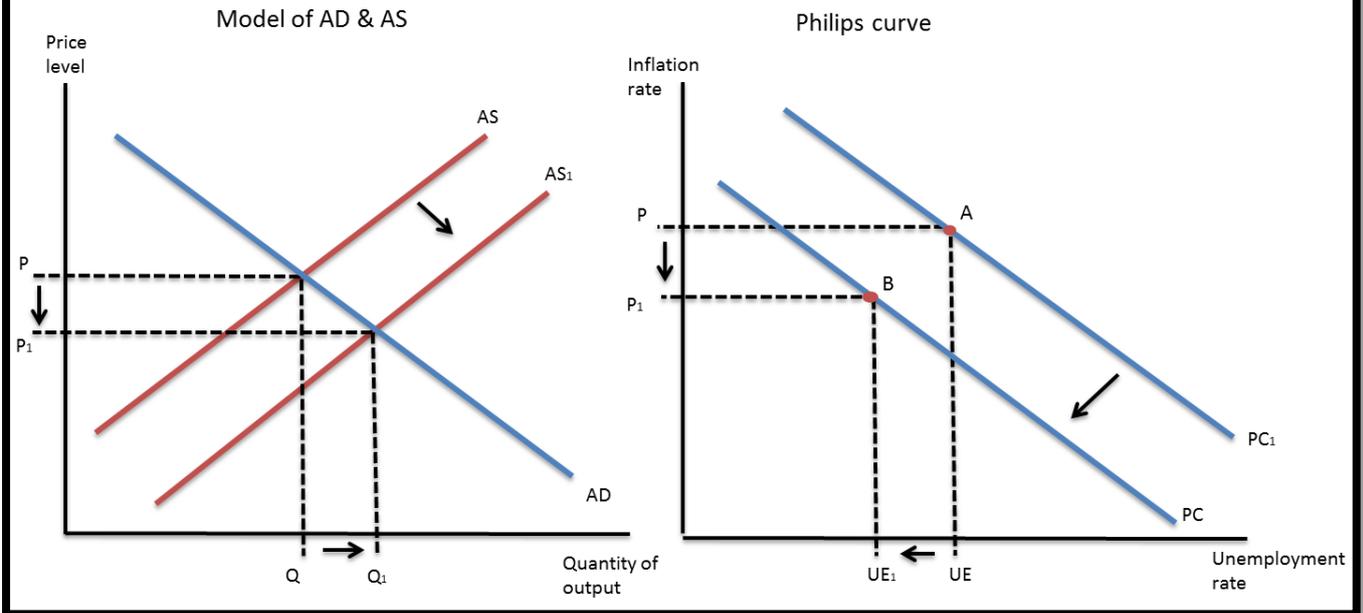
### Contractionary policy to counteract supply shocks



