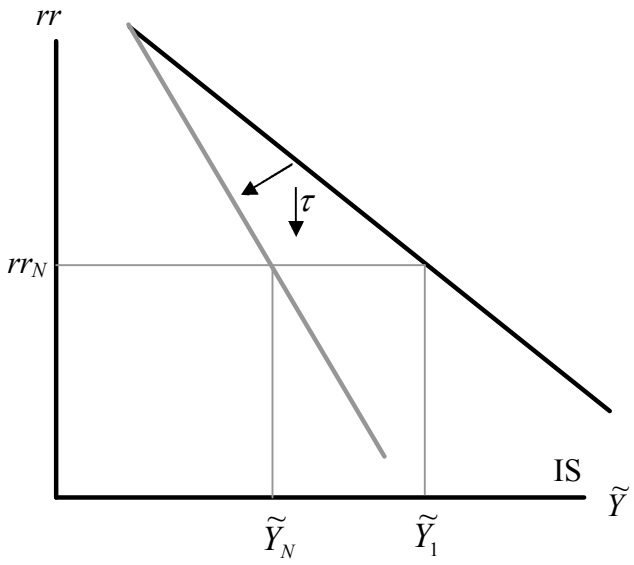
Chapter 17 Selected Answers

Problem 17.2:

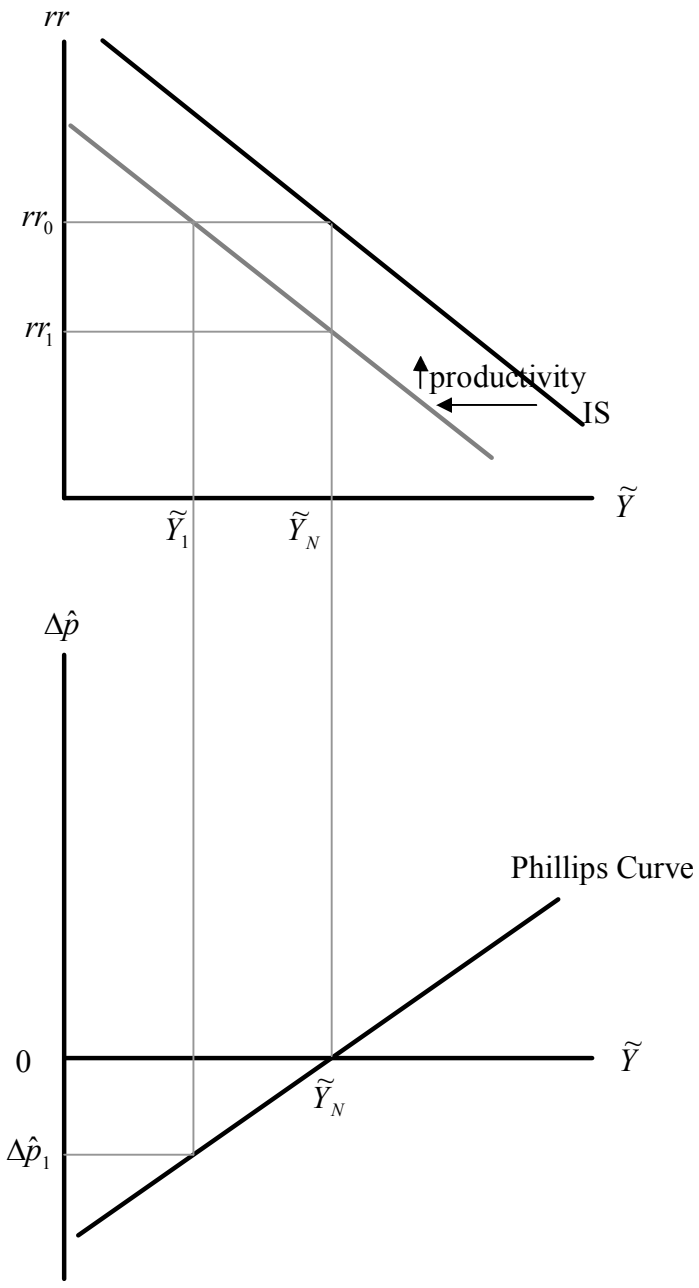
(a) We know from Chapter 13 that an increase in marginal tax rates pivots the IS curve downwards. Thus, *ceteris paribus* (particularly, holding the real rate of interest constant) aggregate demand falls.

