ECON1002 Mid-Sem Lecture Notes

Week 1

- Economics – The science of how people respond to incentives and decisions about the allocation of finite/scarce resources.
- Macroeconomics - Focuses on the aggregate level of independent decisions and economic activity across an economy.
- Gross Domestic Product (GDP) – The measure of the value of the total goods and services produced **within** an economy across a given time-period. Short-run GDP fluctuations are associated with variations in business output and production. Long-run GDP growth is associated with rising standards of living.
- Gross National Product (GNP) – The measure of the value of the total goods and services produced **by** an economy across a given time-period (e.g. includes products produced by firms outside of the economy).
- Prices are used to value GDP as they are a good indicator of spending power, as well as easily measurable.
- The following characteristics define good economic performance:
    1. Rising living standards (life expectancy, education, infant mortality.
    2. Smooth business cycle (small variation from mean growth).
    3. Contained inflation (not too large or small).
    4. Sustainable debt levels.
    5. Balanced spending and saving.
    6. Full-Employment.
- Real GDP vs Nominal GDP:
    1. Nominal GDP – A basic measure of the change in value of an economy. However, it does not take into account inflation and therefore does not directly correlate with increased production.
    2. Real GDP – The actual measure of an economy's change in value. Accounts for inflation and is a more realistic calculation of an economy's production output.

$$GDP_N = \frac{GDP_R}{D}$$

Where D = GDP Deflator

- There are 3 methods of calculating GDP:
    1. Production (Value-Added) – The adding of all of the value created along the production chain for all G&S. $GDP\ (Value\ Added) = Revenues - Costs$
    2. Expenditure – Includes the total amount of expenditure within an economy (expenditure on domestic products). $Y = C + G + I + NX$
    3. Income – Measures the total amount of income received within an economy (also the total amount of money spent on G&S). This includes wages and salaries, profits, capital gains etc. $GDP = Income_{Labour} + Income_{Capital}$.

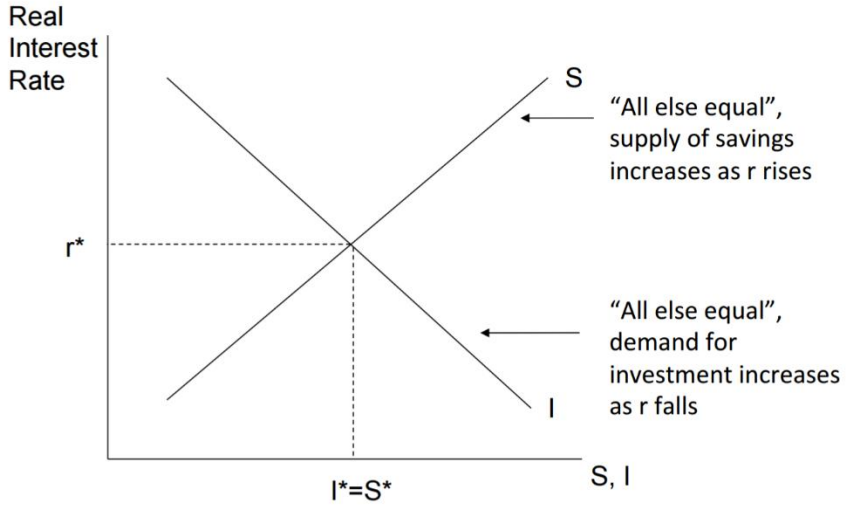
- GDP at a point in time (tutorial questions); $GDP_t = \sum p_i \times q_i$.
- GDP Growth for year t: $\Delta GDP = \frac{GDP_t - GDP_{t-1}}{GDP_{t-1}}$
- GDP Advantages & Disadvantages:
    1. Advantages:
        - Easy to Measure.
        - Correlated with rising standards of living.
    2. Disadvantages:
        - Does not factor in leisure time,
        - Non-market economic activities,
        - Environmental quality,
        - Resource depletion,
        - Quality of life,
        - Poverty/Inequality.
- GDP is, however, correlated with increased happiness and life expectancy (however correlation is not always causation).
- Consumer Price Index (CPI) – The price of a certain basket of commonly consumed goods across a given year.
- Inflation – The change in value of prices across a given time period.
- Inflation is not always accurately measured, as it does not take into account quality adjustment nor substitution bias.
- Inflation and interest rates are linked by the fisher equation (approximation); $i = r + \pi$.
- Benefits and Costs of Varying Inflation:
    1. Benefits of Low Inflation:
        - Allows steady and sustainable levels of growth.
        - Allows for printing money to boost inflation.
        - Helps for price adjustment.
    2. Costs of High Inflation:
        - Distorts relative prices.
        - Tax distortion (bracket creep)
        - Price noise – firms don't know if high prices are due to demand or inflation.
        - Wealth redistribution.
        - Shoe-leather and menu costs (becoming more obsolete with improving technology).

