Day 1: Introduction and Core Concepts

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This problem set focuses on different ways to decompose income at the macroeconomic level. Our data source will be the World Income Database (`WID.world`), a vast repository of distributional income data. This repository was originally commissioned during the pioneering work of a team of french economists lead by Thomas Piketty. Nowadays, a large team of researchers from multiple countries maintain and expand the repository.

This exercise requires the installation of the `wid` command in `STATA`.[4]

What is Income

Exercise 1

Net national income can be decomposed by the following equation:

$$\begin{aligned} \text{Net National Income} = & \text{ Gross Domestic Product} \\ & + \text{Consumption of Fixed Capital} \\ & + \text{Foreign Income} \end{aligned} \tag{1}$$

1. Use the `wid` command and extract the macroeconomic aggregates listed in equation 1 for Ethiopia, Tajikistan, Switzerland and Qatar. Add the Exchange Rate to this list.
2. Restrict the series to years 2000 to 2020. Transform the macroeconomic aggregates to billions of 2015 US$.
3. For each country, plot the evolution of those macroeconomic aggregates in time.

Exercise 2

Net national income can be decomposed by the following equation:

$$\begin{aligned} \text{Net National Income} = & \text{ Compensation of Employees} \\ & + \text{Net Capital Income} \\ & + \text{Net Mixed Income of Households} \\ & + \text{Taxes on Products and Production} \end{aligned} \tag{2}$$

1. Use the `wid` command and extract the macroeconomic aggregates listed in equation 2 for Guinea, Iceland, Nepal and Colombia. Add the Exchange Rate to this list.
2. Restrict the series to years 2005 to 2015. Transform the macroeconomic aggregates to billions of 2015 US$.
3. For each country, plot the evolution of those macroeconomic aggregates in time.

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[4]Type `ssc install wid` in `STATA`.

What is Capital

Exercise 1

National Wealth can be decomposed by the following equation:

$$\begin{aligned} \text{Net National Income} = \quad & \text{Net Market-Value National Wealth} \\ & + \text{National Non-Financial Assets} \\ & + \text{Net Foreign Assets} \end{aligned} \tag{3}$$

1. Use the `wid` command and extract the macroeconomic aggregates listed in equation 3 for Norway, Japan, Russia and the US. Add the Exchange Rate to this list.
2. Restrict the series to years 2000 to 2020. Transform the macroeconomic aggregates to thousands of billions of 2015 US$.
3. For each country, plot the evolution of those macroeconomic aggregates in time.

Exercise 2

National Non-Financial Assets can be decomposed by the following equation:

$$\begin{aligned} \text{National Assets} = \quad & \text{Housing Assets} \\ & + \text{Business Assets} \\ & + \text{Other Assets} \end{aligned} \tag{4}$$

1. Use the `wid` command and extract the macroeconomic aggregates listed in equation 4 for Asutralia, Canada, Spain and Japan. Add the Exchange Rate to this list.
2. Restrict the series to years 2000 to 2020. Transform the macroeconomic aggregates to thousands of billions of 2015 US$.
3. For each country, plot the evolution of those macroeconomic aggregates in time.

Inequality between Labor and Capital

Exercise 1

According to the WID methodology, capital shares and labor shares can be represented by the following identities:

$$\text{Labor Share} = \frac{\text{Compensation of Employees} + 70\% \text{ of Net Mixed Income}}{\text{Net National Income} \breve{} \text{Taxes on Products and Production}} \tag{5}$$

$$\text{Capital Share} = \frac{\text{Net Capital Income} + 30\% \text{ of Net Mixed Income}}{\text{Net National Income} \breve{} \text{Taxes on Products and Production}} \tag{6}$$

1. Use the `wid` command and extract capital and labor shares for China, France, Japan and the US. Add the Exchange Rate to this list.
2. Restrict the series to years 1960 to 2020. Transform the the series in to percentages.
3. For each country, plot the evolution capital and labor shares in time.

Inequality between Individuals

Exercise 1

This exercise will focus on comparing the total income received of the top 10% of income recipients versus the total income received by the bottom 50% of income recipients.

1. Use the `wid` command and extract total income by top 10% and total income received by the bottom 50% for China, France, Japan and the US. Add the Exchange Rate to this list.
2. Restrict the series to years 2000 to 2020. Transform the macroeconomic aggregates to thousands of 2015 US$.
3. For each country, plot the evolution of top 10% income level and the bottom 50% income level.

Exercise 2

This exercise will focus on comparing the total income received of the top 10% of income recipients versus the total income received by the bottom 50% of income recipients.

1. Use the `wid` command and extract the income share by the top 10% and income share of the top 1% for China, France, Japan and the US. Add the Exchange Rate to this list.
2. Restrict the series to years 2000 to 2020. Transform the series in to percentages.
3. For each country, plot the evolution of top 10% income share and the top 1% income share.

Exercise 3

This exercise will focus on the average income received by individuals in the Bottom 50%, Top 10% and Top 1% of the income distribution in Ethiopia.

1. Use the `wid` command and extract average income in the bottom 50%, top 10% and top 1% income brackets for Ethiopia. Add the exchange rate to this list.
2. Restrict the series to years from 2000 to 2017. Transform the series in to thousands of 2015 US$.
3. Plot the evolution of income levels in time.

Exercise 4

This exercise will focus on the share of total income received by individuals in the of Top 50%, Top 10% and Top 1% of the income distribution in Ethiopia.

1. Use the `wid` command and extract the income share by the top 50%, top 10% and top 1% income share for Ethiopia.
2. Restrict the series to years from 1987 to 2017. Transform the series in to percentages.
3. Plot the evolution of top income shares in time.