

Midterm Exam Answer Key
Economics 116
Fall 2016

Part 1

Q1. No. The economy is in equilibrium when actual investment equals planned investment. Remember: planned investment refers to the level of inventories that firms planned to have. Since GDP accounts describe actual levels of investment, these accounts do not necessarily describe the existence of equilibrium. To put this a bit more formally, remember that GDP can be accounted as actual expenditure. That is:

$$AE \equiv C + I + G + NE$$

AE describes the actual level of expenditure. Yet, the economy is in equilibrium when production (i.e., income) equals AE. That is, when $Y=AE$.

Q2. In practice, the rate of unemployment is measured based on a survey that the BLS carries out every month. Roughly, the survey concerns household members 16 and older and asks them whether they work 1 hour or more as a paid employee, 15 hours or more without pay in a family enterprise or whether they have a job from which they are temporarily absent. If they do, they are considered to be employed. Those who are not employed are either unemployed or not in the labor force. The former is the key part for this question. To be unemployed, a person must have made specific efforts to find a job during the previous 4 weeks to the survey. Crucially, then, a person not looking for work either because he/she does not want a job or because he/she has given up is not considered to be part of the labor force.

Those who argue that the unemployment rate is an underestimation of the actual rate of unemployment base their argument on the fact that some persons that are not part of the labor force might have been looking for a job but, not being able to find one, have given up. This is the so called discouragement effect. On the other hand, those who argue that the unemployment rate is an overestimation of the actual rate of unemployment base their argument on the fact that the survey does not include questions involving a wage rate. Indeed, the survey does not include questions of the form: “If you are not working but want a job, would you be willing to work for this particular wage”? The absence of wage rates from the survey might imply that a person that claims to be looking for a job but is not being able to find one (hence, it is unemployed) might be looking for jobs with a higher wage than those available. In such a case, those that support the overestimation hypothesis would claim that these persons should not be counted as unemployed since they could be working if they wanted to (for a smaller wage).

Q3. To decide whether it should buy the machine, the firm needs to compute the present value of the stream of revenues the machine will generate and compare it with the cost of the machine; namely, the \$100 dollars that the firm would need to pay to buy the machine. Hence, the key part of this decision is to compute the above present value. We know this. Suppose that the firm is making this decision at time t . Then, the present value of the stream of revenues can be written as:

$$PV = \frac{R}{(1+r_{t+1})} + \frac{R}{(1+r_{t+1})(1+r_{t+2})} + \dots + \frac{R}{(1+r_{t+1})(1+r_{t+2})\dots(1+r_{t+n})}$$

Whether the firm buys the machine or not thus depend on the interest rates. One difficulty would be that, in general, these interest rates are unknown at time t . Hence, the firm would need to form an expectation of the future interest rates.

Q4. As we have seen, the goal of stabilization policies is to smooth out, as much as possible, fluctuations in GDP. Both fiscal policies and monetary policies can be used to reach this goal. The key problems with these policies are the so called lags; namely, the recognition, implementation and response lags. In general, these lags might involve a trade-off between fiscal and monetary policies. Roughly, once a boom or a slump is recognized (recognition lag), the implementation of monetary policies tends to be “faster” than the implementation of fiscal policies (implementation lag). The reason is simple: the implementation of monetary policies is typically not subject to some of the restrictions that the implementation of fiscal policies face (roughly Congress approvals). On the other hand, fiscal policies tend to be more effective, once implemented, than monetary policies (response lag). Here the reason is that the economy tends to respond more slowly to changes in the monetary policy than to changes in spending or taxes.

Part 2

Q1. With sticky wages, demand increases occur without proportional wage increases. Therefore, monopolistically competitive firms that are maximizing profits will increase output as they increase prices. In this sense, the AS curve is a price-output response curve and shows a positive relationship between P and Y . In the long run, the economy reaches capacity, and wages are no longer sticky, turning the AS curve vertical. The AS curve is different from a supply curve in microeconomics in several ways. First, there is no supply curve for monopolistically competitive firms because they are setting the price levels and output levels simultaneously. Second, it deals with price levels of the entire economy, rather than the price of a specific good (while keeping other prices fixed).

