

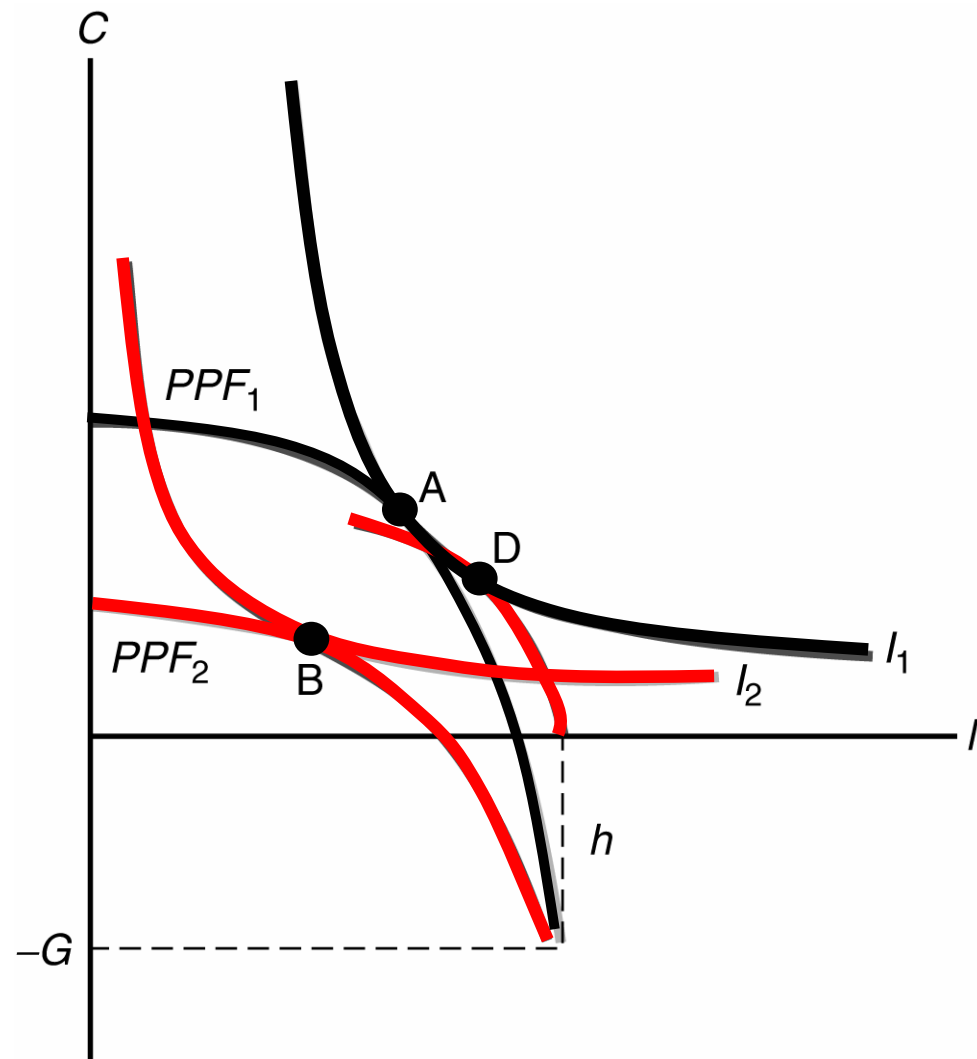
Chapter 5 – Problem 2

In a one period model, taxes must be exactly equal to government spending. A reduction in taxes is therefore equivalent to a reduction in government spending. The result is exactly opposite of the case of an increase in government spending that is presented in the text. A reduction in government spending induces a pure income effect that induces the consumer to consume more and work less. At lower employment, the equilibrium real wage is higher because the marginal product of labor rises when employment falls. Output falls, consumption rises, employment falls and the real wage rises.

Chapter 5 – Problem 3

The only impact effect of this disturbance is to lower the capital stock. Therefore, the production possibility frontier shifts down and the marginal product of labor falls (*PPF* is flatter).

(a) The reduction in the capital stock is depicted in the figure below. The economy starts at point A on PPF_1 . The reduction in the capital stock shifts the production possibilities frontier to PPF_2 . Because PPF_2 is flatter, there is a substitution effect that moves the consumer to point D. The consumer consumes less of the consumption good and consumes more leisure. Less leisure also means that the consumer works more. Because the production possibilities frontier shifts down, there is also an income effect. The income effect implies less consumption and less leisure (more work). On net, consumption must fall, but leisure could decrease, remain the same, or increase, depending on the relative strengths of the income and substitution effect. The real wage must also fall. To see this, we must remember that, in equilibrium, the real wage must equal the marginal rate of substitution. The substitution effect implies a lower marginal rate of substitution. The income effect is a parallel shift in the production possibilities frontier. As the income effect increases the amount of employment, marginal product of labor must fall from point D to point B. This reinforces the reduction in the marginal rate of substitution from point A to point D.



(b) Changes in the capital stock are not likely candidates for the source of the typical business cycle. While it is easy to construct examples of precipitous declines in capital, it is more difficult to imagine sudden increases in the capital stock. The capital stock usually trends upward, and this upward trend is important for economic growth. However, the amount of new capital generated by a higher level of investment over the course of a few quarters, of a few years, is very small in comparison to the existing stock of capital. On the other hand, a natural disaster that decreases the stock of capital implies lower output and consumption, and also implies lower real wages, which are all features of the typical business cycle contraction.