Section Exercise for April 4/5: Economic Growth II with Answers

Consider our very long-run global economic real GDP growth and prosperity table from lecture:

In the Shadow of Malthus

Year	Population (Millions)	GDP per Capita ($2015)	Total World GDP ($2015 Billions)
-8000	5	$750	$4
-1000	50	$750	$38
0	170	$750	$128
1500	500	$750	$375
1800	750	$1000	$750
1900	1500	$2000	$3000
2000	6200	$7700	$47740
2015	7400	$10000	$74000

with our growth rates of total GDP of:

0.032%/year over -8000 to -1000
0.121%/year over -1000 to 0
0.072%/year over 0 to 1500
0.231%/year over 1500 to 1800
1.386%/year over 1800 to 1900
2.767%/year over 1900 to 2000
2.921%/year over 2000 to 2015

1) How long, roughly and on average, did it take world real GDP to double in the period from -1000 to zero?

70/0.121 = 578 years

2) How long, roughly and on average, is it taking world real GDP to double these days so far in the 21st century?

70/4.454 = 23.96 years

3) How much faster, by this metric, is global economic growth these days than it was back in the days of the noble Greeks and Romans, of Daurayavush the Great, Chandragupta Maurya, and Qin Shi Huang?

578/23.96 = 26 times faster—we see in a year the amount of proportional economic growth that previous human civilizations saw in a generation,.

4) If growth in real global GDP continues at its current 21st century pace, what will real global GDP be in 2100? In 2200?

$886 trillion and $16,476 trillion

5) If world population peaks at 10 billion in 2050 and remains static thereafter, while global real GDP growth continues at its 21st century pace, what will average GDP per capita in the world be in 2100? In 2200?

$89,000/year *per capita* and $1,648,000 year *per capita*, respectively.

6) Are these possible? What would life be like on earth if incomes were as high on average in 2200 as you calculated in (5)

Here again, we are interested in their thoughts…