

Free Response Answers

1. **(1998 #1)** The increase in government spending leads to an outward shift in aggregate demand. Given that the economy is at full employment, the price level increases. The effect on real output is determined by the assumption made concerning the aggregate supply curve. Using a long-run or a classical aggregate supply function that is vertical at the full employment output level real output is unchanged. However, it would not be wrong to argue that the economy can operate, in the short run, above full employment. With this approach, a contrast between full-employment output and potential output must be shown. Alternatively, a contrast between long-run and short-run aggregate supply can be used. In these cases, real output could increase, at least in the short run.

The increased government spending will lead to an increase in the nominal interest rate. With a higher nominal GDP, the transactions demand for money will increase. Also, increased government borrowing raises the demand for loanable funds and increases the interest rate. With an increased supply of government bonds to fund the debt, the price of bonds falls and the rate of interest rises. Higher inflationary expectations will pressure upward the nominal interest rate.

The real interest rate is equal to the difference between the nominal interest rate and the rate of inflation. With both the nominal interest rate increasing and the expected price level increasing the change in the real interest rate is indeterminate.

The government deficit is the difference between inflows (taxes and other government revenues) minus outflows (expenditures and transfer payments) for some period of time (typically a year). The national (or federal, for the U.S.) debt is the sum of accumulated government deficits (minus repayments) at some point in time.

An increase in the economy's potential to produce output is captured by an outward shift in the long-run aggregate supply function. A tax policy that:

- a) Increases the return or profitability from supplying inputs and stimulates a greater use of inputs (at each aggregate price level) **OR**
- b) Increases the productivity of inputs will lead to an outward shift in the aggregate supply curve.

Examples of such tax policies are investment tax credits, reduced corporate profits taxes, and educational tax credits. For each tax policy, a specific linkage to economic growth must be developed. For instance, an investment tax credit will lead to increased net investment and an increase in the capital stock, with more capital the aggregate supply function shifts outward. Economic growth leads to an outward shift in the economy's production possibilities frontier or boundary.

II. Grading Rubric for Macroeconomics Question 1: 9 Points

Part (a) 2 points

1 Point for: an acceptable AS-AD graph with full employment shown either as: vertical portion of AS or a clear notion of capacity constraint, such as a SRAS and a LRAS.

½ point for: an increase in the price level (must show AD shift)

½ point for: either no increase in real output if full employment is on the vertical portion of AS

OR an increase above the full-employment output level if the SRAS is upward sloping **Part (b): 2**

Points

1 point for nominal interest rises with any of the following reasons:

- nominal rate = real rate + expected inflation rate; price level goes up thus inflationary expectations increase \square increased transactions demand for money
- increased demand for loanable funds (supply of government bonds), and thus lower price of bonds and higher interest rates
- higher inflationary expectations (or higher inflation).

1 point for

- \square real interest rate change being uncertain because the nominal interest rate increases while the price level rises. [If the student declares that one change is larger than the other (nominal interest rate change vs. inflation rate) a specific conclusion is acceptable.]

Part (c): 2 Points

\square 1 Point Deficit = difference between inflows (taxes) and outflows (spending) within a given time

period \square 1 Point Debt = sum of accumulated deficits/surpluses (at some point in time) **Part (d): 3**

Points

1 Point for a correct tax policy (must link to aggregate production or aggregate supply),

- such as increased investment tax credit,
- increased R&D tax credit,
- reduced capital gains tax,
- and reduced corporate profits tax.

[Do not accept demand-oriented answers, such as lowering personal income taxes to increase consumption.]

1 Point for a correct linkage from tax policy to higher investment leading to a greater capital stock and greater capacity.

[It is acceptable to argue that a demand-side tax policy would increase business profits, leading to increased business investment. Then the capital stock would increase, leading to an increase in capacity and an outward shift in AS.] 1

Point for an outward shift in the production possibilities frontier (PPF, PPB, PPC).

2. (2000 #1) This long macro question was aimed at testing the student's understanding of aggregate analysis and, in particular, macroeconomic policy tools and their relative effectiveness. The student needed to understand the concept of full employment, as well as recession. Moreover, the student needed to understand the relative effectiveness of increasing government spending compared to reducing taxes. Also, the student needed to assess the impacts on imports and exports from an expansionary fiscal policy. Finally, the question tested the student's understanding of both the short-run and long-run impacts of an increase in net investment.

(a) The AS-AD graph should show an equilibrium price level and real output (real GDP). Given that the economy is in a deep recession, the equilibrium level of output clearly should be below the full-employment level of output.

(b) An increase in government expenditures will have a greater impact on real income or GDP than will a decrease in personal taxes of an equivalent magnitude. The government expenditure multiplier is more powerful than the tax multiplier since a portion of the tax decrease is saved rather than directly spent.

