

Econ 102: Principles of Macroeconomics
Homework 8 (Page 1 out of 6)

Problem 1 (Comparing Classical Model with Keynesian Model)

In each empty box type “yes” if you agree with a statement, and type “no” if you disagree with a statement.

Statement	Classical Model (Long-Run Model)	Keynesian Model (Short-Run Model)
Labor market clears – the real wage is such that labor demand always equals labor supply		
When Fed lowers interest rates (monetary expansion), output increases and unemployment falls (price level does not change)		
There is cyclical unemployment		
There is frictional and structural unemployment		
Higher saving rate s does not change current output		
Higher saving rate s leads to a fall in current output		
Increased government spending G and government deficit $G-T$ leads to higher current output, higher unemployment and higher level of interest rates		
Increased government spending G and government deficit $G-T$ leads to higher current output, lower unemployment and higher level of interest rates		

Problem 2 (The Big Picture Lesson)

Circle the correct phrase:

Short-run vs. long-run analysis

In this course, we have studied two models: the long-run model and the short-run model. The **(long-run / short-run)** model was intended to capture the laws that govern the economy when enough time passes so that things fully adjust to changing conditions – therefore, the central assumption of this model was market clearing in all markets.

The **(long-run / short-run)** model, on the other hand, was intended to capture possible departures from this **(short-run / long-run)** equilibrium due to frictions in the **(labor market / loanable funds market / goods market)**, that were assumed to preclude the **(wage / price / interest rate)** to flexibly adjust to market clearing outcome. Because of these frictions, the model instead assumed that firms can freely choose employment at the prevailing level of wages, and it assumed that there was always a pool of available unemployed workers around willing to accept jobs at this rigid nominal wage.

Econ 102: Principles of Macroeconomics
Homework 8 (Page 2 out of 6)

The consequence of this assumption was that firms would employ workers to meet the demand, and as a result, aggregate spending would drive income and production. As a result, **(cyclical / frictional / structural)** unemployment may appear in the **(short-run / long-run)**, and the economy may slip into recession simply due to insufficient spending (lower consumer confidence, lower business confidence etc...). Such effect can not possibly take place in the **(long-run / short-run)** model, as output is determined by full employment of available production resources, like labor and capital, and spending is always **(insufficient / sufficient)** to purchase all output by **(Say's / Graham)** Law.

The way we solve for these two equilibria is as follows.

In the short-run, because the labor market is slack and wages are sticky, output is such that the **(goods / money)** is in equilibrium, i.e. production is determined by **(interest rate i / spending AE)**. Since loanable funds market is then in equilibrium automatically, the money market pins down the equilibrium interest rate. Wages and price level are sticky and predetermined.

In the long-run, on the other hand, output is determined by the supply-side only: i.e. it is determined by the amount of capital, the labor market clearing employment and production function. Given production Y , interest rate is then such that both the loanable funds market and goods market are in equilibrium – goods market by **(Say's / Graham's)** law is in equilibrium automatically when loanable funds market is (and all the way around). Price level is then found from the **(money market / loanable funds market)** equilibrium. Knowing the price level and markups, the equilibrium wage level can easily be retrieved.

Self-correcting mechanism linking short-run analysis with long-run analysis

The economy can not be in short-run equilibrium forever, because there is positive **(cyclical / frictional / structural)** unemployment. As a result, in the medium-run there is pressure on wages W to fall, and once this gradually happens, production costs fall and adjustment takes place. The result of this **(self-correcting / spiral)** mechanism is that the economy always converges to the long-run equilibrium pinned down by classical model.

Policy implications

There are several important policy lessons this analysis implies. For example, in the long-run expansionary monetary policy is neutral – it only makes the **(price / output)** level higher and increases inflation. Higher inflation may lead to a higher spread between the nominal interest rate and the real interest rate (this is true because persistently high inflation rate may boost inflationary expectations; recall that nominal interest rate = real interest rate + expected inflation). However, in the short-run, **(expansionary / contractionary)** monetary policy, by its immediate effect on nominal interest rates through the money market – and thus also real interest rates due to sluggish price adjustment – may lead to an increase in the short-run investment spending and thus higher output. That is exactly why during **(expansions / recessions)** the Fed tends to lower the interest rates – as it believes recessions are driven by insufficient spending, and the Fed wants to counteract the effect it might have on production.

Econ 102: Principles of Macroeconomics
Homework 8 (Page 3 out of 6)

Fiscal policy is a bit harder to implement. It takes longer to change the tax code, or change government expenditures, which are usually planned way ahead. So, in practice, it is not used as much as monetary policy. However, it also has a positive effect on output in the short-run model. In the long-run, however, it may even have a negative effect on output. In the long-run expansionary fiscal policy results in crowding out of loanable funds, and may lead to a fall in private investment, capital and output. Still, in the short-run, **(contractionary / expansionary)** fiscal policy similarly leads to an increase in output due to its positive effect on spending. That is why the government decided to enact a fiscal stimulus during the 2008 crisis.