#### Favourable supply shock

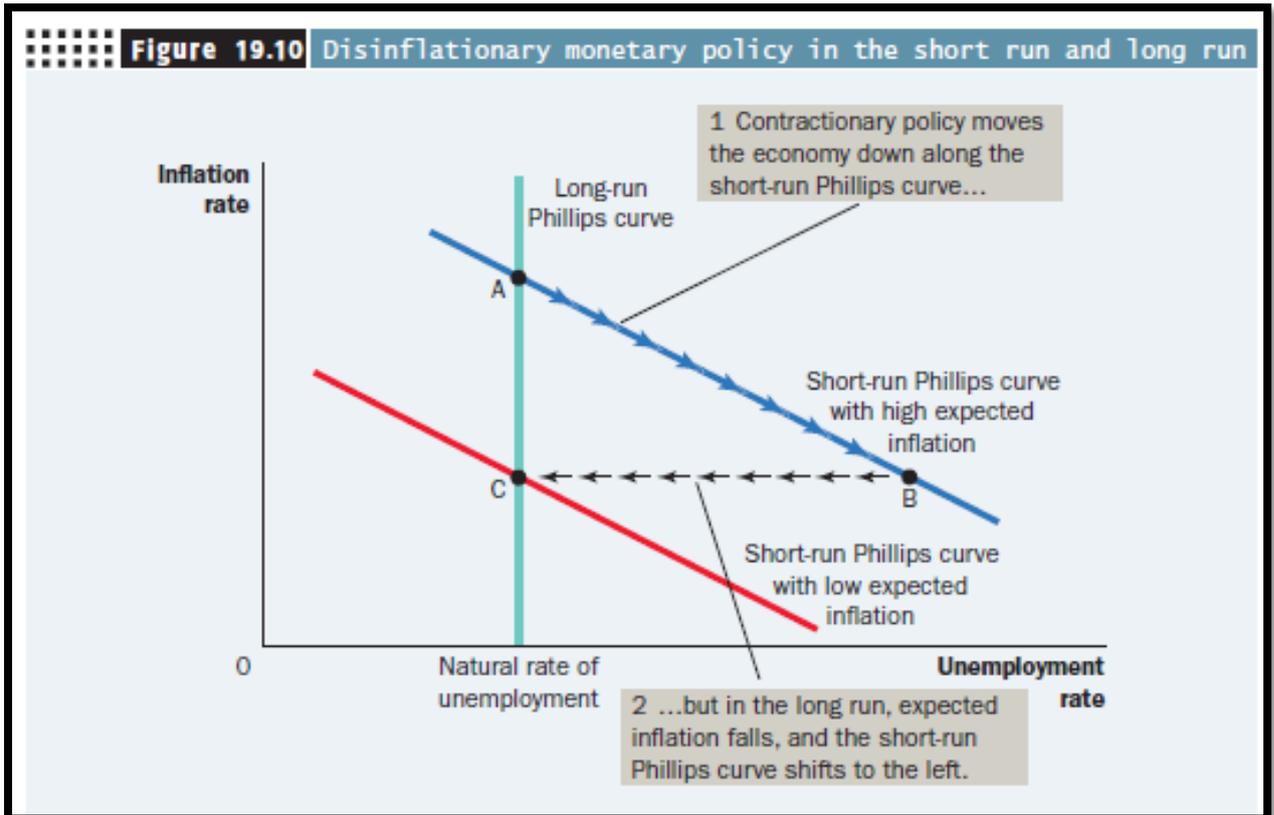
- In the USA when Alan Greenspan started as FED chairman he began with a favourable supply shock due to OPEC members abandoning their agreement to restrict oil supplies
- This led to falling unemployment and falling inflation as aggregate supply shifted right and GDP increased

**A favourable shock to AS (favourable supply shock)**



### The cost of reducing inflation

- Policies aimed at bringing down inflation are known as disinflation policies
- To reduce inflation the reserve bank has to attempt to contract monetary policy
- When the reserve bank slows the rate of money growth it contracts AD
- This reduces the quantity of g/s that firms produce which leads to a rise in unemployment
- When the reserve bank combats inflation the economy moves down the short run Phillips curve
- The economy experiences lower inflation but at the cost of higher unemployment



- A to B is the period of pain due to the cost of bringing down inflation
- So in the short term we see lowered inflation but higher unemployment (A to B)
- However in the long term the Phillips curve will shift to the natural rate of unemployment with lower inflation and lower unemployment (B to C)

### The sacrifice ratio

- The number of percentage points of annual output that is lost in the process of reducing inflation by one percentage point
- An estimate of the sacrifice ratio is 5 so 1% decrease of inflation reduces output by 5%
- To reduce inflation from 20% to 4% this would require an estimated sacrifice ratio of 80% of annual output

### **Rational expectations and the possibility of costless disinflation**

- The theory of rational expectations suggests that people optimally use all the information they have including information about govt policies when forecasting the future
- Expected inflation explains why there is a trade-off between inflation and unemployment in the short run but not in the long run
- How quickly the short run trade-off disappears depends on how quickly expectations adjust (credibility factor – how credible is what the reserve bank is saying)
- The theory of rational expectations suggests that the sacrifice ratio could be much smaller than estimated
- According to Thomas Sargent the sacrifice ratio could even be zero
- If the govt made a credible commitment to a policy of low inflation then people would be rational enough to lower their expectations of inflation immediately
- So the sacrifice ratio is an unreliable guide to policy makers

### **USA example of disinflation policy**

- In the USA when Paul Volcker was FED chairman, inflation was widely viewed as one of the nation's foremost problems
- Volcker succeeded in reducing inflation from 10% to 4% but at the cost of high unemployment (10%)
- Volcker disinflation showed that policy makers cannot count on people immediately believing them when they announce a new policy of disinflation

### **Summary**

- The Philips curve describes a negative relationship between inflation and unemployment
- By expanding AD policy makers can choose a point on the Philips curve with higher inflation and lower unemployment
- By contracting AD policy makers can choose a point on the Philips curve with lower inflation and higher unemployment
- The trade-off between inflation and unemployment described by the Philips curve holds true only in the short run
- The long-run Philips curve is vertical at the natural rate of unemployment
- The short run Philips curve also shifts because of the shocks to AS
- An adverse supply shock gives policy makers a less favourable trade-off between inflation and unemployment so the RBNZ can contract growth in the money supply to reduce inflation it moves the economy along the short run Philips curve which results in temporary high unemployment
- The cost of disinflation depends on how quickly expectations of inflation fall

