

Solow model dynamics in 4 steps:

Step 1.

Find out what the shock is. If it is a shock to parameters $(s, n, x, \delta, \alpha)$, then k does not jump. If an aggregate variable (K, L, A) jumps then k also jumps.

Step 2.

$$\dot{k} = sf(k) - (\delta + n + x)k \quad y = f(k)$$

Draw the diagram $(sf(k), (\delta + n + x)k)$, find the old and the new steady state, deduct how k evolves between them.

Step 3.

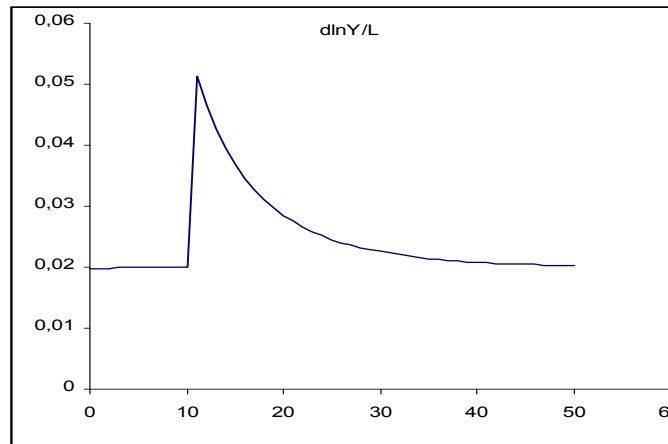
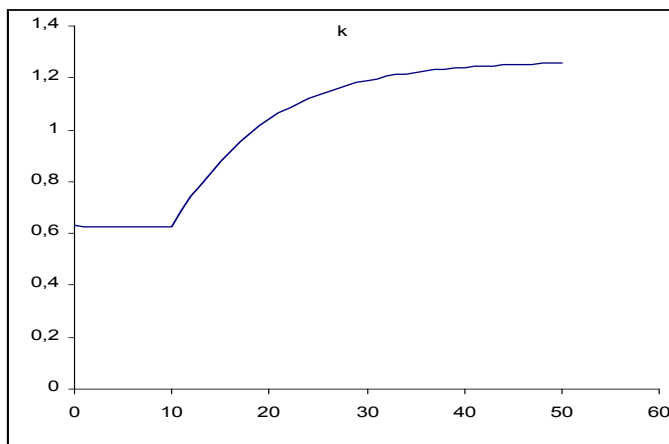
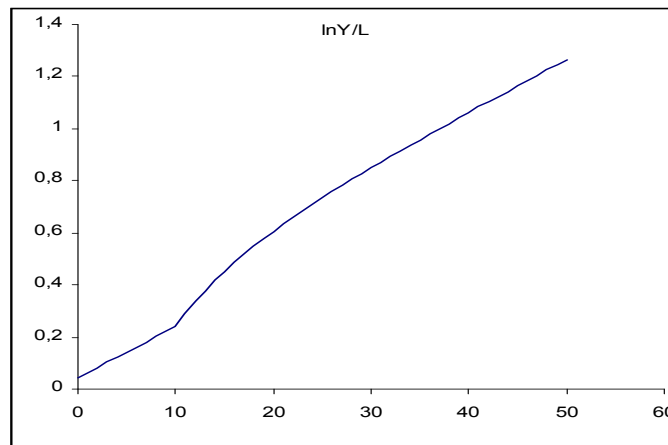
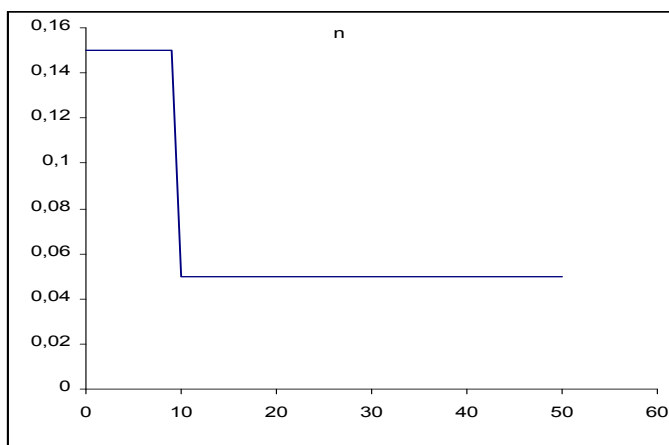
$$yA = Y/L \quad \Rightarrow \quad \ln Y/L = \ln A + \ln y$$

The path of k , y and $\ln y$ look the same. Draw a graph for $\ln A$.