Week 2

- Wealth:
    - Wealth is a stock; it is a static value (measured at a single point in time), while GDP/capital gains are a flow; dynamic values (measured across a given time-period).
    - Wealth can increase either by increased savings and/or capital gains.
    - Saving – Current Income minus Current Spending.
    - Capital Gains – changes in the value of assets already owned.
    - Change in Net Worth = Savings + Capital Gains – Capital Losses.
    - Net Worth = Assets – Liabilities.
- Savings:
    - Savings are simply the proportion of income not spend (set aside).
    - Economic growth is driven by increasing capital (human and physical).
    - Capital is built via investment (taken from national savings or borrowed from abroad).
    - Borrowing from abroad can be risky as it is not as reliable as national savings.
    - By saving and investing more now, consumption can be increased in the future.
    - 3 Types of Household Saving:
        1. Life-Cycle Saving – Saving to meet long term objectives (education, housing, cars etc.
        2. Precautionery Saving – Saving to prepare for unexpected setbacks (unemployment, medical emergency, GFC).
        3. Bequest Saving – Saving to leave an inheritance for future generations.
    - As real interest rates represent the reward for saving, the general analogy is that as interest rates rise, so do savings.
    - However, as IRs increase, the time required to reach saving stretch goals is reduced. This has the counter effect of reducing saving at higher levels, as people are willing to save less and wait longer to reach the saving goal (so they can also spend more now).
    - Income and National Savings:
        1. Firms – Pay out revenue as sales, wages, supplies, interest rent, dividends and tax. Some revenue retained as earnings and allowance for depreciation.
        2. Households – Receive income through wages, interest, rent and dividends. A proportion of household income is used for consumption and depreciation, while the rest is either saved or paid as taxes.
        3. Government – Income received through tax payments from firms and households. The budget balance represents the level of government saving (or borrowing).

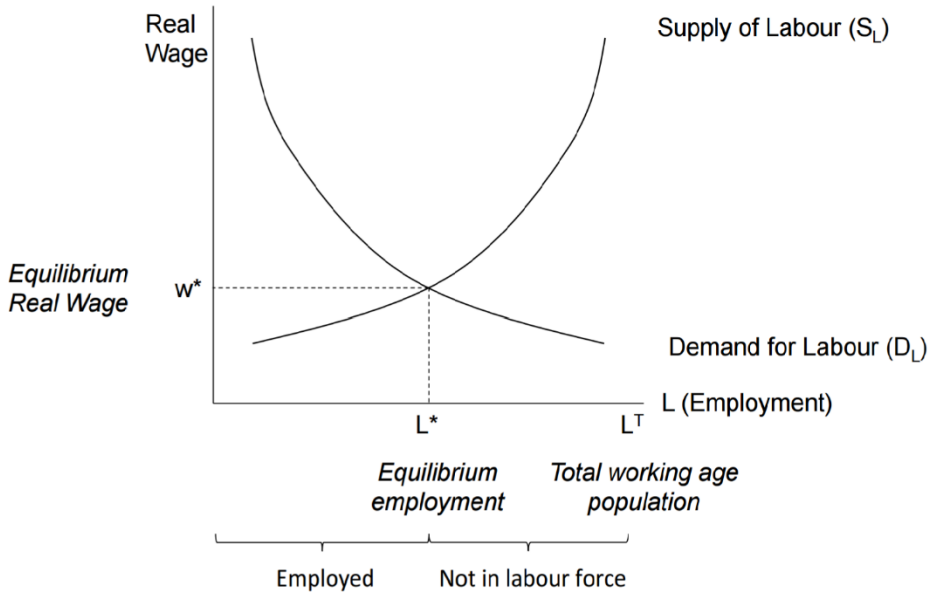
- Focusing back on the total level of expenditure within an economy ($Y = C + I + G + NX$):
    1. Investment (I) – The total spending on capital equipment to expand and economy's future productive capacity.
    2. Consumption (C) – All spending on goods and services within an economy for current needs and wants.
    3. Government Spending (G) – A combination of current spending and investing for the future (I_G & C_G).
- In a closed economy, national savings is equal to national investment: $S_N = I + I_G = Y - C - C_G$.
- By introducing taxes: $S = S_P + S_G = (Y - C - T) + (T - C_G)$.
- The government balance can then be derived as $G_{BB} = T - C_G - I_G$.
- Transfer Payments – Payments the government makes to the public with no return of G&S.
- Private Saving – All saving of the private sector (Y-T-C).
- Public Saving – All saving of the government (T-G).

