

Answers to Questions: Chapter 8

1. In microeconomics, the demand curve shows the various quantities of a specific product that a consumer wants at various prices for that product, *holding preferences, income, and other prices constant*. The quantity demanded changes because of a change in relative prices. In macroeconomics, the *AD* curve shows the various quantities of GDP demanded at various price levels in the economy. Here, there is no change in relative prices of other products (although if the nominal wage is unchanged, there is a change in the real wage, which is a relative price). In macroeconomics, the increase in output demanded arises because the changing price level causes the real money supply (and interest rates) to change.
2.
 - a. The *AD* curve is steeper when the interest responsiveness of the demand for money becomes larger. When the interest responsiveness of the demand for money becomes larger, the demand for money curve will have a flatter slope relative to the *M/P* axis. A given increase in the real money supply will therefore produce less of a reduction in the interest rate, less of an expansion in autonomous planned spending, and less of an expansion in real GDP. Consequently, a given reduction in the price level, which increases the real money supply, will have a smaller effect on real GDP when the interest responsiveness of the demand for money is larger.
 - b. The *AD* curve is flatter when the income responsiveness of the demand for money is larger because the *LM* curve is steeper. A steep *LM* curve amplifies the effect on output of a higher real money supply, all other things held equal.
3.
 - a. Shifts the *LM* curve to the right; therefore, *AD* curve shifts to the right.
 - b. An increase in foreign income shifts the aggregate demand to the right. The rise in foreign income causes exports and therefore net exports to increase at each level of income and interest rate in this country, that is, autonomous planned spending rises. That increase will cause firms to expand output, resulting in a rise in real GDP at each interest rate. The increase in real GDP at each interest rate shifts the *IS* curve to the right and causes a movement up the *LM* curve. Therefore, there is an increase in aggregate demand at every price level, which is represented graphically as a shift to the right of the aggregate demand curve.
 - c. An increase in the income tax rate increases the size of the marginal leakage rate, which reduces the size of the multiplier. That shifts the horizontal intercept of the *IS* curve left, but does not change its vertical intercept. Therefore the *IS* curve is steeper and the new *IS* curve is to the left of the original *IS* curve. Therefore at any given price level, the *LM* curve intersects the new *IS* curve at a lower level of income,

- which shifts the AD curve left. However, a shift of the LM curve left because of a higher price level reduces income less since the new IS curve is steeper, which results in a steeper AD curve.
- d. Shifts the vertical intercept of the IS curve down and makes the IS curve flatter; the effect on horizontal intercept is ambiguous. Nevertheless, the AD curve shifts to the right and becomes flatter. For the AD curve, it can be shown that $\Delta Y/\Delta c > 0$ if $Y > T_a + tY$.
 - e. Makes the IS curve pivot upward about its horizontal intercept, kA'_p , because the vertical intercept, A'_p/b , becomes larger as b becomes smaller. Therefore, the AD curve shifts to the right and becomes steeper.
 - f. Leaves the original IS curve unchanged (absent a real balance effect), but shifts the LM curve to the left by decreasing the real money supply. Because the nominal money supply has not changed, however, this causes a movement along the original AD curve, rather than a shift in it.
 - g. Makes the IS curve shift to the right; therefore, the AD curve shifts to the right.
 - h. Makes net exports increase, thus shifting the IS curve to the right; therefore, the AD curve shifts to the right.
 - i. Makes the IS curve shift to right: therefore, the AD curve shifts to the right.
 - j. Makes the IS curve shift to left: therefore, the AD curve shifts to the left.
4. The assumption of a fixed *nominal* wage means that labor costs remain fixed as firms increase output. Therefore profits increase as firms expand output when the prices of goods and services sold by businesses rise, which is why the aggregate supply curve is upward sloping.
 5.
 - a. Increases.
 - b. No change.
 - c. Decreases.
 6. A higher price level results in higher profits for firms if they expand the amount of goods and services, given that input costs are fixed. That is why real GDP increases as the price level rises.
 7. Nominal wages adjust slowly for three reasons. First, formal or informal contract fix wages for a period of time, just as union contracts or the contracts professional athletes sign for one or more seasons. Second, in the absence of formal labor contracts, it takes time for workers and managers to evaluate how productive workers are in order to determine what the workers should be paid, so that in the period between performance evaluations, the nominal wages of workers are fixed. Finally businesses are reluctant to reduce nominal wages out of the fear of losing their best employees.