# **Debates over macroeconomic policy**

## **1. Should monetary and fiscal policymakers try to stabilise the economy?**

### **Reasons for allowing policymakers to stabilise the economy**

- The economy is inherently unstable so left on its own it will fluctuate
- Policymakers can manage AD in order to offset this inherent instability and reduce the severity of economic fluctuations
- E.g. with household pessimism spending and production will decrease which leads to higher unemployment and therefore a decrease in incomes and GDP, so there is a waste of resources and no benefit to society as firms and people wish to produce but they can't due to pessimism from consumers
- There is no reason for society to suffer through the booms and busts of the business cycle
- By leaning against the wind of economic fluctuations monetary and fiscal policymakers can stabilise AD and thereby assist production and employment
- E.g. in response to a recession, AD should be raised either by raising govt spending or lowering taxation or lowering the OCR
- E.g. in response to a boom, AD should be lowered either by lowering govt spending or raising taxes or raising the OCR
- Economists traditionally consider the management of AD and not of AS (demand side policies)

### **Reasons against allowing policymakers to stabilise the economy**

- Monetary policy affects the economy with long and unpredictable lags between the need to act and the time it takes for these policies to work
- Many studies indicate that changes in monetary policy have little effect on AD until 6 months after the change is made (firms plan their investments at least 6 months in advance)
- Fiscal policy works with a lag because of the long political process that governs changes in spending and taxes so it can take years to pass and implement a major change in fiscal policy
- It is common for policymakers to inadvertently worsen the effects of economic fluctuations
- It's not possible for policymakers to eliminate all fluctuations and because forecasting can be imprecise and unpredictable it's hard to make effective changes
- When policy makers use monetary policy & fiscal policy they are only making educated guesses
- One of the first rules taught to a doctor is do no harm because the human body has its own defences just like the economy
- Intervening in the absence of knowledge can make matter worse

## **2. Should monetary policy be made by rule rather than by discretion?**

### **Reasons for monetary policy made by rule**

- Discretionary monetary policy can suffer from incompetence and abuse of power to the extent that central bankers align themselves with politicians so that discretionary policy can lead to economic fluctuations that reflect the electoral calendar (political business cycle)
- When the govt sends the police to a troubled spot they are given strict instructions not to abuse their power but monetary policymakers are given freedom to restore economic order without guidelines
- There may be a discrepancy between what policymakers say they will do and what they actually do (inconsistency of policy)
- Because policy makers are often time inconsistent people are sceptical when central bankers announce their intentions to reduce the rate of inflation
- E.g. policymakers may promise zero inflation but when unemployment increases they may forget the promise about zero inflation
- Committing the RBNZ to a moderate and steady growth of money supply would limit incompetence, abuse of power and time inconsistency
- People will believe the central banks as it's a legal requirement

### **Reasons against monetary policy made by rule**

- A important advantage of discretionary monetary policy is its flexibility
- Inflexible policies will limit the ability of policymakers to respond to changing economic circumstances
- Flexibility is good to face unforeseen fluctuations e.g. oil price rises, stock market crash, credit squeeze
- The alleged problems with discretion and abuse of power are largely hypothetical and the importance of the political business cycle is far from clear
- Furthermore any attempt to replace discretion with a rule must confront the difficult task of specifying a precise rule to which economic experts can agree upon

## **3. Should the central bank aim for zero inflation**

### **Reasons for the central banking aim for zero inflation**

- Inflation confers no benefit to society but imposes several real costs
- E.g. shoe leather cost, menu costs, increased variability of relative prices, unintended changes in tax liabilities, confusion and inconvenience, arbitrary redistribution of wealth
- Reducing inflation is a policy with temporary costs and permanent benefits
- Once the disinflationary recession is over, the benefits of zero inflation would persist
- Policymakers should be farsighted – Volcker's monetary policy is the reasons for the economic prosperity in the 1990's