- Investment:
    - Investment decisions are always made on the cost-benefit principle; marginal benefit >= marginal cost.
    - Interest rates always represent the opportunity cost of an investment decision (the cost of leaving the funds in the bank and generating revenue from interest).
- Financial Markets:
    - Saving and Investment decisions are determined by different forces.
    - Equilibrium occurs in the financial market for which savings are equal to investment, and therefore the equilibrium real interest rate can be determined.
    - Saving represents the supply of investment funds, while investment represents the demand for them.
    - Changes in factors other than the real interest will shift the curves themselves. The financial market diagram is shown below:



Week 3:

- Labour Markets can be treated as any market; with supply and demand.
- Demand for labour – comes from employers need for increased production.
- Supply for labour – comes from employees.
- Price of labour is equal to the wage rate over time.
- Workers are only hired if the marginal benefit is greater than the marginal cost (MB>MC).
- Demand (Labour):
    - Marginal benefit is the value of each workers marginal product (MB = (R-C)*MP).
    - Diminishing Returns – As the number of workers increases the marginal product of each worker decreases. This is because capital is assumed to remain constant.
    - Shifts in the demand curve occur for any change in the marginal benefit of labour. This could be due to changing technology, direct changes in the productivity of labour or just changes in the value of the products.
- Supply (Labour):
    - Reservation Price – the minimum payment accepted before the next best alternative.
    - The higher the wage rates, the higher the supply of labour.
    - Shifts in the supply curve occur for any variation in the marginal cost. This could be due to demographic factors, changes in working-age population or changes in the costs of labour.
- A diagram of the labour market is shown below:



- The effect of technological change on income distribution:
    - Technological advance has greatly improved productivity.
    - It has increased the real wages of skilled labour, as more skilled labour is required to operate the technology and as a result of an increase in demand.
    - However, it has decreased the demand for unskilled labour and therefore forced real wages down.
    - It is quite conclusive that increased technological advancement has increased wage disparity.
- Unemployment and the Labour Force:
    - Employed – those who work 1 or more paid hours a week, or are on leave.
    - Unemployed – those who are actively seeking work or work non-paid.
    - Out of the Labour Force – Those who do not work at all and are not actively seeking employment.
    - Working age Population is considered all persons over the age of 15 in Australia.
    - Labour Force = Employed + Unemployed.
    - Unemployment = Unemployed/Labour Force.
    - Participation Rate = Labour Force/Working Age Population
    - The costs of Unemployment:
        - Personal Costs:
            - Inability to meet financial obligations.
            - Loss of skills and purpose.
            - Loss of self-esteem and depression.
            - Leads to familial issues.
        - Economic Costs:
            - Increased welfare payments.
            - Lower income from tax.
            - Loss of skills.
            - Under-utilisation of the workforce.
        - Social Costs:
            - Crime.
            - Domestic Violence.
    - Types of Unemployment:
        - Frictional Unemployment – All short-term unemployment where workers are searching for jobs with matching skills.
        - Structural Unemployment – Long-term unemployment where there is a mismatch in skillsets to those demanded within the economy. Can be resultant due to many factors; minimum wage laws, high unemployment benefits, workplace discrimination etc.
        - Cyclical Unemployment – Unemployment caused by changes in the level of economic output. This type of unemployment is not included in the natural rate, as it is a varying factor from the general level.

