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IES
Macroeconomics

Homework assignment 3

Instructions

- *For this homework you have each been assigned two countries, see file 'Country assignments.xlsx'. Each pair of countries has been assigned to two students. You can work individually or you can work in pairs and submit one common solution.*
- *The solution should be submitted as a PDF document that includes your answers including graphs/tables. For exercise 1 you can just use scan/picture of your solution.*
- *The homework should be submitted by email to* `kovarkamil@gmail.com` *with HW3_surname1_surname2 as subject. The names should be also included in the PDF document.*
- *The homework should be submitted by* ***Saturday 21st of December, 23:59****.*
- *This assignment contributes 2.5% to your overall grade.*

Exercise 1: Growth accounting with human capital

[20 points] Consider an economy where output Y_t is produced using physical capital K_t, human capital H_t, and labor L_t. The production function is:

$$Y_t = A_t K_t^{\alpha} H_t^{\beta} L_t^{1-\alpha-\beta}$$

Derive the growth accounting formula for this production function.

Exercise 2: Empirical application of accounting

[80 points] Download the latest Penn World Tables (PWT) and extract the data for the two countries you have been assigned.

1. For each country perform the growth accounting covering periods (a) 2000 to 2019, (b) 2000 to 2009, (c) 2010 to 2019. Use production function from exercise 1 and for simplicity assume that $\alpha = 0.3$ and $\beta = 0.25$.
2. Create graphs and comment on the results for each period individually and also on comparison between (b) and (c).
3. Compare the results for (a) between your two countries and comment on the differences.

Few hints: The PTW can be found simply by googling, but you cal also use the address `https://www.rug.nl/ggdc/productivity/pwt`. In the PWT you will want to use variables *rgdpna*, *hc*, *rnna*, *emp* and *avh*.