

ANSWER KEY TO QUIZ 2: ECON 102, SECTION 1

Prepared by SERGIY STETSENKO (sestet@sas.upenn.edu)

Q1. (2 points for each fact)

1) Output (real GDP) per worker $y = Y/K$ and capital per worker $k = K/L$ grow over time at relatively constant and positive rate.

2) They grow at similar rates, so that the ratio between capital and output K/Y is relatively constant over time.

3) The real return to capital r (and the real interest rate $r - \delta$) is relatively constant over time.

4) The capital and labor shares are roughly constant over time.

Q2.

We compare the outputs using Purchasing Power Parity (PPP) adjusted exchange rate.

Q3. (1 point for correct answer, 1 point for explanation).

False. Interest rate is the price people pay to have resources now rather than later. Price of money is the inverse of the price level.

Q4. (1 point for correct answer, 1 point for explanation).

False. The unemployment rate is countercyclical.

Q5.

Both skilled and unskilled workers move from poor to rich countries.

Q6.

Output per capita can grow quite a bit while population grows fast.

Q7.

“Productivity slowdown” usually refers to a significant slowdown of productivity growth in the 1970s after a period of high productivity growth in the 1950s and the 1960s. It is usually related to a decrease in TFP. It’s more difficult to measure output in the service sector than in the manufacturing sector. One of the possible reasons for productivity slowdown is a shift from manufacturing to services combined with an underestimating of the output growth in the service sector.

Q8.

True. Growth accounting equation: $g_Y(t) = g_A(t) + \alpha g_K(t) + (1-\alpha)g_L(t)$

Using the available data we can calculate all terms except $g_A(t)$. Growth accounting equation imputes its value residually.

Q9

The evidence is the existence of large and small firms. If there were increasing returns to scales small firms would merge. If there were decreasing returns to scales large firms would split.

Q10. (Full credit for any relevant property).

Labor share = $wL / Y = ((1-\alpha)AK^\alpha L^{1-\alpha})L / AK^\alpha L^{1-\alpha} = 1-\alpha$ is constant that is displayed by the data.

Q11.

Using growth accounting equation (note that $g_A(t) = 0$) we have:

$$g_Y(t) = 0 + (1/3)*4\% + (2/3)*1\% = 2\%$$