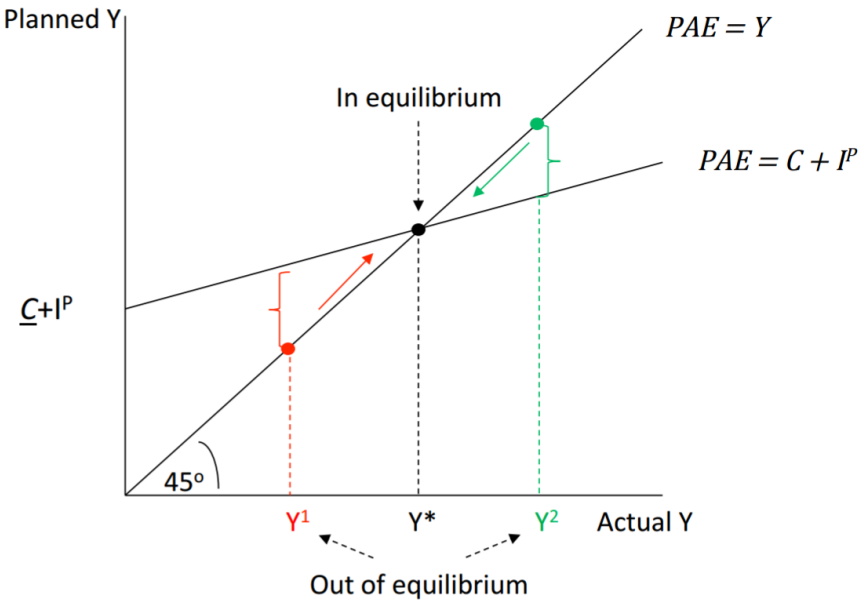
    - The Natural Rate of Unemployment – The natural rate of unemployment is the level of employment excluding any effects from the business cycle (excludes cyclical unemployment). It is also known as full employment.
    - Minimum wages are used to redistribute wealth from the rich to the poor.
    - This is because people with lower incomes have a higher marginal propensity to consume (MPC) than those with higher incomes.
- Short-Term Economic Fluctuations:
    - Potential Output – The real GDP of an economy when it's using its resources at normal rates, without cyclical effects. Potential output does grow overtime due to increases in labour and capital resources.
    - Actual Output – The total output of an economy, including that of cyclical behaviour. This is generally above or below the potential output due to varying inflation and unemployment levels, which forms an output gap.
    - Output Gap – Represents the difference between the potential output and the actual output.
    - A positive output gap generally means that there is high inflation, as unemployment is below the natural rate and aggregate demand is high.
    - A negative output gap means that there is low inflation, as unemployment is above the natural rate and aggregate demand is low.
    - Okun's Law – Represents the relationship between the level of unemployment and the output gap (Y = actual output, Y* = potential output, u = actual unemployment, u* = natural rate of unemployment, β = economy constant (1.5-1.8 for Australia)):

