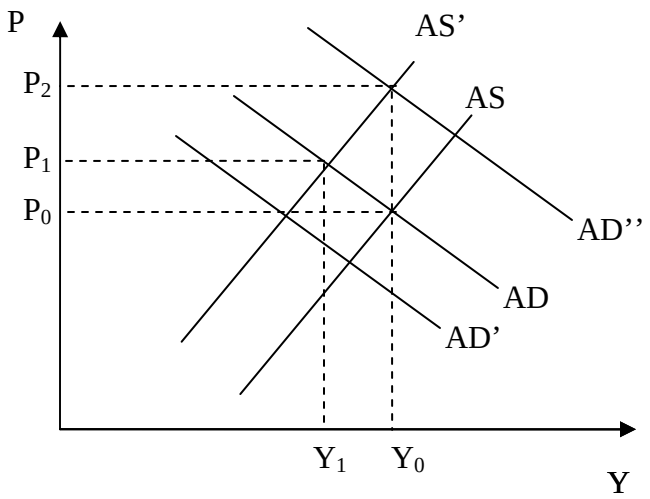
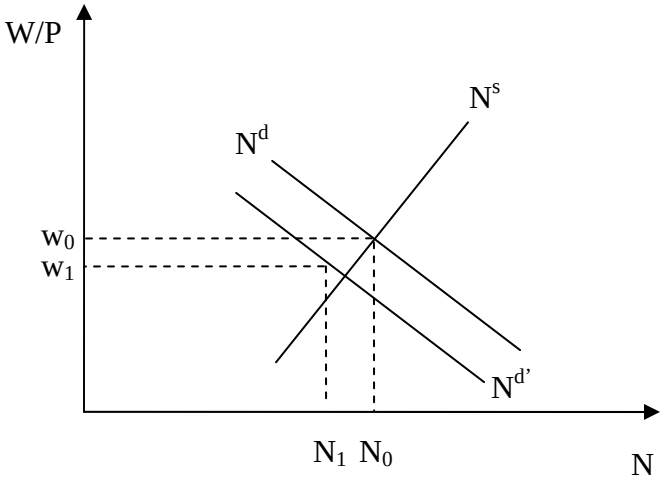
Question 1

Question 7 on page 483 of Williamson

If total factor productivity drops, the aggregate supply curve will shift left to AS’, because they are less productive, firms are charging a higher price for a given amount of output (or they are producing less output for a given price). This causes prices to rise and output to fall.



Under the Keynesian sticky wage model, the drop in productivity causes the labor demand curve to shift down to $N^{d’}$ will the real wage drops to w_1. There is some Keynesian unemployment as a result of the drop in productivity.



The monetary policy response, in pursuit of price stability, will be to contract the money supply. This reduces investment activity and the aggregate demand curve shifts down to AD’. Prices will return to their original level, so the real wage goes up and Keynesian unemployment becomes even worse, thereby contradicting the goal of fiscal policy.

The fiscal policy response, in pursuit of reduced unemployment, will be to increase spending / cut taxes. This shifts the AD curve to AD’. Output returns to its original level and the price level increases drastically to P_2. This hinders the goal of monetary policy. However, the real wage will fall and Keynesian unemployment will decline.

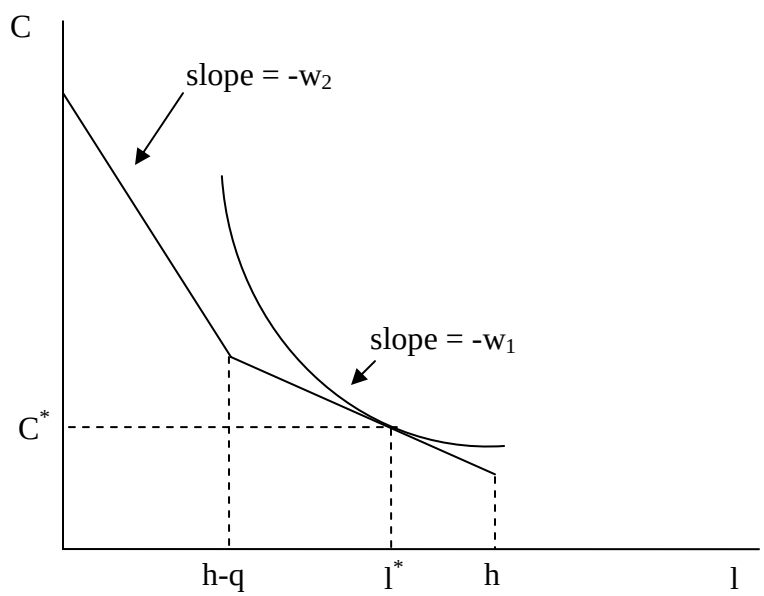
Question 2

Question 5 on page 137 of Williamson

a) Now, the budget constraint is:

$$C = w_i * h - w_i * l$$

where $w_i = w_1$ if $l > h - q$ and $w_i = w_2$ if $l < h - q$. Graphically:



The optimal consumption-leisure choices are C^* and l^* where the level curve is tangent to the budget constraint.

b) Well, at q hours the budget constraint is kinked. There is no slope at that point, so the level curve can't be tangent to the budget constraint at that point. Intuitively, an individual with flat level curves will take full advantage of the overtime pay rate and work a lot while an individual with a steep level curve will take advantage of non-overtime rates to "buy" leisure cheaply.

c) If the overtime rate increases, the income effect will cause a worker to take more leisure while the substitution effect will cause a worker to consume more and work more (take less leisure) since leisure is implicitly more expensive.

   For small increases in w_2 this change in wages will only impact those already working overtime. However, as seen from the graph above, if the increase in w_2 were large enough, and the level curve of those not working overtime were flat enough, some of the non-overtime workers would switch to overtime work.

<u>Question 3</u>

a) Asssume the utility function is $U=C^{.5} * l^{.5}$. Enter this formula into the spreadsheet (cell B3). What is the initial numerical value of utility? 1

b) Use the budget constraint from class discussions to enter a formula which gives you the initial numerical value of savings in cell B9. What is this value? 54

Now, you will use solver to find the numerical value of consumption and leisure which maximizes utility. Go to Tools | Solver in Excel. Your target cell should contain the numerical value of utility. You want to maximize this by changing the cells containing the numerical values of consumption and leisure.

Your constraints should set the cell with the numerical value of saving equal to zero (to set up constraints, click "Add").

c) Solve for the utility-maximizing level of consumption and leisure when the wage is 5. What are these values? $C^* = 30$, $l^* = 6$
d) Set the numerical values of C and l back to their initial values of 1. Also, increase the wage to 8. What happens to the utility-maximizing level of consumption and leisure? $C^{**} = 45$, $l^{**} = 5.6$

   Is labor supply upward or downward sloping in this problem? Upward.