

Economic Growth

Problems Sets

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Problem Set 3

Basic analysis of GDP data

GDP data as provided by the Penn World Table can easily be presented graphically. Beyond that one can derive secondary data like yearly growth rates, average growth rates, and the like to characterize the growth performance of countries.

The exercises below look very technical. But the purpose rather is deepen the understanding of average growth rate concepts. Make sure that you understand what average growth rate means even if you have problems with the calculations.

Exercise 1 Consider the Penn World Table time series data of Bangladesh.

- (1) Extract the time series of expenditure-side real GDP and of population size, and compute the corresponding per capita GDP data.
- (2) Display the per capita data graphically in decimal and in logarithmic scale. Add a linear regression line to both pictures. (Use the tools of your program and save on extra effort for explicit own calculations would require.)
- (3) Compute the average growth rate of GDP per capita between 1959 and 2019 according to the continuous time model.
- (4) Add the fictional performance with constant growth rates fitting the original data at the beginning and the end of the time period in decimal and in logarithmic scale.
- (5) Explain the difference between the regression lines and the curves with constant growth rates?
- (6) Inspection of the data suggests to look at the subperiods 1973 - 2005 and 2005 - 2019. Fit the constant average growth rate curves in decimal and in logarithmic scales for these sub-periods.