### **Reasons against the central bank aiming for zero inflation**

- Zero inflation is probably unattainable and to get there involves output, unemployment and social costs that are too high
- Policymakers can reduce many of the costs of inflation without actually reducing inflation
- E.g. changing the tax laws to take into account the effects of inflation and indexing govt bonds to prevent arbitrary redistribution of wealth
- Social cost of inflation is higher than economic cost of lowering GDP as social cost is not evenly spread among the population
- The vulnerable workers who lose jobs are the least skilled & therefore the cost of reducing inflation is borne by those who can least afford to pay for it
- Arbitrary redistribution of wealth between creditors and debtors caused by unexpected inflation can be prevented by indexed govt bonds

### **4. Should fiscal policymakers reduce the govt debt?**

#### **Reasons for govts having balanced budgets**

- Budget deficit imposes an unjustifiable burden on future generations by raising their taxes and lowering their incomes
- When the debts and accumulated interest come due, future tax payers will face a difficult choice (either through paying high taxes or enjoying less govt spending or both)
- By shifting the cost of current govt benefits to future generations there is a bias against future tax payers
- Deficits reduce national savings which leads to a smaller stock of capital which reduces productivity and growth
- Running a budget deficit is justifiable during a war/recession
- Unfortunately govts find it easy to tax and spend

#### **Reasons against govts having balanced budgets**

- The problem with the deficit is often exaggerated
- The transfer of debt to the future may be justified because some govt purchases produce benefits well into the future
- Single-minded concerns about budget deficits or budget surpluses are dangerous because it draws attention away from various other policies that redistribute the income across generations
- The govt debt can continue to rise because population growth and technological progress increases the nation's ability to pay the interest on the debt
- Whenever the govt ends up collecting more taxes than what it plans to spend it ends up with surplus funds that have a high opportunity for society as a whole
- This is because the govt may not have the right incentives to make the best use of unplanned surpluses
- However surpluses can be meaningful if they are used for infrastructure development (roads)

## **5. Should the tax laws be reformed to encourage saving**

### **Reasons for changing tax laws to encourage saving**

- A nations savings rate is a key determinant of its long run economic prosperity
- A nations productive capability is determined largely by how much it saves and invests for the future
- When the saving rate is higher, more resources are available for investment in new plant and equipment
- The NZ tax system discourages saving by taxing the returns to savings quite heavily
- The US tax system discourages saving by heavily taxing income from capital and by reducing benefits for those who have accumulated wealth
- The consequences of high capital income tax policies are reduced saving, reduced capital accumulation, lower labour productivity and reduced economic growth
- Examples of how saving is discouraged
  - Double taxation – e.g. if you buy stocks and that firm makes a profit it is taxed and when the firm gives a dividend from the profit to investors this is also taxed. So there is double taxation and this reduces the return to the investor and reduce the incentive to save
  - Inheritance tax which discourages one generation from saving for another
  - Govt benefits like medicare & welfare are reduced to those who are able to save
  - Universities give grants as a function of parent wealth which discourages students and parents from saving
- An alternative to current tax policies is a consumption tax
- With a consumption tax households pay tax based on what they spend
- Income that is saved is exempt from taxation until the savings is later withdrawn and spent on consumption goods

### **Reasons against changing tax laws to encourage saving**

- Many of the changes in tax laws to stimulate saving would primarily benefit the wealthy
  - E.g. higher income households save a higher fraction of their income than low income households
  - E.g. any tax changes that favour people who save also tend to favour people with high incomes
- Reducing the tax burden on the wealthy would lead to a less equal society (greater disparity between rich & poor)
- This would also force the govt to raise the tax burden on the poor
- Raising public savings by eliminating the govts budget deficit would provide a more direct and equitable way to increase national savings

### **Negative gearing**

1. You borrow to acquire an investment
2. The interest and other costs you incur are more than the rental income you receive from the investment (in other words you make a cash loss)
3. This cash loss is offset against income from other sources, thus reducing your taxable income, and hence the amount of tax you have to pay (compared to the tax you'd pay without the investment).

### **The New Zealand tax situation**

- NZ's tax burden is high by world standards, it is higher than Australia, Asia and America (only slightly less than Europe)
- Any person earning under \$180,000 pays more personal income tax in NZ than in Australia
- While NZ's top tax rate of 39% is one of the world's lowest, its application is one of the most inequitable
- The argument of the finance minister is that taxation is the price we pay for living in a civilised society
- However this view is too simplistic and implies if tax was 100% we would have the most civilised society in the world
- Over a third of all wealth produced in NZ is taken by the govt
- NZ is out of step with our nearest neighbours and our main trading partner, we are dangerously close to big spending, stagnant European economies
- The increase in the top tax rate in 2000 to 39% for incomes over \$60,000 was completely unnecessary when the country has been running persistent budget surpluses since 1994
- NZ'ers in 2006 paid over 50% more tax than they paid in 2000
- Higher wages mean more people move into higher tax brackets so the problem is acknowledgement (theft by fiscal creep)
- The NZ govt does not realise that when the country does well the creators of that wealth should get to keep a fair share of it
- Countries such as Canada, USA and Netherlands automatically index their national personal income tax thresholds while many others have partial indexation