(c) A decrease in personal income taxes will lead to an increase in disposable income and an increase in consumption. With an increase in consumption, aggregate demand will increase or shift out, increasing the price level and the value of real GDP or output. With a higher domestic price level and an unchanged "foreign" price level, imports will become relatively less expensive and increase, while exports will become relatively more expensive to foreigners and decrease. [Also, with higher real income or GDP demand for all goods, including imports will increase. Finally, it is also true that the expansionary fiscal policy should increase the demand for loanable funds, raising interest rates, and appreciating the dollar. An appreciated dollar will lead to increased imports and reduced exports.]

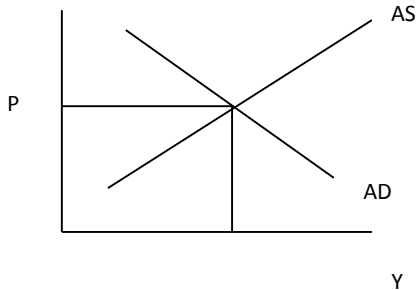
(d) Since investment is a component of aggregate demand, an increase in net investment will shift out the aggregate demand function. Since positive net investment will increase the stock of capital, the aggregate supply curve will shift out to the right.

Question 2 [2+2+4+2 = 10 Points] Part (a): 2 Points

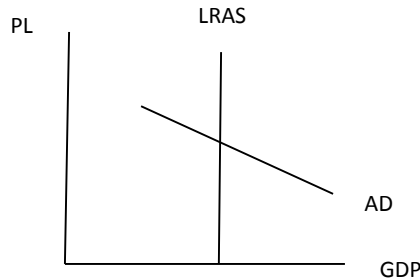
(1 point) AD-AS graph with a real output (Q or Y) and a price level shown

(1 point) Showing that the real output is below the full-employment or potential income

Some **one point only** graphs:



Absence of Full employment



Absence of Recession

Part (b)

(1 point) G increase has greater impact than the T decrease

(1 point) Reason: part of the T decrease is saved and does not contribute directly to an increase in income

Part (c): 4 Points No Assertions!

i. (1 point) Consumption increases because disposable income increases (May draw on part b if Y_d or money income increase is clearly stated)

ii. (1 point) Because AD increases, GDP and P level increase
[If the student operates in the perfectly elastic range of AS curve, P level would not need to increase.]

iii. (1 point) Imports increase with an explanation:

- a) higher income/real GDP increases imports
- b) higher domestic price level increases imports
- c) higher interest rate leads to appreciated \$ which will increase imports [Note: if only assert \$ increases vs. other currencies, no point in part iii.]

iv. (1 point) Exports decrease with an explanation: a)
higher domestic price level decreases exports
b) appreciated dollar reduces exports
(Note: Exports “do not change” if P does not change in ii. is acceptable)

Part (d):

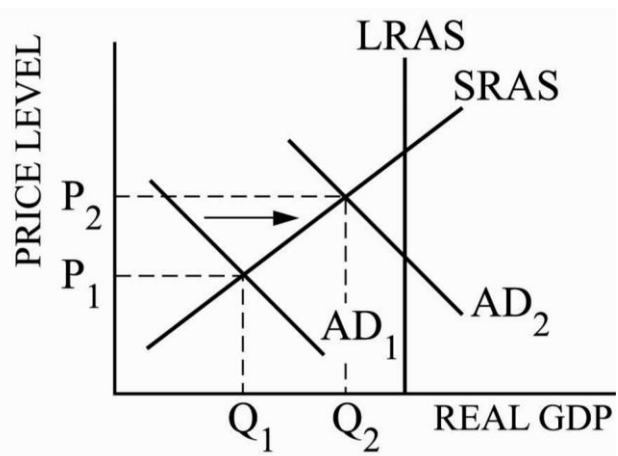
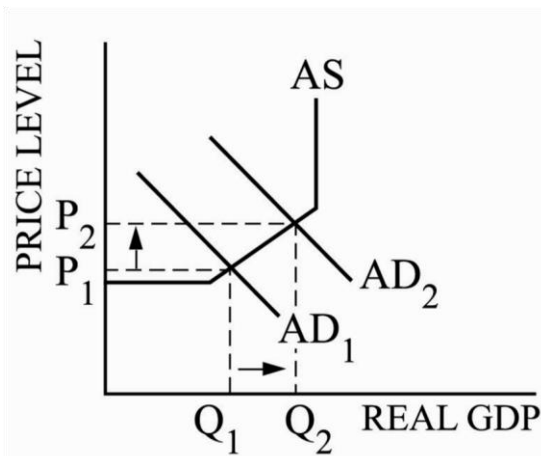
(1 point) Because net investment is a component of AD, increased investment will shift out the AD curve **[Insist on a reason for the AD curve’s shifting out.]**

(1 point) Increased net investment means an increase in the capital stock (or productivity or capacity) and an outward shift in AS

3. **(2001 #1)** The increase in government spending will shift out (increase) the aggregate demand curve. Since the economy is below full employment, there will be an increase in real output and an increase in the price level (assuming an upward-sloping aggregate supply curve). The increase in government spending will generate an increase in demand for loanable funds, and the increase in income will increase the demand for money. Thus, interest rates will increase, and interest-sensitive expenditures, such as investment, will fall. A reduction in corporate profits-taxes will lead to more investment and an outward shift in the aggregate demand curve. Greater investment leads to a larger capital stock and an outward shift in the aggregate supply curve. As a result, real output increases. The impact on the price level is indeterminate since the shifts have counteracting effects. With a greater capital stock, the production possibilities frontier will shift out.

