# Notes: Macro Models – AD-AS Mo

### Market Equilibrium of National Income

* + - It refers to the market equilibrium level of national income is attained when the economy is under stable market condition whereby the market output level is equal to the aggregate market demand, after adjusting the unplanned stock to clear excess demand or supply condition. At this level of market condition, there is no tendency of change in the level of national income unless there is a change in the level of economic activities.

Real GDP

AD­1

AD2

AD­0

Y0 = Y1

= YF

Y2

AS

GPL

AE­2

P2

### Circular Flow of Income

* + - It refers to the flow of injections and withdrawals that will affect the level of transactions and output which will affect the level of national income through the multiplying effect.

National Income

Households

Firms

Consumption/
Output

Savings

Financial Market

Investments

Imports

Taxes

Exports

Government Expenditure

Government

Foreign Market

### Flow of National Income

* + - It refers to the different ways on how the level of national income is attained which can be based on the output approach, income approach and expenditure approach.

Household

Firms

Factor Services

Expenditures

Product

Factor income

### Multiplier Effect

* + - It is the ratio of the change in income to the change in autonomous expenditure that brings about the change in income.
		- It determines the amount of change in national income as a result of a change in aggregate expenditure.
		- K=△NY/△AD

↑G(100m)x2 (k) = 200m (△NY)

* + - The extent of the multiplier effect depends on the withdrawal effects at various levels of transaction in the circular of income
		- **In the multiplier process**, the initial increase in the aggregate demand expands the circular flow of income and then increasing the income of the factor earners which will further expand the circular flow of income with new consumption activities. As long as more consumption activities take place, the circular flow of income will continue to expand at the respective level of economic activities until the withdrawal effect is equal to the initial injections which will cease the expansion of the circular flow of income. Consequently, the national income will increase by several folds, depending on the value of the multiplier which is determined by the sum of the MPW (Marginal Propensity to withdraw - MPS + MPT +MPM)

### Reverse Multiplier Process

* In the reverse multiplying process, the initial reduction in the aggregate expenditure contracts the circular flow of income and then, reducing the income of the factor earners which will further contract the circular flow of income as consumption activities reduces. As lesser consumption activities are made, the circular flow of income will contribute to contract at the respective level of economic activities until the withdrawal effects is equal to the initial reduction in injection. Consequently, the national income will decrease by several folds, depending on the value of the multiplier which is determined by the sum of MPW (Marginal Propensity to Withdraw = MPS + MPT + MPM)

### Explain how the size of the multiplier is determined

* The value of multiplier is determined by MPW or MPC as stated in the formula below:

$$k= \frac{1}{MPW}= \frac{1}{MPS+MPT+MPM}= \frac{1}{1-MPC}$$

* Therefore, the determinants of the MPW or MPC will indirectly be the determinants of the multiplier.
* For MPC, it is influenced by factors like the availability of credit facilities, degree of affluence, size of population and consumer behaviour.
* For MPS, it is affected by the attitude towards savings, legislation (compulsory CPF Scheme), level of welfare (better welfare system, less need and willingness to save).
* For MPM, it is influenced by factors like the degree of reliance on imported resources and the availability of domestic natural endowments.
* For MPT, it is influenced by the tax rate set by the government

**Qn: Explain how the value of multiplier will differ for small and large economy**

### **2.4 Impact of Change in Aggregate Demand and Aggregate Supply**

### 2.4.1 Explain how a change in aggregate demand will affect the general price level (GPL) and the real GDP (to depict demand-pull inflation)

ASF

P3

P2

P1 = P0

Y0

Y1

Y2=Y3=YF

Real GDP

GPL

AD3

AD2

AD0

AD1

As seen from the diagram, the rise in aggregate demand from AD0 to AD1 will only cause an increase in real GDP from Y0 to Y1 without any change in price level as price is at P1 which is equal to P0. As the aggregate demand rises further from AD1 to AD3 where the supply condition is at rising cost condition or full employment level, there will be excess demand condition which will contribute to rise in price level from P2 or P3 as the real GDP will rise from Y1 to Y2 but remains at Y3 when there is full employment level.

2.4.2 How an increase in the production capacity of production will shift the ASf to ASf1

0

Y1

= YF

AD2

AD1

Real GDP

ASF1

GPL

ASF2

P1

P2= P0

YF2

Y0

Y2

* As seen from the diagram, the expansion of the resource capacity as a result of the import of more resources will shift the vertical AS from ASf to ASf1.This will lead to a rise in the real GDP from Y1 to Y2 as the expansion of the resource / production capacity has lowered down the cost of production and thus, a fall in price level. There will be an increase in aggregate demand from which will induce a rise in national income from Y0 to Y1 as the level of investment has increased due to a lower cost condition.