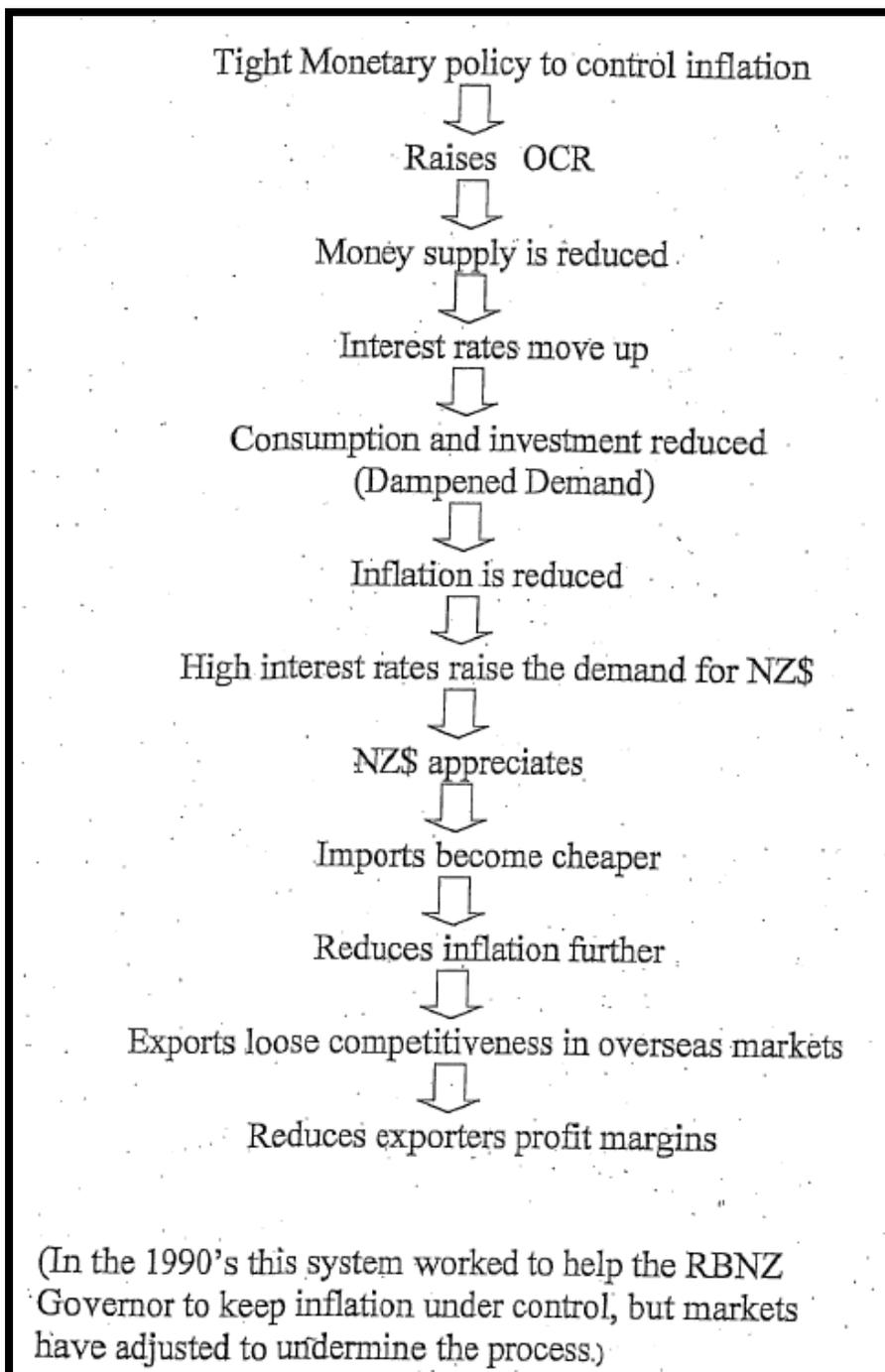
**The New Zealand recession and property market bubble**

