MOT1421
Economic Foundations
Week Six

MACROECONOMICS: THE KEYNESIAN MODEL SELF-TEST: ANSWERS

The self-assessment consists of 10 Questions.
Each Question has a weight of 1. Your maximum score therefore is 10.
A score of 6 means that you have successfully passed the test.
This self-assessment is self-scoring.

Question 1

The Keynesian multiplier process starts as a result of an increase in autonomous demand and spending; this could be an increase in autonomous business investment (financed by bank credit). Higher demand leads to higher production, more jobs and higher incomes for households. Households will save a proportion of this income and spend the rest. Due to this, aggregate demand increases in a second round – and again, higher demand leads to higher output, more jobs and increased household income. Households save part of the extra income and increase consumption demand – a third round follows of demand increases → output increases → more jobs → higher incomes. The multiplier process, by which the initial autonomous demand increase kickstarts a cumulative growth process which converges to a new equilibrium level of GDP.

Question 2

Keynes argued that business investment is mostly determined by the 'animal spirits' of the business managers. What Keynes meant is this. The decision to invest depends on what one expects the future to be. If one expects the economy to grow and one's market to expand as well, one will be inclined to invest, because the expected economic growth will help to recoup the investment plus a profit. If one expects the market to stagnate or decline, one will not invest. Business investment is therefore a function of "market and profit expectations". Keynes stressed that these expectations are subjective, have no objective basis (because the future is fundamentally uncertain) and socially determined. Business leaders will be influenced by the societal mood, by 'predictions' of recognised experts and by what other firms do. This way, the societal mood, however flimsy and whimsical, starts to influence business expectations and hence business investment. If the mood is positive, for whatever reason, business investment will rise; if the mood is negative, business investment will decline. The social psychology of business expectations is called 'animal spirits' by Keynes.

Question 3

The 'paradox of thrift' is one of the most important, and least understood, insights of Keynesian economics because it runs counter to common sense. Common sense holds that it is wise and beneficial if people are 'thrifty' and frugal and decide to save a higher proportion of their income – for various reasons. Keynes showed that a higher propensity to save will depress demand and lower income, but <u>not increase savings</u>. In other words, a high propensity to save (= thrift) leads to the paradoxical outcome that these thrifty people have a **lower income** and the **same level of savings** as before with a lower propensity to save. It is futile to try to increase savings by increasing the propensity to save. The only feasible way to raise aggregate savings in the economy is by raising investment, demand and income.

To illustrate this important paradox, consider the following reduced form expression for real GDP: $y = \frac{1}{\sigma} \times I_0$. Let us assume that autonomous investment $I_0 = 100$ and the propensity to save $\sigma = 0.2$. The multiplier $\frac{1}{\sigma} = 5$

and equilibrium GDP will be 500. Savings are defined as $S = \sigma \times y = 0.2 \times 500 = 100$. Now suppose that the propensity to save increase to $\sigma = 0.25$. It follows that the multiplier $\frac{1}{\sigma} = \frac{1}{0.25} = 4$ and equilibrium GDP will be 400. Savings are defined as $S = \sigma \times y = 0.25 \times 400 = 100$.

Question 4

The government can use fiscal policy to reduce the amplitude of the (normal) business cycle, which consists of an upswing in economic activity followed by a downswing (over a period of 6-7 years). If the economy gets into an upswing (because firms have optimistic expectations and increase investment), the government should reduce public expenditure and/or increase taxation. This means the state is stepping on the brakes: the private sector is increasing demand and spending, while the state reduces spending and slows downs the upswing in a counter-cyclical manner. If the economy enters a downswing or even a recession, the government should increase public expenditure and/or reduce taxation. This way, the government will be increasing demand at the exact moment when the private sector is lowering its demand. Counter-cyclical government spending will make the downswing less deep – and help the economy recover from recession.

Counter-cyclical fiscal policy means that the government deficit should decline in an upswing and should increase in a downswing of the business cycle.