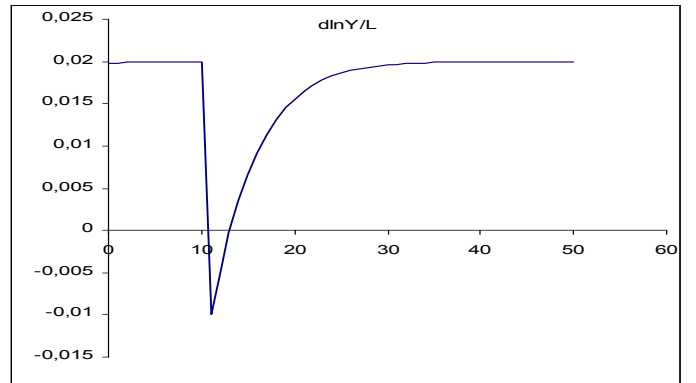
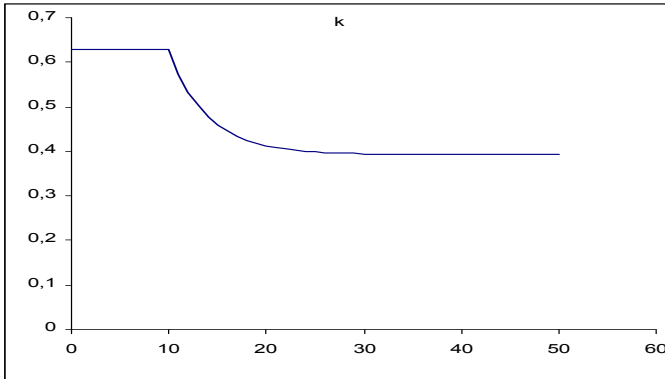
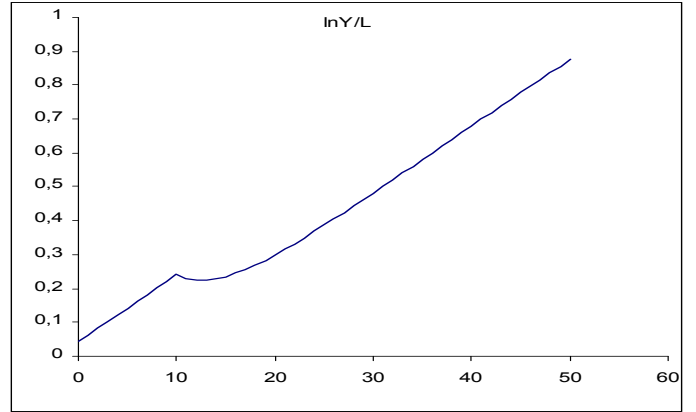
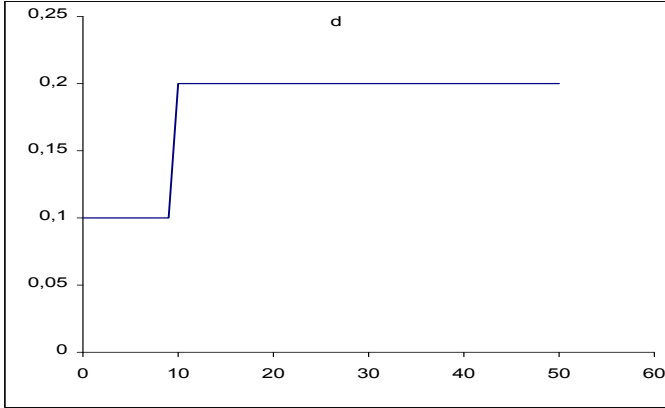
Step 4.

Add graphs for $\ln y$ and for $\ln A$ to get the graph for GDP per capita. The growth rate is the slope of this graph. The short run is right after the shock. The long run is at time going to infinity.

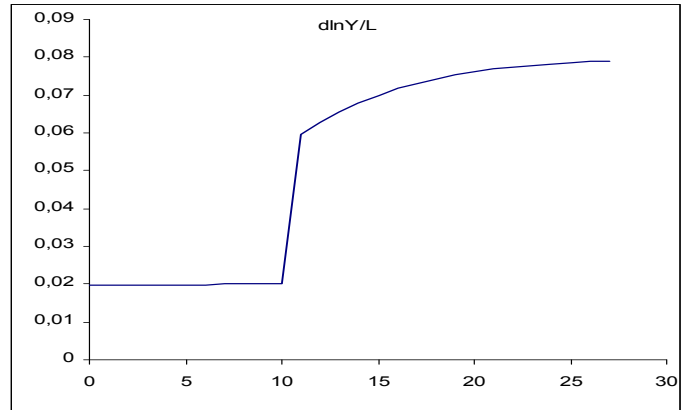
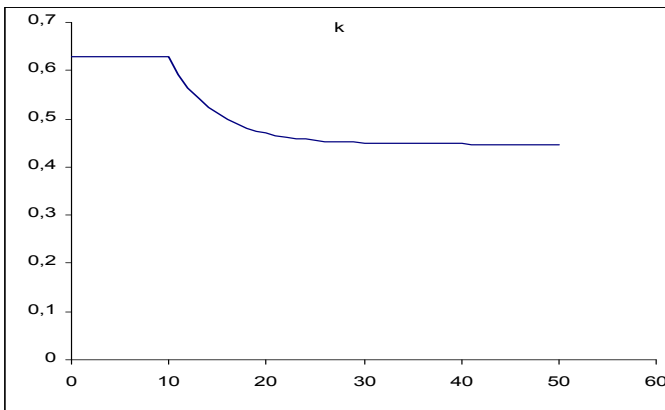
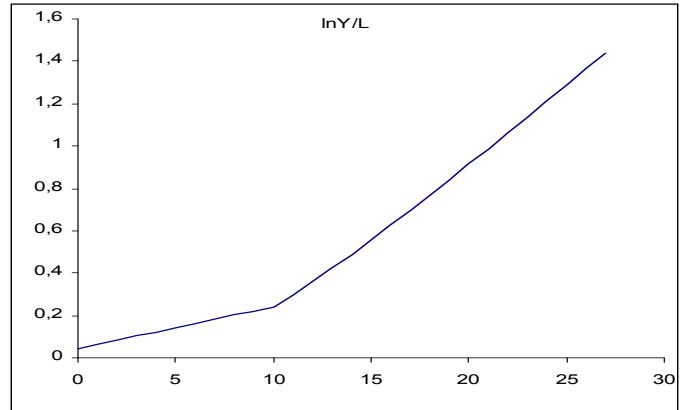
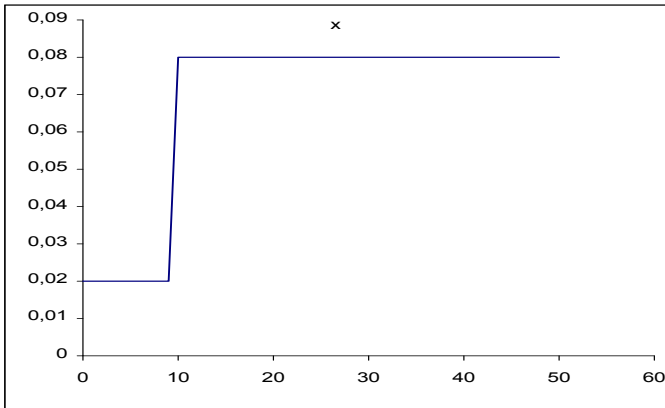
Example 1: n down, d down or s up.