$$\frac{Y - Y^*}{Y^*} = -\beta(u - u^*)$$

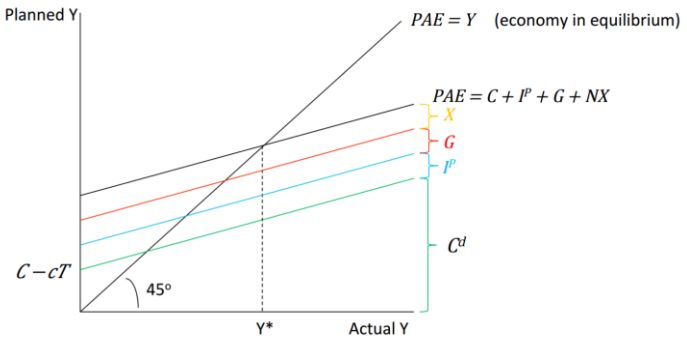
Week 4

- Cyclical unemployment can occur through either a fall in aggregate demand (reduced demand for G&S means less labour needed) and/or sticky prices (e.g. prices remain high while demand falls, workers laid off before wages reduce).
- Prices are not fully flexible, as they are not immediately interchangeable as theoretically assumed. Hence, they are "sticky" (prices stick for a certain time period before changing).
- Key(nes) ideas of Keynesian Theory:
    1. Sticky Prices.
    2. AD determines overall economic activity.
    3. AD can fluctuate based on confidence and consumer expectations.
    4. Free markets will not always provide full employment in the short run, aka government policies will be needed to affect the level of spending within an economy reduce/eliminate output gaps.
    5. Only applicable to the short-run where prices are held constant.
- Planned Expenditure – The level of expenditure based on fixed prices and planned levels of investment. $Y = C + I + G + NX = C + I + C_G + I_G + NX$
- Actual Expenditure - Expenditure where prices may have changed, and levels of investment vary from those planned.
  $PAE = C + I_P + G + NX = C + I_P + C_G + I_{G,P} + NX$
- Variations in the level of planned investment occurs when the expected sales vary. If sales were higher than expected, actual inventories < planned inventories, and vice versa.
- Consumer spending is now modelled as a linear relationship, proportional to the average consumers' marginal propensity to spend (MPC). This is because, in reality, consumers do not spend every dollar they earn. Therefore, the aggregate consumption within an economy is given as: $C = C^- + c(Y - T)$, where C^- = exogenous consumption (minimum consumption for basic G&S needs), c = MPC, Y = income and T = taxes paid.
- It is important to note that the Keynesian theory does not account for variation in the MPC. It is widely expected that lower income consumers have a higher MPC, while higher-income consumers have a lower MPC.

- Two-Sector Model:
    1. No government or trade occurs, only consumption and private investment. $PAE = C + I_P$. Note that because there is no government, T = 0 (disposable income = real income = Y).
    2. Savings: $S = Y - C = -C^{-} + (1 - c)Y$.
    3. The two-sector model of PAE is shown below:



- The Keynesian multiplier represents the relative change of shifts in the PAE curve. In other words, how much a 1 unit change in PAE has on the level of actual income (Y). Due to the MPC, the effect of a 1 unit change results in an even larger change in output.
- The economy can also be evaluated in terms of withdrawals (savings) and injections (investment), for which equilibrium will always occur when withdrawals = injections.
- Four-Sector Model:
    - The four sector model now includes the government and trade (G and NX). $PAE = C + I_P + G + NX$
    - Taxes are now also a function of output: $T = T^{-} + tY$.
    - The addition of more exogenous variables allows for more ways of shifting of the PAE curve, but also allows for government intervention to influence output levels and GDP growth.