Note: This diagram is used to explain the mechanism of supply- side policy/ sustainable economic growth (increase in real GDP without increase in price)

**Qn: Explain how supply-side management policies like manpower development affect potential growth as seen in the AD-AS analysis**

**Manpower development**

increase in funding for training and development – increase in government expenditure – increase in AD – via k – increase in real GDP – raise actual growth

Increase in government spending – more skilful workers – raise their occupational mobility – expand the labour supply – raise production capacity – attain potential growth

**Free trade – increase in export demand and import demand**

Lower tariff – price of export demand is lowered – increase in export demand – increase in AD – via k – increase in real GDP

induce in import – expand the availability of resources – expand production capacity – attained potential growth

**Qn: How will the LRAS shift to the right?**

1. economics causation
2. draw diagram
3. description of diagram

2.4.3 How an increase in cost of production will contribute to decrease in AS (Cost-push inflation)

* As seen from the diagram the rise in cost of production (Increase in price of oil) will cause the AS curve to shift from AS0 to AS1 which will cause a rise in price level from P0to P1 and a fall in the real GDP from P0 to P1.

ASF

GPL

Real GDP

P0

P1

Y1

Y0=YF

AD

ASo

AS1

Note: The vertical point of ASF remains unchanged as the full employment capacity of production is still at the YF.

## Determinants of the Respective Components

### Consumption (C)

* + - Consumption function, C = a + (MPC) Yd
			* ‘a’ is autonomous consumption and (MPC)Yd is induced consumption
		- According to Keynes, there is a positive relationship between income and consumption
		- Breakeven point of consumption is when the function intersects with 45° line where Y=C.
		- Focus on Definition, Characteristics and Formula

###  Consumption function



a= autonomous consumption

b=MPC

C= a+ BY

= 100+ 0.8(1000)

=900

### Shifts in Consumption Function (Non-Income Determinant)

**Qn: Is consumer spending the main cause of inflation?**

-credit consumption is a huge part of AD

* + - Wealth
			* Increase in household wealth shift consumption upwards
		- Expectation of future price
			* Households expect inflation in future 🡪 consume more now 🡪 C shifts up
		- Redistribution of income
			* Unequal distribution of income will affect the consumer’s base purchasing power. When the income distribution is uneven, the consumption will be low as the rich as MPC is small for the rich.
			* With income redistribution, the poor will spend more as MPC for poor is large.
			* Consumption will increase, C shifts up.
		- Interest rate and availability of credit
			* Easy credit facilities will increase credit consumption.
			* Lower interest will reduce cost of borrowing, lowering the cost of goods such as fixed assets.
			* The above causes increase in consumption, C shifts up.
		- Fiscal policy
			* Increase taxation 🡪 reduce disposable income 🡪 fall in consumption
			* Increase in subsidies 🡪 increase disposable income 🡪v increase in consumption
		- Tastes and Attitude
			* Change in attitude to be more thrifty 🡪 Decrease consumption
			* Introduction of new consumer goods 🡪 Increase consumption

### Savings (S)

* + - The amount of household income which is not spent but kept for future use.

2.4.1 Saving function



-a= autonomous dis-savings

(1-b) = MPS

S= -a+(1-b)Y

=-100+(1-0.2)1000

100

Y= C+S (2 sectors)

S = Y – C

I = MPS + MPC

MPS = 1 – MPC

•Determinants of MPS in Singapore

* Compulsory Saving Scheme (CPF)
* Asian thrifty attitude
* Absence of welfare scheme

### Determinants of Savings

* + - Deferred purchase
			* Saving will increase as individuals’ purchasing power in the future and thus enabling the individuals to purchase assets in the future.
		- Contractual obligations
			* The need to save for insurance
		- Precautionary reasons
			* Saving for emergency needs due to unforeseen circumstances
		- Social attitudes
			* If the society places emphasis on the virtue of saving, there will be a higher level of saving
* Age
	+ - * The older the person, he will find greater need to save
		- Expectations of the future economic situation
* Less optimistic about the future 🡺 save more now
	+ - * Public welfare provided by the state is not sufficient 🡺 individuals will increase their saving to take care of themselves

**3.5A Explain how increase in saving will affect the level of standard of living**

Paradox of thrift – Standard of living

Increase in saving – decrease in consumption – decrease in Ad – decrease in real GDP – via k – decrease in real GDP per capita – decrease in SOL

increase in saving – increase in fund for investment – induce more investment - increase in AD – via k – increase in real GDP and raise SOL

### Investment (I)

* + - Autonomous in the short run
		- Relationship
			* Interest rate increases 🡺 the cost of financing for investment increases 🡺 level of investment less profitable 🡺 investor decreases level of investment
			* **Negative relationship** between interest rates and investment
			* The negative slope of the investment function is known as the **marginal efficiency of investment** (MEI).(affected by notion of profitability)
			* The level of MEI will increase or decrease (shift of the MEI) when the price of capital has changed and/or the productivity of capital equipment has increased, enabling the greater utilization of capital equipment which will induce a higher rate of return on investment at a particular level of investment