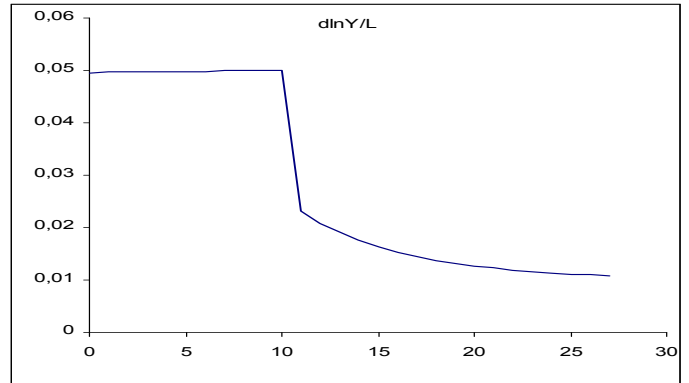
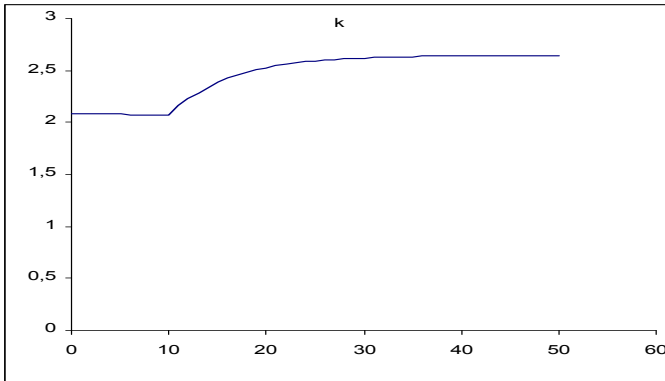
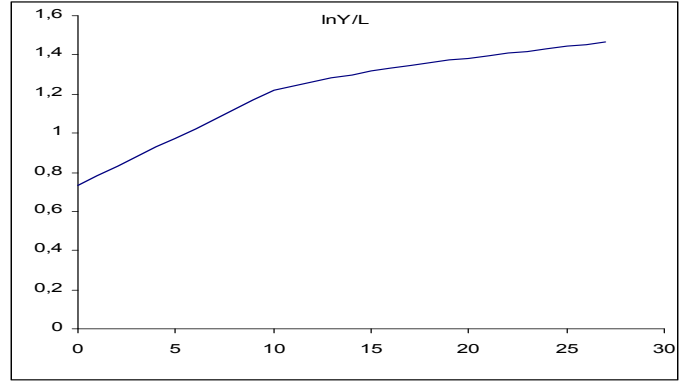
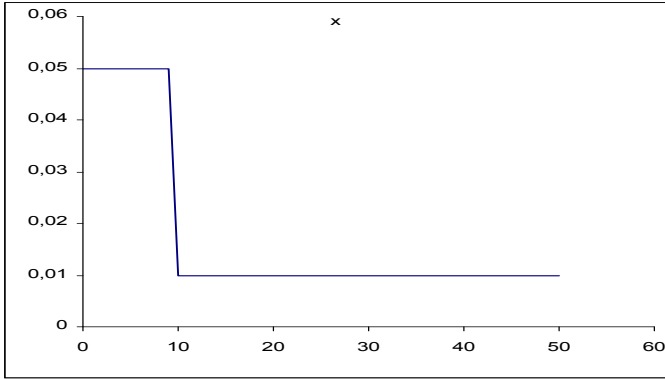
Example 2: n up, d up or s down.



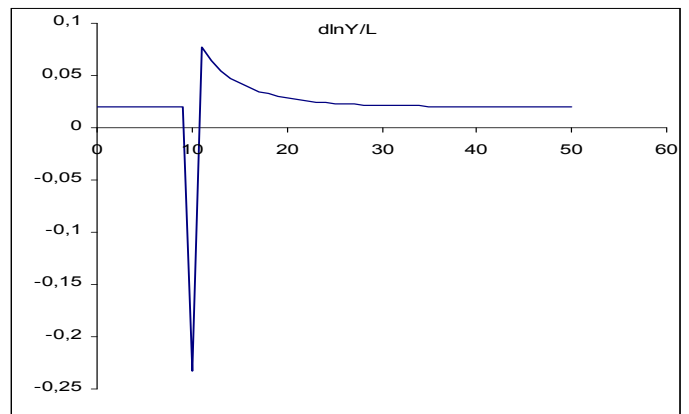
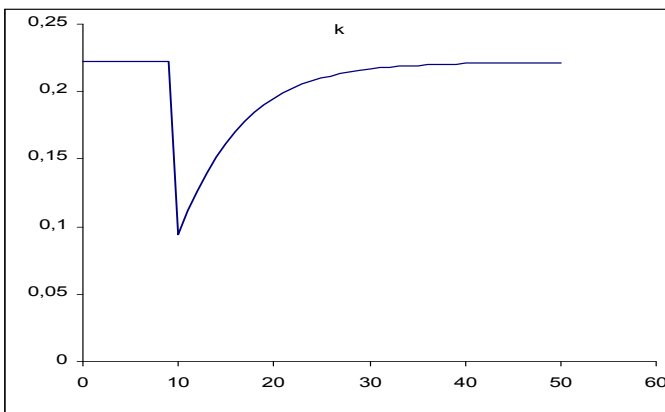
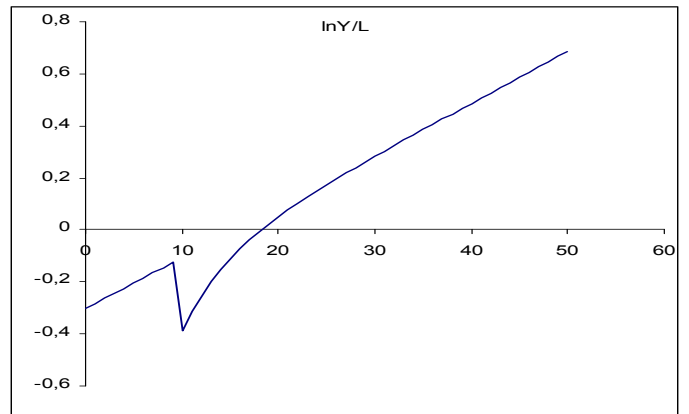
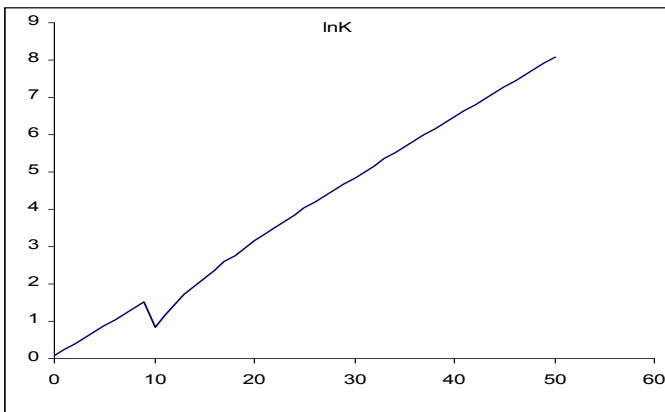
Example 3: x up.