Problem 3 (The Complete Framework of Macroeconomic Analysis)

You have the following data about the economy of *Keynesia*.

In this economy, labor market is slack and wages are sticky at the level $W=10$.

Firms price the goods they sell as a constant markup on the production cost, which is solely determined by the wage level. The price level is assumed to be 10% markup over the wage level, and thus $P=11$.

The following description of the economy has been provided to you.

Money Market

$$M^S = 22$$

$$M^D = 2P + 0.2Y - 100i$$

$$(P = 11, W = 10)$$

Goods Market

$$AE = C + I + G$$

$$C = (1 - 0.2)(Y - T)$$

$$I = 40 - 100i$$

$$G = 27$$

$$T = 0$$

In addition, **you know that** the economy has also 10 units of capital, labor supply is $L=10$, and the production function is given by $Y = 14\sqrt{KL}$. Depreciation of capital is 10%.

a. Calculate the short-run output level

Your answer:

Econ 102: Principles of Macroeconomics
Homework 8 (Page 4 out of 6)

b. What is the price level in the short-run?

Your answer:

c. Is the level of capital $K=10$ the long-run equilibrium? I.e. is it the steady state dynamic equilibrium of the classical model?¹

Your answer:

d. What will be the price level in the long-run?

Your answer:

¹ Note that you are asked to verify, not to compute. You will have hard time computing the long-run steady state capital with G positive; in fact, you might not know how to do it. Nevertheless, it is a very easy task to verify whether candidate equilibrium is one or not.

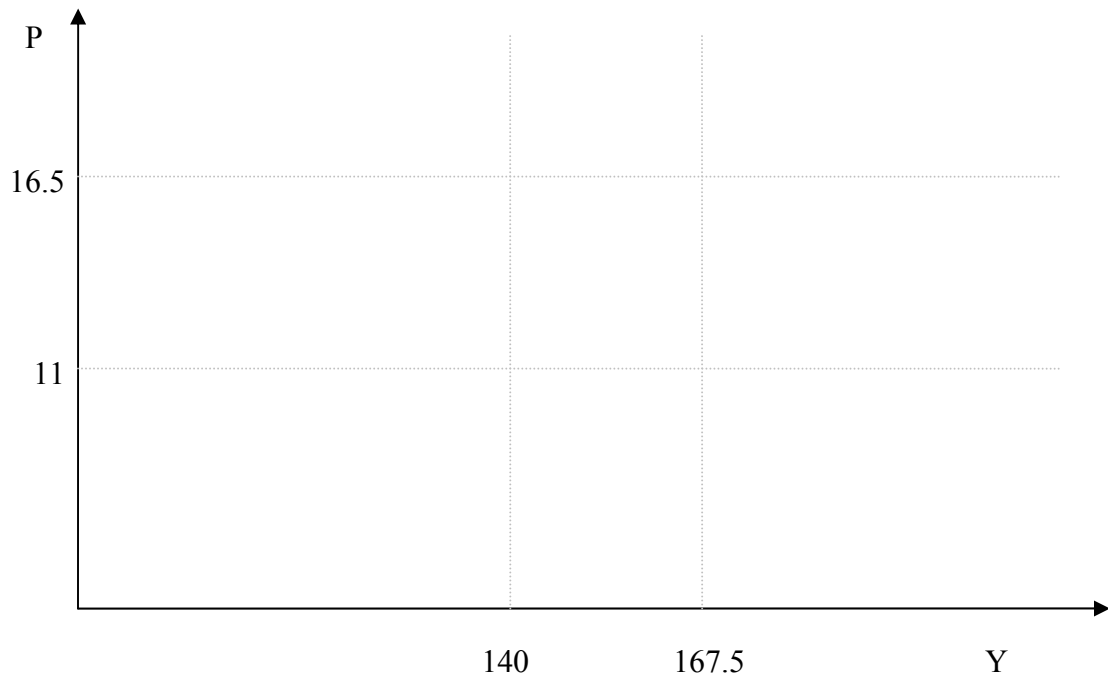
Econ 102: Principles of Macroeconomics
Homework 8 (Page 5 out of 6)

e. Will the economy experience inflation or deflation as it converges to the long-run equilibrium?

Your answer:

f. Derive the equation and plot the AD line. On the same figure, include also the AS line and LAS line and label all the equilibrium values that you have computed in points a-e above.

Your answer:



Econ 102: Principles of Macroeconomics
Homework 8 (Page 6 out of 6)

g. Illustrate the medium-run self-correcting mechanism that will take the economy to the long-run equilibrium (use the diagram you derived in point f).

Your answer:

