Macroeconomics of Development

Data Assignment (15 points)

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Testing for cross-country convergence

- Let us use World Development Indicators (WDI) data from the World Bank to see if we can corroborate the central conclusion of Patel, Sandefur and Subramanian (2018). While these authors run a set of regressions for each starting year since 1960 with different ending years, we will do a simpler exercise. The Google spreadsheet Patel-Sandefur-Subramanian-WDI contains cross-country data on GDP per capita (in PPP terms) for 13 time points from 1960 to 2018 in five year intervals (except for the last interval 2015-2018). The 3-letter country code identifies a country. As in the paper, countries with a population of less than 1 million have been dropped.

    1. Calculate the growth rate of per capita GDP for every ten year period starting 1960 (so 1960 to 1970, 1965 to 1975 etc). The formula (from the paper) is $1/s * ln(y_{t+s}/y_t)$. Where s is the interval over which we are measuring the growth rate (here s=10).

    2. Perform a bivariate OLS regression with growth rate as the y variable and initial log GDP per capita as the x variable. You will have 11 regressions.

    3. Record the sign and magnitude of the coefficient for each of the regressions.

    4. Plot the betas in a separate line graph against the initial year.

- Now let us select a few periods to plot and inspect visually. For this we will do some regressions over a longer period of time.

    1. Calculate the growth rate of per capita GDP for the following 20 year periods: 1960 to 1980, 1980 to 2000 and 2000 to 2018. The formula is the same as above.

    2. Perform the regression as above and generate the regression line by multiplying the coefficient with the X values and adding the intercept term.

    3. Make scatter plot for each period, with initial log GDP per capita on the X-axis and the growth rate on the Y-axis.

    4. Plot the regression line and the scatter plot on the same graph.

- Finally let us test of the robustness of our results. Let us repeat the above exercise (20 year periods) by excluding China from the analysis. Do you still get similar results? What about if you exclude India?