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8. a. Technological improvements increase profits. Higher profits cause firms to produce more, given nominal wages and other input prices. Since output is greater at each price level, the *SAS* curve shifts to the right.
- b. The decrease in the nominal wage rate lowers costs and increase profits at each price level, resulting in an increase in output. Since output increases at each price level, the *SAS* curve shifts to the right.
- c. Lower prices for raw materials reduce costs and increase profits at each price level, resulting in an increase in output. Since output increases at each price level, the *SAS* curve shifts to the right.
9. The increase in aggregate demand would cause the price level, output, and the interest rate to rise. The interest rate rises not only because the increased spending shifts the *IS* curve right but the higher price level shifts the *LM* curve left. That increase in the interest rate crowds out autonomous consumption spending and autonomous investment. With flexible exchange rates, an increase in the interest rate will cause the exchange rate to increase and there will also be a crowding out effect on net exports and in addition imports rise as income rises. The increase in government spending is likely to increase the budget deficit, although not as much as the rise in spending since the higher level of income generates more tax revenue.
10. a. Real output decreases and interest rate increases via the *IS-LM* analysis. Thus, *AD* curve shifts to the left along the *SAS* curve. So the price level also declines. Thus, both output and the price level decline in the short run. The lower price level also reduces firms' profits and causes them to try to reduce costs. Since a lower price level has increased the real wages of workers, they are likely to agree to reductions in nominal wages. Lower nominal wages shift the *SAS* curve right, which leads to an additional drop in the price level. That lower price level increases the real money supply, shifting the *LM* curve to the right. The shift to the right of the *LM* curve is represented as a movement down the new *AD* curve. The nominal wage and the price level continue to decline and output continues to rise until the output returns to its original level and the *IS* and *LM* curves intersect at the original level of output. In the long run, output and employment and real wage do not change. However, the price level and the nominal wage both decline.
- b. Output and the interest rate both increase when net exports rise as a result of the depreciation in the dollar. The increase in output and the rise in the interest rate are shown graphically as a shift right of the *IS* curve and a movement up the *LM* curve. The *AD* curve shifts right by the amount that income increases at the intersection of the new *IS* curve and the *LM* curve. The price level rises since aggregate demand exceeds aggregate supply at the initial price level. The rise in the price level is shown graphically as movements up the *SAS* curve and the new aggregate demand curve.

The rise in the price level reduces the real money supply, which is shown as a shift left of the LM curve and corresponds to the movement up the new aggregate demand curve. Therefore output, the interest rate, and the price level all increase in the short run, while the real wage rate falls due to the rise in the price level.

Once workers notice that their real wages have fallen, they will seek higher nominal wages. The rise in the nominal wage rate shifts the SAS curve to the left, which results in a further rise in the price level but a decline in output which is shown graphically as a movement up the new AD curve. Corresponding to this movement up the new AD curve is a shift left of the LM curve as the additional increase in the price level leads to a further decline in the real money supply. The interest rate continues to rise as the real money supply continues to decline. The price level, the interest rate, and the nominal and real wage rates all continue to increase and output continues to decline as the SAS and LM curves continue to shift left until the SAS curve, the new AD curve, and the LAS curve all intersect at the original level of real output, Y^N . So at the new long-run equilibrium, the effect of the depreciation of the dollar is a higher price level, a higher nominal wage, and a higher interest rate, but no change in the equilibrium real wage rate or real GDP.