Figure 17.2.1
An Increase in Marginal Tax Rates



Problem 17.4: A rise in productivity increases potential output; it is a *positive* supply shock. From the definition of scaled output ($\tilde{Y} = \frac{Y}{Y^{pot}}$), we see that, holding aggregate demand (Y) constant, scaled output would fall for the same level of aggregate expenditure. Thus, in Figure 17.4.1, the IS curve must shift left. If the economy started at NAIRU. and, holding monetary policy (rr) constant, the Phillips curve shows that prices would decelerate (the inflation rate would fall). Holding policy constant would not allow the economy to take advantage of the higher potential output. To do that, aggregate demand would have to grow in proportion to the increase in potential output. One policy that would make this happen would be for the monetary authorities to reduce interest rates to rr_1, which would stimulate investment (a movement along the new IS curve) until NAIRU was restored. Here, scaled output would be the same, but actual GDP would have risen by the same proportion as potential GDP. Other policies that stimulated aggregate demand (e.g., tax cuts or government spending increases could have similar effects). If policymakers saw an increase in productivity, which raised GDP, to be an increase in aggregate demand rather than aggregate supply, they might be tempted to pursue contractionary policies and defeat the beneficial effects of the increase in productivity.

Figure 17.4.1
An Increase in Productivity



An aggregate-demand shock (here a fall in net exports) shifts the IS curve leftward, reducing aggregate demand below NAIRU and decelerating prices.

Problem 17.6: Figures 17.6.1 and 17.6.2 refer. (*Remainder of answer not supplied*.)