1. The booming property market fuelled inflation and economic growth
2. This forced the RBNZ to push up the OCR to keep inflation within the 1-3% target band
3. This resulted in an appreciation of the \$NZ in the foreign currency exchange market and reduced the competitiveness of NZ exports
4. This then reduced export employment and increased NZ's reliance on foreign borrowing to service its foreign debt
5. Which then resulted in increased inflows of foreign funds which further appreciated the \$NZ in the foreign currency exchange market
6. Any attempts to cut interest rates simply fired up the property market sucking in more foreign debt
7. Cycle is then repeated
  - Breaking out of this cycle had seemed impossible
  - The govt has tried to make rental property investment less attractive by reducing the ability to claim depreciation on buildings
  - The suggested macro-prudential policy tools include: loan to value ratio limits, a counter cyclical capital buffer for banks, changes to the core funding ratio

<b>NEW ZEALAND BANKS</b>		Shows the increased level of overseas borrowing leading up to the global financial crisis	
<b>Offshore borrowing and mortgage lending dominate</b>			
Month end	Bank overseas borrowings	Bank residential mortgage lending	
Jan 2009	<b>\$139.9b</b>	<b>\$156.3b</b>	
June 2008	<b>\$119.5b</b>	<b>\$152b</b>	
June 2007	<b>\$102.3b</b>	<b>\$139.3b</b>	
June 2006	<b>\$87.3b</b>	<b>\$122.1b</b>	
June 2005	<b>\$78.5b</b>	<b>\$107.1b</b>	
June 2004	<b>\$62.1b</b>	<b>\$92.8b</b>	
June 2003	<b>\$60.4b</b>	<b>\$79.7b</b>	
June 1998	<b>\$31.6b</b>	<b>\$51.4b</b>	

### Failure of the OCR

- The bond market is played by carry traders
- They engage in carry trade by buying bonds in currencies of developed countries which pay the highest rate of interest
- This caused a problem to monetary management in NZ
- The RBNZ governor was made to feel as though he was yelling “fire” in a crowded cinema but ignored because everyone is too busy enjoying the movie
- This explains how investors in the housing market were relaxing while the governor was trying to convince them the market would collapse and that they will suffer losses



### HOW THE PROCESS WORKS NOW

1. Some countries are awash with savings, and are flush with cash seeking investment for higher returns.
2. NZ tight Monetary policy and high rate of interest makes it an attractive country to lend to. Banks and finance companies borrow NZ\$ from overseas and lends to NZers.
3. Done by selling URIDASHI and Euro kiwi bonds in Japan and Europe – these bonds are in NZ\$ and offer very attractive rate of interest to overseas lenders.
4. Overseas lenders need NZ\$ to buy these bonds, and the demand for NZ\$ increase, and pushes up the value of the NZ\$.
5. Banks and other financial institutions then lend these NZ\$ to people in NZ to buy houses, cars and household appliances in a massive shopping spree funded by overseas lenders.
6. Borrowing NZ\$ cheaply overseas and lending is profitable for financial institutions in NZ – little exchange rate risk as they have to pay overseas lenders in NZ\$.
7. Only constraint is overseas saver's willingness to lend to New Zealand.
8. Group psychology – we all knew somebody who made a fortune by buying and selling property.
9. If OCR is raised it may fuel this borrowing and lending further which is the difficulty faced by the Governor of RBNZ.

## LITTLE NOTABLES EXCLUSIVE – WESLEY HARFIELD

### Summary

- Advocates of active monetary & fiscal policy view the economy as inherently unstable and believe policy can be used to offset this inherent instability
- Critics of active policy emphasise that policy affects the economy with a lag and our ability to forecast future economic conditions is poor, both which can lead to policy destabilisation
- Advocates of rules for monetary policy argue that discretionary policy can suffer from incompetence, abuse of power and time inconsistency
- Critics of rules for monetary policy argue that discretionary policy is more flexible in responding to economic circumstances
- Advocates of a zero-inflation target emphasise that inflation has many costs and few benefits
- Critics of a zero-inflation target claim that moderate inflation imposes only small costs to society whereas the recession required to reduce inflation is quite costly
- Advocates of reducing govt debt argue that the debt imposes a burden on future generations by rising their taxes and lowering their incomes
- Critics of reducing the govt debt argue that the debt is only one small piece of fiscal policy
- Advocates of tax incentives for saving point out that society discourages saving in many ways such as taxing income from capital and reducing benefits for those who have accumulated wealth
- Critics of tax incentives argue that many proposed changes to stimulate saving would primarily benefit the wealthy and might have only a small effect on private saving