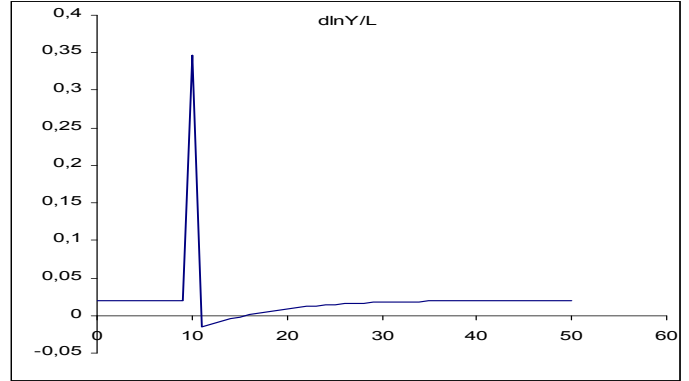
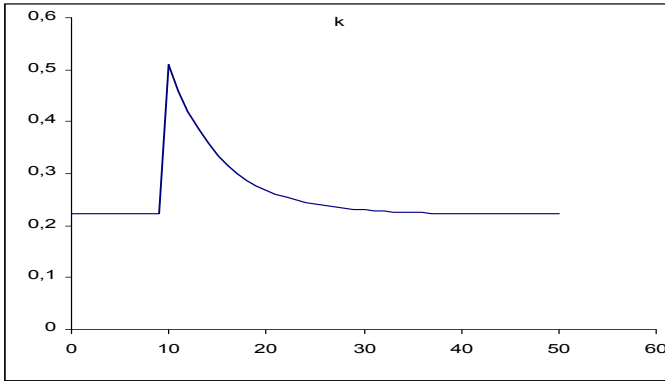
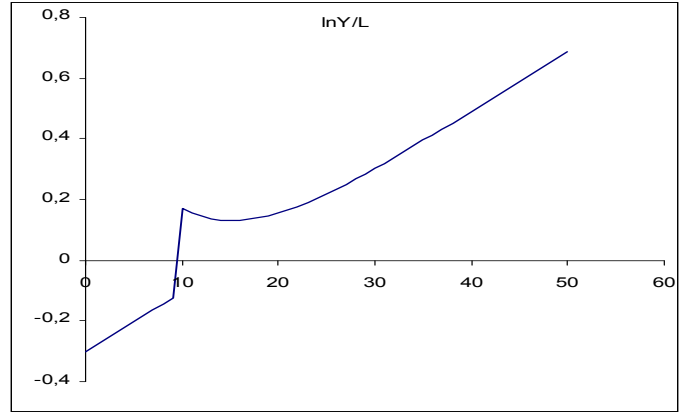
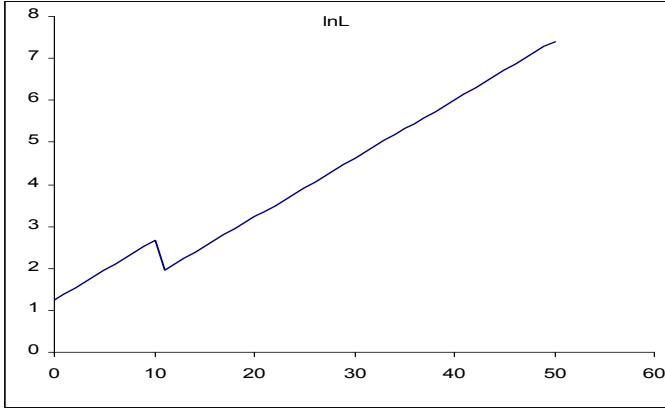
Example 4: x down.



Example 5: K lost



Example 6: L lost



Example 7: A increase