### 3.6A MEI/Investment Function

I/r

###

MEI

As seen from the diagram, it can be observed that the MEI is downward sloping from left to right, indicating that there is an inverse relationship between interest rate and increase in interest rate from r1 to r2 will lead to a fall in the level of investment from I0 to I1 and a rise in interest rate from r0 to r2 will lead to a rise in investment from I1 to I2

**1) Explain how equilibrium level of investment is attained based on Rate of Return (R) and the cost of borrowing (r)**

- Notion of profitability

R > r – profitable 🡪 increase Investment

R < r – loss 🡪 decrease Investment

R = r – equilibrium level of investment is attained

Therefore, when interest rate rises from r0 to r1, the rate of return is lower than the interest rate and thus, there is loss and this will reduce the level of investment till I1­, where interest rate is at r1 equal to the rate of return at R1 at I1.

When interest rate is lower from r0 to r2, the rate of return (R0) on investment at I0 is higher than the interest rate at r2 and therefore, there is profit which will induce investment to rise from I0 to I2 until the rate of return (R2) is equal to the interest rate (r2) at the level of investment at I2.

3.6B Interest Elasticity of MEI

Level of Investment

I/r

r0

r1

I0

I1

I2

MEI2

MEI1

As seen from the diagram, MEI can be interest inelastic (MEI1), which means that a change in the interest rate will lead to a less than proportionate change in the level of investment. When MEI is interest elastic, it means that a change in the interest rate will lead to a more than proportionate change in the level of investment. The MEI is considered interest-inelastic when the level of investment is more influenced by political stability, technological advancement and other factors and a small extent by interest rate. For example, FDI is interest-inelastic as the source of borrowing for FDI is from external banking sector, therefore, interest rate has no influence on FDI, therefore, interest rate has no influence on FDI.

Determinants of interest elasticity of MEI

✓Composition of investment – Domination of FDI – Investment is interest inelastic as the FDI will not borrow from the local banks.)

✓Degree of market confidence

•↑i/r🡪high degree of market confidence🡪↓I is less likely to occur

•↑i/r🡪market pessimism🡪↑I is less likely to occur

✓Depends on the value of decrease in interest rate

###  Shifts in MEI

* + - Price/availability of capital
			* Increase in price of capital 🡺 increase cost of investment (more expensive to purchase new plant and equipment) 🡺 Level of investment decreases (MEI shifts left)
		- Business confidence and expectations
			* Optimism in future 🡺 increases investment (MEI shifts right)
		- Rate of change of income
			* Bigger change in income 🡺 increase need of investment to produce more goods
		- Government policies
			* Expansionary policies encourages investment
			* Tax on profits decreases the return on investment 🡺 less incentives to invest 🡺 MEI shifts left
		- Technology
			* Advancement in technology attracts more investment 🡺 MEI shifts right
		- Political stability
			* Political stability raises the investment confidence as it will protect the investor's capital and raise the market demand as the consumers are likely to spend more under a stable environment.

### Government Expenditure (G)

* + - It refers to spending by government on the ordinary and development expenditure and it is exogenously determined

### Determinants of G

* + - Demographic pattern
			* Ageing population 🡺 increased G for health care, subsidies for nursing homes (G shifts up)
		- Level of taxation
			* Higher taxes mean increase public finds available for spending 🡺 G increases
		- Government policies
			* Expansionary monetary policies 🡺 G increases
		- Level of economic development
			* Country embarks on economic development 🡺 economy requires more facilities and infrastructures for the industries 🡺 G increases
		- Cost of financing
			* Higher interest rates 🡺 increases the cost of government expenditure as higher interest will raise the interest payment for bonds 🡺 G will be lower (G shifts down)

**Qn: Why govt expenditure as % of GDP has decreased?**

-High degree of privatisation

### Balance of Trade (X –M)

* + - It refers to the net value of the difference between the total value of export revenue earned by the nation and the expenditure spent on the import of foreign goods.
		- Exports are goods and services produced domestically but on which foreigners incur expenditures. The level of export expenditure is assumed to be autonomously determined.
		- It is affected by the price of the export goods, quality of goods, exchange rate and income of the foreign countries citizens.
		- Imports are goods and services produced in other countries which are purchased by households, firms and the government sector in the domestic economy.
		- The level of imports spending is assumed to be endogenously determined. It is affected by the price of the import goods, quality of goods, exchange rate and income of the local countries citizens.