Figure 17.6.1
Federal Government Expenditure: Current and Capital

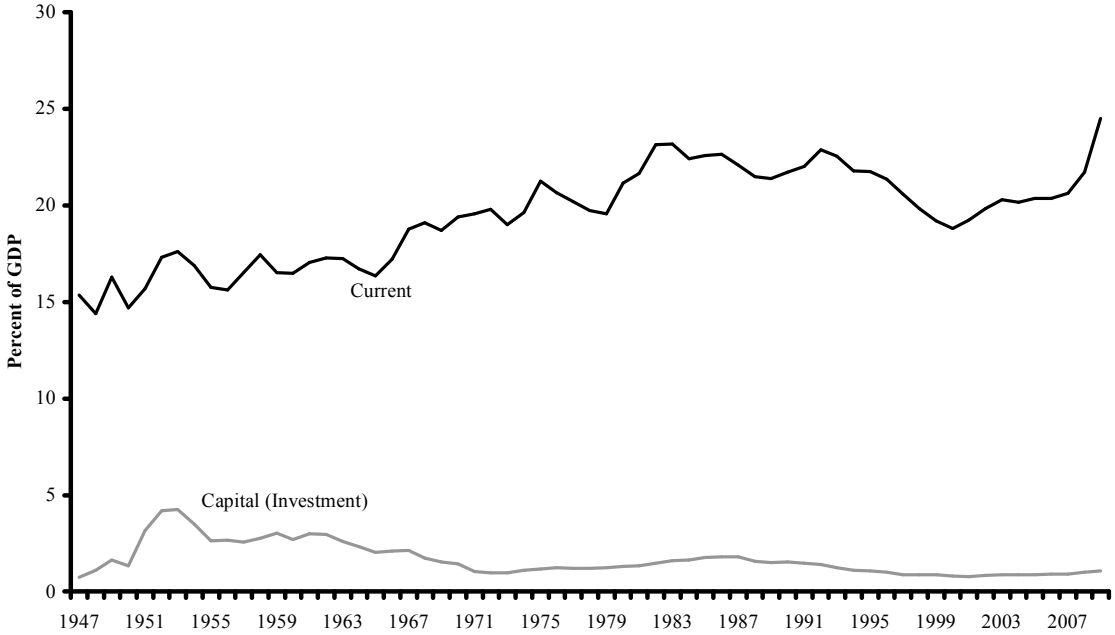
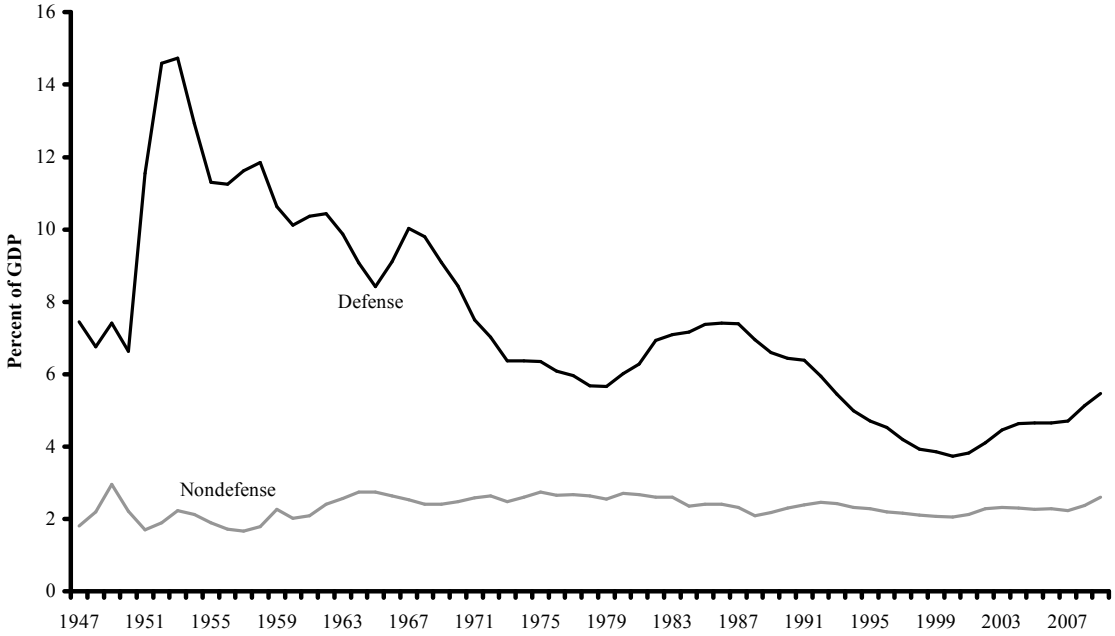


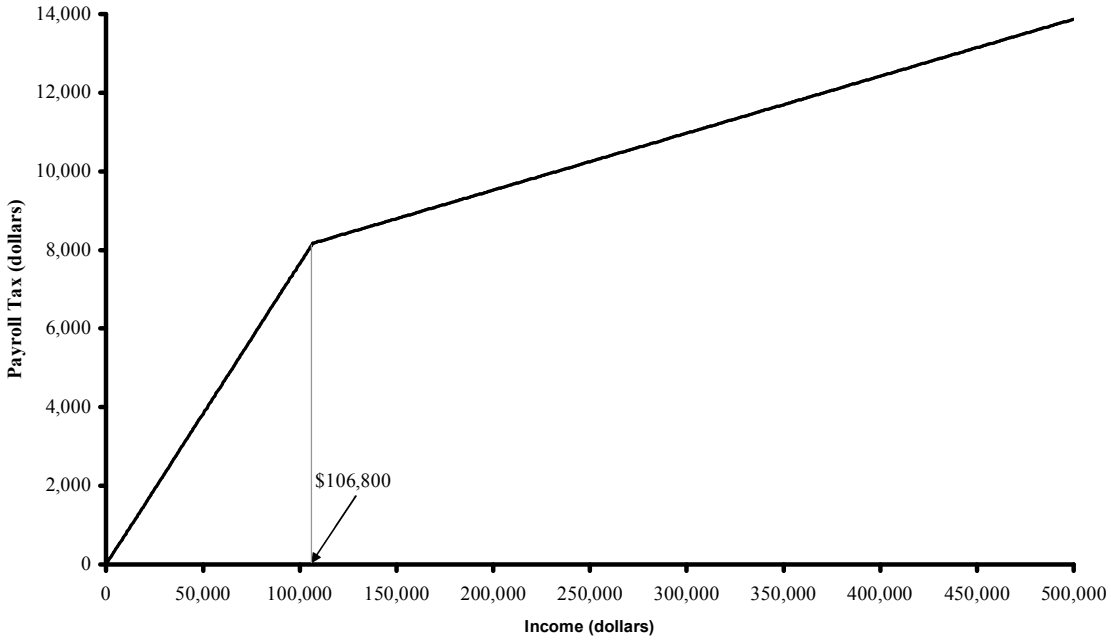
Figure 17.6.2
Federal Government Expenditure: Defense and Nondefense