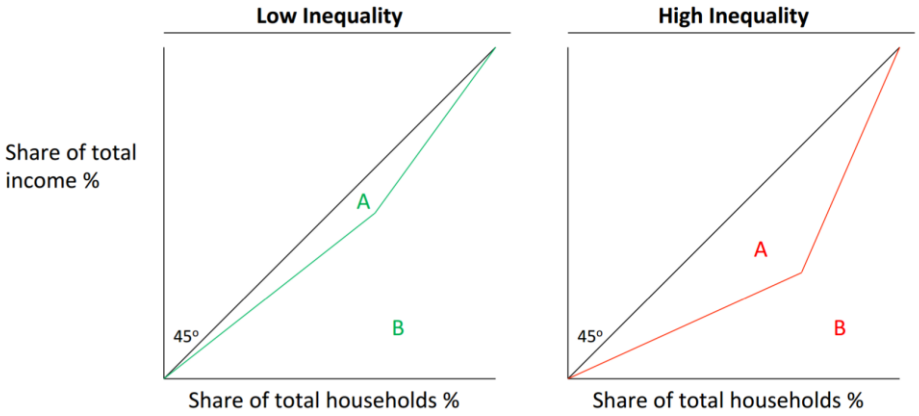


Week 5

- The goal of fiscal policy is to fill the demand gaps within an economy, and hence obtain full-employment.
- This is achieved by changes in the level of government spending.
- Contractionary gap – negative output gap means that the government will increase spending to increase output.
- Expansionary gap – positive output gap means that government will reduce spending to reduce output.
- The government can affect the level of output not only by direct government purchases (G), but also through changes in taxation and conducting transfer payments.
- Taxes and transfer payments directly affect the level of disposable income within the private sector (Y-T).
- For an increase in PAE:
    1. Tax cuts.
    2. More transfer payments.
- For a decrease in PAE
    1. Tax hikes.
    2. Less transfer payments.
- Balanced Budget Multiplier – The short-run effect of equilibrium GDP of an equal change in government expenditure and net taxes. This occurs because taxes are a part of disposable income, meaning that variation in taxes has less of an effect than variation of direct government expenditure.
- It is important to remember that transfer payments can result in an even lower output equilibrium in the long-run (increases disposable income but reduces G). However, transfer payments are very effective for fast injection into the economy.
- Three qualifiers (complexities) of fiscal policy:
    1. Fiscal policy and its effect supply:
        - FP can affect both aggregate demand and aggregate supply.
        - Supply siders are those that believe tax cuts encourage increased productivity in the workplace, boosting the supply of human and technological capital.
        - Government spending on public capital (roads, schools, airports etc.) also boost the potential level of output.
        - Transfer payments can reduce the level of productivity and reduce the level of supply (especially labour if welfare payments are too high).
    2. The problem of outstanding deficits;
        - Large and persistent deficits reduce the level of national saving and investment in capital. This greatly impacts the long-term growth of an economy.
        - Both spending and tax cuts are therefore less attractive, as sometimes short-run sacrifices have to be made to achieve long-run objectives.

3. Inflexibility of fiscal policy:
    - Fiscal policy can be slow to implement.
    - Increasing taxes and reducing spending is extremely hard for governments as it is political suicide.

- Social role of fiscal policy:
    1. Short-Run:
        - Stabilise movements in AD.
        - Tax and spending (slow implementation).
        - Automatic stabilisers (fast implementation).
    2. Long-Run:
        - Correct externalities.
        - Reduce levels of inequality (progressive taxation, welfare payments).
        - Provide a social safety net (welfare, education, etc.)
        - Public goods.
        - Balanced budget over the business cycle
        - Provide future generations with better quality of life.
- Taxation in Australia:
    1. Progressive income taxation:
        - As income increases, so does the tax paid.
        - Unfortunately distorts productivity and income, as it reduces the incentive to work harder and earn more money.
    2. Goods and Services Tax (GST):
        - Regressive – taxes consumption, lower income consumers pay a larger portion than richer consumers (as poor MPC is higher).
        - Efficient – everyone is taxed equally, no distortion in production or spending decisions.
- Income inequality is represented by the Lorenz curve and the Gini coefficient:



$Gini_L = A/(A+B) < Gini_H = A/(A+B)$

- Tax Revenue – Can be difficult to forecast, as it depends on:
    - Levels of expenditure.
    - Levels of business profits.
    - Taxation rate.
    - Number of tax payers.
- Tax Smoothing – The concept that governments should reduce spending now and save when future deficits or increased spending is anticipated.
- Methods of finance for the government:
    - Taxes.
    - Borrowing (both domestic or from overseas).
    - Printing money (seignorage), results in inflation and devalued currency.
- Government budget constraint – government spending has to be financed by only taxes or borrowing (seignorage is rarely practical). This can mathematically be represented by money out = money in:

$$G_t + Q_t + rB_{t-1} = T_t + (B_t - B_{t-1})$$

- Low levels of public debt are ideal to prevent crowding out (where rises in interest rates and interest payments reduces the level of investment).
- Borrowing is not perpetual. At some point in time a surplus is required to reduce the level of debt or it will compound to infinity.
- Intergenerational Equity – The idea that the current generation should not impose unfair burdens on future generations (e.g. increased taxes, reduced spending).