## Importance of the respective aggregate demand components

### Consumption

* + - Consumption is often used as a measurement for welfare of citizens in the country. A rise in disposable income will raise the level of consumption, enabling higher level of material comfort which will raise the level of SOL
		- Consumption is one of the sources of contribution of the growth of GDP (especially for large and affluent economy with extensive credit facilities)
		- Consumption will induce product innovation as new forms of consumption will demand the producers to produce new forms of products, widening the scope of economic growth
		- Consumption will create an acceleration effect on the economy which will generate a higher level of employment (Increase in NY🡪↑C🡪↑I, ∴↑NY - ↑I) (Induce rise in investment 🡪 depends on whether change in income and consumption is permanent.)
		- It will also include an increase in domestic activities which will help expand the domestic expenditure and production and then, provides greater employment, reducing the degree of dependency on external demand
		- **Significance of consumption is amplified by:**
1. size of the economy
2. level of affluence – influenced by the degree of distribution of income
3. level of expectation
4. level of credit availability

### Investment

* + - Investment directly increases employment of the country, increasing national income at the same time. (↑ in production – labour intensive industries)
		- Investment in new areas of the economy will widen the scope of the economy and thus providing a wider range of job opportunities
		- Investment will also provide massive employment opportunities when the investment is focusing on the manufacturing sector. (Countries like India/China – critical factor for social/political stability)
		- ↑I 🡪↑ Production🡪 ↑ employment 🡪 ↑ Real GDP 🡪 ↑ Real GDP per capita (↑ SOL)
		- Investment infrastructural development will provide better facilities that will raise the level of convenience and comfort of their lives and thus, raising the standard of living.
		- Investment improves the infrastructure of the country facilitating economic growth. (reap EOS 🡪 ↓LAC 🡪 ↑ profitability) Infrastructural investments improve the attractiveness for foreign direct investment (FDI)
		- Investment in R & D will lead to higher level of efficiency and improvement in the quality of products which will raise the competitive edge of the economy
		- It will also lead to the transfer of technology when the investment is in the form of FDI which will raise the skill level of the workers and enhance the technological knowhow of the economy.

### Savings

* + - Savings provides the capital for investment and source of fund for the government for public expenditure (CPF)
		- Higher level of savings will also provide more sovereign fund for the economy to generate more wealth for the country. This will enable to the economy to have more fund for public expenditure to raise the efficiency of the economy and the standard of living. Besides this, the fund can also provide more funding for the economy to counter economic crisis.
		- Saving helps in the social planning for retirement and family development 🡪 promote social stability

### Government Expenditure

* + - Government expenditure is used to improve infrastructure for the country to raise the efficiency of the industries and provide a higher level of standard of living
		- A kind of injection to improve liquidity of the financial market in times of insolvency
		- Able to indirectly boost consumption through the increase in the disposable income that will provide a higher level of purchasing income
		- Act as a remedy solution to solve deflationary condition

**4.4A Explain how increase in government expenditure will affect the economy**

Introduction

Definition of government expenditure

Impact on the economy – aims of government

Main body

1. Explain how increase in government expenditure will affect the actual and potential growth
2. how increase in G leads to real GDP growth (increase in AD) /multiplier process
3. how increase in G leads to potential growth
4. draw diagram and description of diagram
5. spill-over impact on other aims of government
6. affecting employment
7. affecting SOL
8. affecting price stability
9. affecting BOP – explains how it affects XD and FDI
10. Analysis – size of k , types of government expenditure

Conclusion – retrospective summary

### Exports and Imports

* + - Affects the exchange rate of domestic currency
		- affects international competitiveness
		- cost of imports 🡪 cost of living and SOL
		- Affects trade balance, in turn influencing total income to the economy (BOT surplus 🡪 ↑AD🡪via k 🡪↑real GDP)
		- The expansion of the availability of resources through import will raise the resource capacity and thus attain potential growth
		- The export demand will help to induce growth of the economy as there is higher level of production that will meet the external demand. The increase in production will induce more investment and thus create massive employment for the economy.

**Qn : Factors influencing our export capacity:**

* **Infrastructural development**
* **FTA**
* **Exchange rate**
* **FDI – raise export demand – their market is international-based**

### AD’s Influence on Singapore

* + - Consumption occupies around 20% of GDP
		- Export demand/ FDI 🡪 very critical to the growth of AD
		75% - directly or indirectly due to external demand.
		- Significance of G 🡪 a source of flow of activities that reverts economic downturn as a source of expenditure to help the lower income group.
		- Significant decrease in the components of government expenditure in AD components due to high degree of privatisation

**Issues for discussion**

**1. meaning of slow growth**

**2. why slow growth occurs?**

**3. Impact of slow growth of Europe on Singapore**

**4. solutions for slow growth**

**5. why countries need to switch from external demand growth to internal demand growth
6. Evaluate if such a measure is feasible**

**7. Can supply-side policies raise economic growth?**

**8.**