Question 5

A ‘liquidity trap’ is the unusual situation in which savings deposited in banks are high, while the demand for credit is very low. This can only happen when the propensity to save is high: people save, generally out of fear and precaution about what the future will bring. The high propensity to save means that the level of economic activity is low (see Question 3), animal spirits are down and business investment is low. The central bank has lowered the interest rate, even down to zero percent, but (*a*) households continue to save (even when they do not earn interest on their savings deposits), and (*b*) businesses continue to refuse to invest (because their expectations about future sales and profits are very low).

The economy gets trapped in a liquidity trap: there is a huge pool of savings (= cash = liquidity), investment and credit demand are weak, the economy is in a recession and the interest rate is very low. The only way out of a liquidity trap is by means of fiscal stimulus: higher state spending will add to demand, increase output and create jobs. Monetary policy is useless: the interest rate is already very low, and households and businesses are not responding to the low(-er) interest rate. Here is a recent article in *The Financial Times* on Global liquidity trap requires a big fiscal response, by Gita Gopinath, the chief economist of the International Monetary Fund.

Question 6

Money-creating commercial banks can lend to firms even if they do not have excess (unused) savings deposits, because these banks can always create new money. Accordingly, banks do not need to mobilise new savings (deposits) by raising the interest rate. As a result, higher public spending does not automatically lead to an increase in the interest rate – and hence, there is no crowding out of business investment and household consumption. Higher investment, financed by credit, then creates extra income (through the multiplier process). Part of the higher income will be saved – and hence, savings will rise. But in the Keynesian model, savings will rise as a consequence of the increase in income, caused by higher investment. Investment therefore 'causes' savings.

Question 7

The derivation of the reduced-form equation for equilibrium real GDP.

$$y = c + g + i + e - m$$

$$y = c_0 + mpc \times (1 - \tau) \times y + \bar{g} + i_0 - \rho \times r + \bar{e} - m_0 - \mu \times y$$

$$y = \frac{1}{1 - mpc \times (1 - \tau) + \mu} \times (c_0 + \bar{g} + i_0 - \rho \times r + \bar{e} - m_0)$$

This is the reduced-form equation for equilibrium real GDP.

The multiplier for *g* is: $\frac{d\,y}{d\bar{g}} = \frac{1}{1 - mpc \times (1 - \tau) + \mu}$

Question 8

Automatic fiscal stabilisers are automatic counter-cyclical increases/decreases in government expenditure and/or government revenue. One example is unemployment benefits: in a recession, unemployment will rise and the state will automatically spend more on unemployment benefits (assuming the country has an unemployment insurance system). Higher spending on unemployment benefits increase aggregate demand (in the recession) and this slows the decline in economic growth; the trough of the business cycle becomes less deep. It also works the other way around: in an upswing, unemployment goes down; state spending on unemployment benefits goes down; aggregate demand goes down; and the upswing will be less steep than otherwise.

Question 9

Higher public spending does not lead to the crowding out of business investment and household consumption in the Keynesian model, because government can borrow from banks and banks can create new money to fund the state. Banks do not need to mobilise new savings (deposits) by raising the interest rate. As a result, higher public spending does not automatically lead to an increase in the interest rate – and hence, there is no crowding out of business investment and household consumption.

Question 10

$y = c + g + i + e - m = 500 + 0.7 \times (y - 140) + 600 - 0.2 \times y$

$y = 2 \times 1002 = 2004$ Equilibrium real GDP is 2004.

$y = c + g + i + e - m = 500 + 0.7 \times (y - t) + g + 450 - 0.2 \times y$

$y = 2 \times 950 + 2 \times g - 2 \times 0.7 \times t = 1900 + 2 \times g - 2 \times 0.7 \times t$

If *g* increases by 10, real GDP will increase by 20. The public spending multiplier is equal to 2. If taxes t increase by 10, real GDP will decline $-2 \times 0.7 \times \Delta t = -2 \times 0.7 \times 10 = 14$. The income tax multiplier is 1.4. This means that the balanced-budget multiplier is 2 – 1.4 = 0.6.

End of self-test Week 6