Q2. The downward slope of the AD curve can be explained by the interaction between the IS curve and the Fed Rule curve. The IS curve shows the relationship between r and Y , and underlying the IS curve is the investment function, which tells us that I increases with r . The Fed

Rule curve shows that r increases when P or Y increases. Thus, when P increases, r increases, then I decreases, so Y decreases. When TR increases, IS curve shifts out (to the right), so for every given P , Y increases. This causes the AD curve to shift out (to the right) as well.

Q3. Generally, an increase in G causes the IS curve and the AD curve to shift out (to the right), leading to a higher Y . If the AS curve becomes steeper, an outward shift in the AD curve has a smaller effect on output, because much of the change occurs in P , and not Y . Alternatively, when the AS curve is steeper, the economy is approaching full employment. Therefore, an increase in G has a smaller effect compared to the scenario in which the economy is at a lower level of output, and wages are much stickier. Under either explanation, the size of the government spending multiplier decreases. When t is larger, a larger portion of Y is spent in taxes, and disposable income decreases. This causes C to decrease, and thus Y to decrease. Therefore, for any given increase in G , the effect on Y is smaller if t increases, so the size of the multiplier decreases.

Q4. This is classic stagflation. As PM increases, P increases. In turn, through the Fed Rule, r increases, causing I to fall, and thus Y to fall. Another way to see this is that the AS curve shifts left and up. In sum, we have higher price levels (inflation) coupled with lower output (and higher unemployment). If r becomes exogenous, we are removing the Fed Rule, so r no longer depends on P or Y . Therefore, the chain described above is broken, and an increase in PM (and thus P) does not lead to a change in I or Y . Thus, we just have inflation, and not stagflation, because only P increases, and Y stays the same. Another way to see this is that the AD curve becomes vertical, so even if the AS curve is shifting, Y stays the same.

Part 3

Q1. The Phillips Curve shows a negative relation between unemployment and inflation. If the aggregate supply curve is stable and aggregate demand increases, output and employment increase thus leading to a decrease in unemployment. At the same time, the increase in AD increases the price level and because the supply curve is steeper as output increases, inflation increases. Thus, there is a negative relation between inflation and unemployment.

If the aggregate demand curve is stable and aggregate supply increases, output and employment increase thus leading to a decrease in unemployment. At the same time, the increase in AS decreases the price level and a decrease in inflation occurs. Thus, there is a positive relation between inflation and unemployment.

Q2. An increase in payroll employment may be an indication to the Federal Reserve that output is increasing. This would trigger the Fed to increase the interest rate. Bond prices and interest rates are inversely related and thus an expected increase in interest rate would lower bond prices.

Stock prices depend on both the expected future dividend rate and the interest rate. Stock prices increase if future dividends are higher and lower if future interest rates are expected to be higher. Although investors may expect the Fed to raise the interest rate, higher payroll employment could be a sign of a strengthening economy and thus higher expected future dividends. Thus, the effect on stock prices is ambiguous.

Q3. The following mechanisms were used by the Fed.

[a] Fed sells U.S. treasury securities to the banks. Fed debits the bank's reserves. The decrease in reserves allows fewer loans to be made. This reduces the money supply and increases the interest rate.

[b] Fed increases the reserve ratio. More reserves needed to support the same level of deposits. Fewer loans can be made. This decreases the money supply and raises the interest rate.

[c] Fed increases the discount rate. Banks would borrow less from the Fed, lowering reserves and leading to fewer loans. This reduces the money supply and raises the interest rate.

Q4. Consumption depends on wealth. The 4 trillion dollar decrease in the stock market would lead to a decrease in consumption. The decrease in consumption would have a multiplied effect on the economy. The decrease in AD = multiplier * decrease in consumption. Assuming an upward sloping AS curve, the decrease in AD would decrease GDP.

The decrease in AD would lower the price level.

The decrease in output and price would lead the Fed to reduce the interest rate.