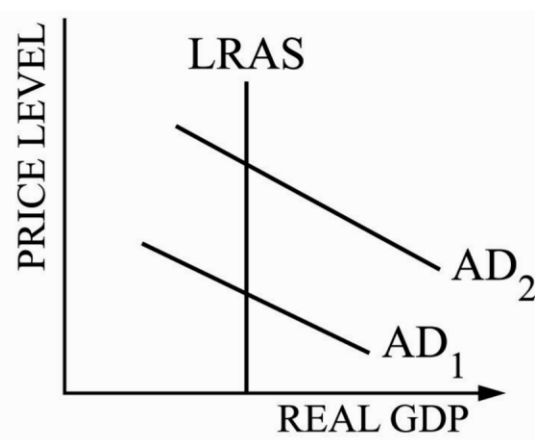
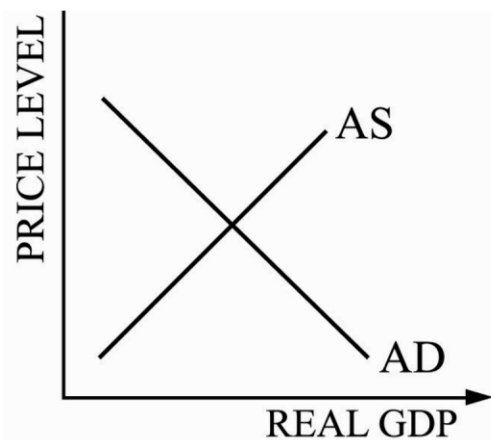
2+2+5+1=10 points

a) Real output and the price level increase (graph needed). From the student's initial level of real output or GDP, the student must show an opportunity for GDP to increase (i.e., not have a vertical AS curve).



1 point for properly labeled graph with an increase in AD

NO credit for:



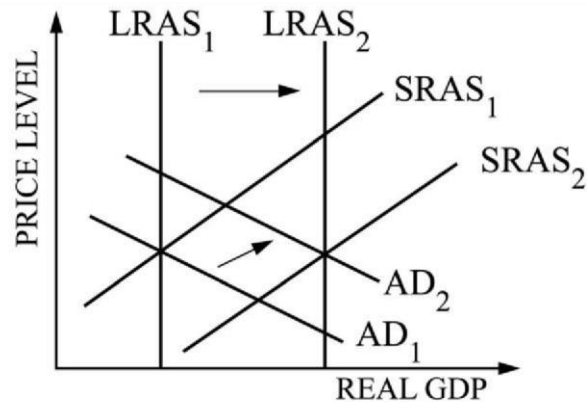
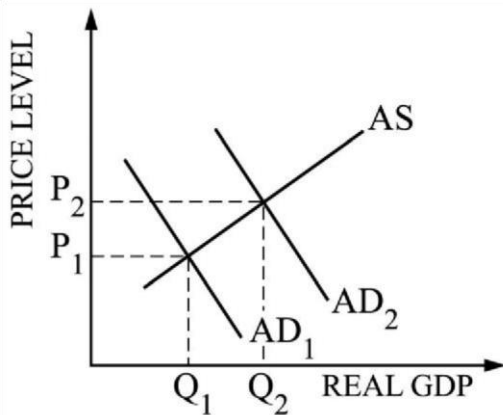
1 point for P increasing *and* Q increasing (or results consistent with graph) All or nothing for the P and Q point. Price does not have to increase if student draws both AD curves in the horizontal range of AS. No point if only the AS curve shifts.

b) **1 point** for interest rates up as government borrows more money in the market for loanable funds or the demand for money increases with a higher GDP

(It is acceptable, of course, to give one point to the student who speaks to the possible ambiguity of the situation given that nominal rates increase and the price level increases.)

1 point for investment falls — an interest-sensitive expenditure (a point for a correct link of interest change in b (i) to change in investment)

c) **1 point** for graph with AD increase *and* explanation that investment spending increases or shareholder wealth/income increase causes a spending increase



1 point for shifting out the AS curve

1 point for explaining AS increase, i.e., more capital or lower production costs

1 point for real output increases (may be linked to a single shift in either AD or AS)

1 point for the price level change is *indeterminate* — must use both AD and AS shifts to earn the point

d) **1 point** for PPF shifts away from origin on a graph—must have *two* PPF curves