Problem 17.11: Typically automatic stabilizers are mechanism that increase government expenditure and/or cut taxes when the economy enters a recession and decrease expenditures (at least relative to trend) and increase taxes in a boom. Thus, they tend to drive the government deeper into deficit in a recession and to drive it towards surplus in a boom. A strict balanced budget amendment would, presuming that the economy started in balance, prevent this mechanism from operating in a recession, and so would nearly eliminate automatic stabilizers. One form of automatic stabilizer would still be possible: namely, a simultaneous increase in expenditures and taxation, which according to the balanced-budget multiplier would still have a positive (though weak) stimulating effect on the economy. But, as we have seen, to maintain a balanced budget when expenditures increase requires that tax rates be adjusted. This mechanism could be *automatic* only if tax rates could be adjusted without specific legislative action in each case. That is not impossible, but it is also alien to the system that currently exists.

Problem 17.12: (*Only the first of the two figures is supplied here. The student should construct the second figure, noting how the two figures relate, and evaluate the progressivity or regressivity of the tax.*) As shown in Figure 17.12.1 by the linear shape of the tax schedule up to the kink at $106,800, the payroll tax is initially a flat tax. After the kink, the marginal tax rate falls from 7.65 percent (= 6.20 + 1.45) to 1.45 percent (see the lower slope after the kink in Figure 17.12.1).

Figure 17.12.1.
Federal Payroll Tax Schedule



Problem 17.14:

(a) Since deficits are generally a stimulus to aggregate demand through the multiplier. Thus, a deficit moves an underemployed economy in the direction of full employment, which, according to the Phillips curve, could lead to an acceleration of prices once NAIRU is reached.

(b) Figure 17.13.1 shows the inflation rate and the Federal deficit as a share of potential GDP. The two series do not look stationary. The mean of the inflation rate seems to shift over time – particularly between the first and second halves of the sample. Both series drift slowly around their means rather than crossing them frequently. These are signs of nonstationarity. It is difficult to see that they even move together in the longer run, so that it is unclear whether the long-run relationship between them is a genuine one.

(c) Figures 17.14.2 and 17.14.3 refer.

(d) Figure 17.14.2 shows a *negative* relationship between annual changes in the two series. The relationship is weak in the sense that its fit (R^2) is low, indicating that other factors dominate the movements of inflation rates. Figure 17.14.3 shows a *positive*, but even weaker relationship between the deficit and inflation rates. Although this might suggest that, in the long run, deficits cause inflation, the relationship is so weak that we should be careful in giving that much credence. The short-run relationship (Figure 17.4.2) suggests that a one percentage point increase in the deficit as a share of potential GDP results in about a ½ point fall in the inflation rate. Notice that this is the opposite of what we said that we might expect in (a) above. One possibility is that our assumption about the direction of causation is incorrect. Rather than deficits causing inflation, perhaps inflation causes a fall in the deficit. This could happen since anything that raises nominal incomes increases revenues from taxes. If tax rates are not fully indexed for inflation, then in an inflationary environment, taxes would rise faster than incomes, raising the share of GDP going to taxes. If nominal expenditure rises more slowly, which is likely, then inflation would lower the deficit.