11. No. The economy is in *short-run equilibrium* when the AD and SAS curves intersect, but not necessarily in *long-run equilibrium*. It will be a sustainable long-run equilibrium only the price level and the nominal wage are such that the real wage rate equals the equilibrium real wage and $Y = Y^N$. At any other combination of W , P , and Y , the SAS curve will shift as the nominal wages adjust.
12. The movement down the AD curve would result from falling prices in response to the economy's being below Y^N . The parameter for the SAS curve is the nominal wage rate. If the SAS curve did not shift (nominal wages did not fall), the falling price levels would yield real wages above the equilibrium real wage. Thus, nominal wages must fall along with prices if the economy is going to "self-correct." During the Great Depression, nominal wages did not behave as the classical economists predicted: nominal wages did *not* decline continuously during the 1930s when Y was below Y^N ; in fact, in 1937 the nominal wage rate was back to the 1929 level, despite an unemployment rate of 14.3 percent.
13. Monetary impotence refers to the situation when an increase in the real money supply does *not* stimulate additional spending and output. The two conditions that would lead to monetary impotence are a vertical IS curve or horizontal LM curve. Because of falling consumer and business confidence, the IS curve during the depression was very steep. This suggests that changes in the interest rate would have had very little effect on desired spending.

14. A zero lower bound on the interest rate prevents a falling price level, which increase the real money supply, from reducing the nominal interest rates below zero. In fact, once the zero lower bound is reached lower bound falling prices raise the real interest rate since the inflation rate is negative and the nominal interest rate cannot fall further.
15. Unlike the United States, Britain allowed its foreign exchange to fall, resulting in a rise in net exports and a relatively smaller decrease in aggregate demand. That relatively smaller decrease in aggregate demand resulted in a less severe downturn in output in the United Kingdom than in the United States. The German government's spending on armaments, highways, and housing resulted in a more expansionary fiscal policy than the one pursued by the U.S. government and a relatively smaller decrease in aggregate demand in Germany than in the United States. In addition, the German government allowed prices and wages to fall, unlike the U.S. government which took actions to raise wages and prices. Thus, the actions of the German government allowed its economy's *SAS* curve to shift right, whereas the actions of the U.S. government caused the American economy's *SAS* curve to shift left. Therefore, governmental policies toward wages and prices moderated the severity of the Great Depression in Germany, whereas they exacerbated it in the United States.
16. The interest rate does not play any role in the Pigou Effect.
17. A fall in prices, with a constant nominal money supply, leads to an increase in the real money supply. With the Pigou Effect, this increase in the money supply will directly affect the demand for commodities; thus, the *AD* curve cannot be vertical.
18. In a period of continuing inflation, the value of real balances would decline if the growth rate of the nominal money supply was less than the inflation rate. This change in wealth might cause a decline in autonomous expenditures, thus helping to slow the growth rate of output. Here, the expectations effect might work against policymakers if people, expecting further inflation, decide to "buy today" and beat the price increases. This activity would stimulate spending. Similarly, the redistribution effect could work against policymakers if the winners from the inflation tended to spend at a greater rate than losers.
19. The initial impact of the increase in autonomous exports will be to shift both the *IS* and *AD* curves to the right. Both output and prices would increase. Given the existence of a real balance effect, however, the rising prices will cause the *IS* curve to shift backward to the left along the (assumed) constant *LM* curve. This implies a movement upward along the new *AD* curve. The economy will return automatically to the intersection with the *LAS* line. If the expectations and redistribution effects are present, then these will shift the *AD* curve to the right, exacerbating the rise in prices accompanying the increase in autonomous exports.

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20. If the nominal wage is rigid downward, the *SAS* curve will remain fixed. Even if the *AD* curve is downward sloping, the price level can fall along the *AD* curve only until the *AD* curve intersects the fixed *SAS* curve. As a result, a shift to the left by the *AD* curve will result in an output level below Y^N and real wages above the equilibrium level.
21. The decline in the output ratio in the United States during the Great Depression was much larger, from more than 100 percent in mid-1929 to 61 percent by late 1932, than it was during the Global Economic Crisis, when the output ratio declined by “only” 8 percentage points from late 2007 to mid-2009.
22. The 1929 stock market collapse reduced real wealth, thereby reducing consumption expenditures, just as the collapse of housing and stock prices did in the United States just prior to and during the Global Economic Crisis. Similar to the pattern in the United States from 2001–10, over construction of houses and commercial real estate during the 1920s contributed to a sharp decline in fixed investment spending during the Great Depression. However, there was an important difference between what caused the decline in aggregate demand during the Great Depression and what happened during the Global Economic Crisis that was the behavior of the money supply. The Fed allowed the nominal money supply to decline by 25 percent between 1929 and 1933 and allowed many banks to fail; the behavior of the Fed was drastically different during the Global Economic Crisis.