Figure 17.14.1
Deficits and Inflation Rates

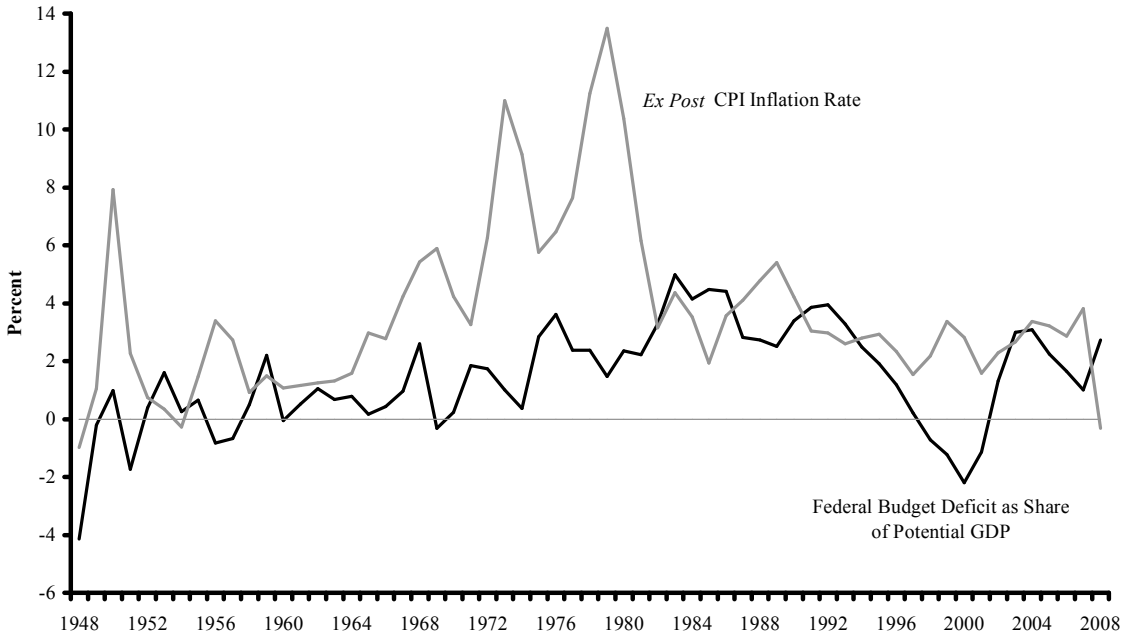


Figure 17.14.2.
Deficits and Inflation Rates

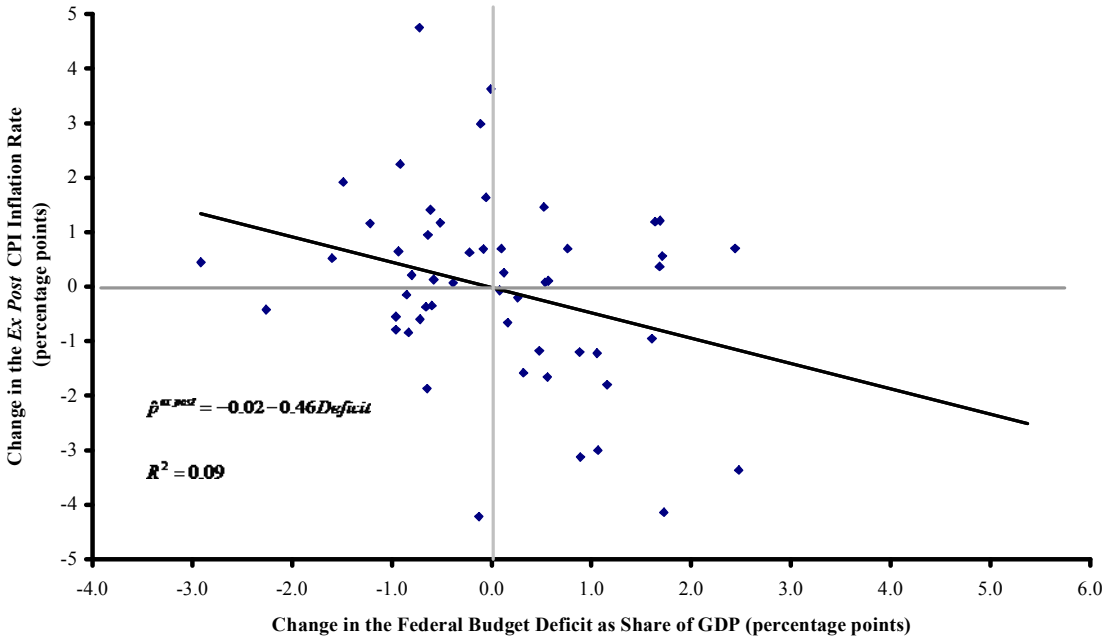
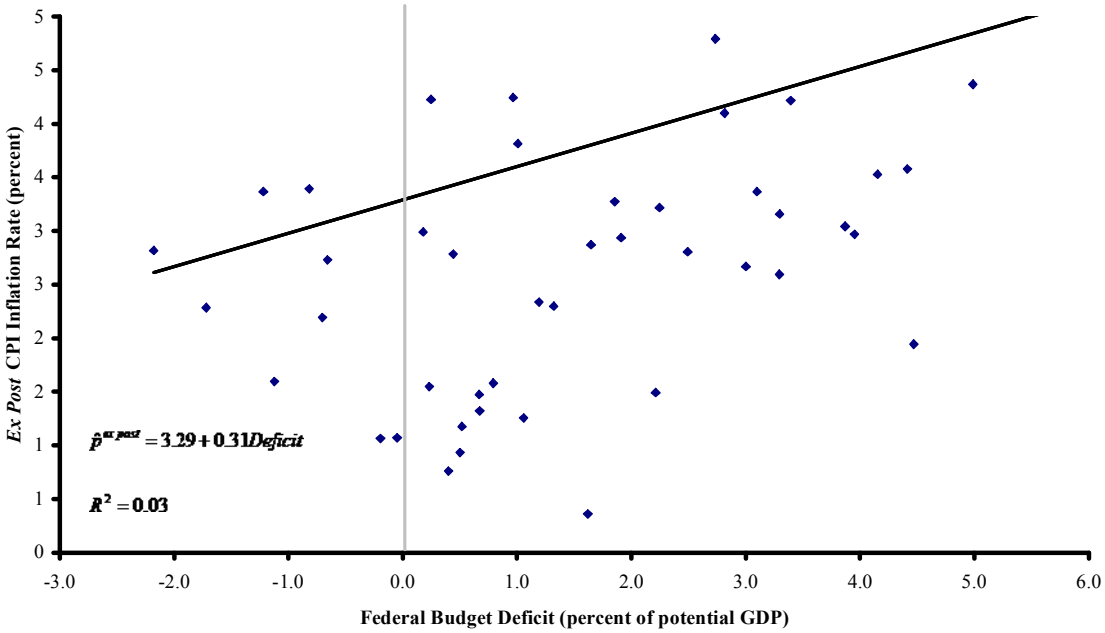


Figure 17.14.3.
Deficits and Inflation Rates



Problem 17.16: Key points:

i. the policy would raise taxes now; but, since funds are would be set aside to pay for future claims, there would be no need to tax people later to pay for Social Security pensions. Under Ricardian equivalence, people will see that the future higher incomes offset the current increase in taxes, so that their lifetime wealth is unaffected. Thus, their behavior is unaffected. If Ricardian equivalence does not hold (because of a failure of foresight or some other reason), then the tax increase would act as a negative stimulus to the economy and reduce aggregate demand through a multiplier process.

ii. selling government bonds and using the funds to build up the Trust Fund again ensures that the funds are available. But now the taxes have to be levied in the future to pay off the bonds and not today. Under Ricardian equivalence, this would make no difference as the benefit of not be taxed today is offset by the future taxes and, again, life-cycle wealth is unaffected, so people's economic decisions are unaffected. If Ricardian equivalence does not hold, this policy would, unlike that in (i) avoid the negative muliplier.

iii. if nothing is done, the Trust Fund will be short of funds when they are needed. It will be necessary at that point either to raise taxes or sell bonds (and therefore obligate the government to taxes even further in the future). Under Ricardian equivalence, this is a foreseeable event and, therefore, people today will see that the benefit of no taxes today is offset by the taxes that must be paid sometime in the future. Again, their life-cycle wealth is unaffected and the policy is identical to (i) and (ii). If Ricardian equivalence fails, then the policy is essentially the same as (ii) because current income is unaffected.