Lecture Notes on Income Distribution

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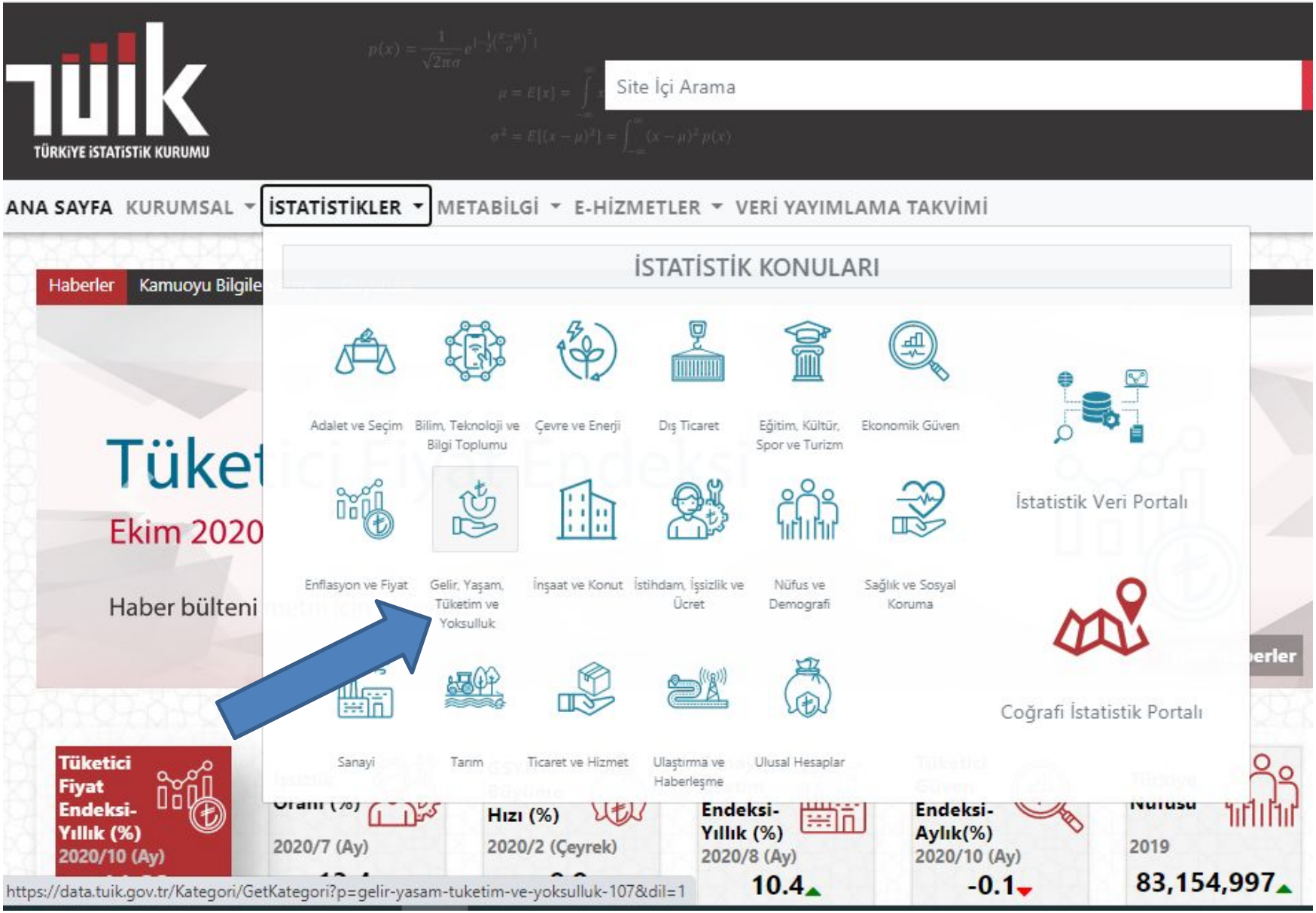
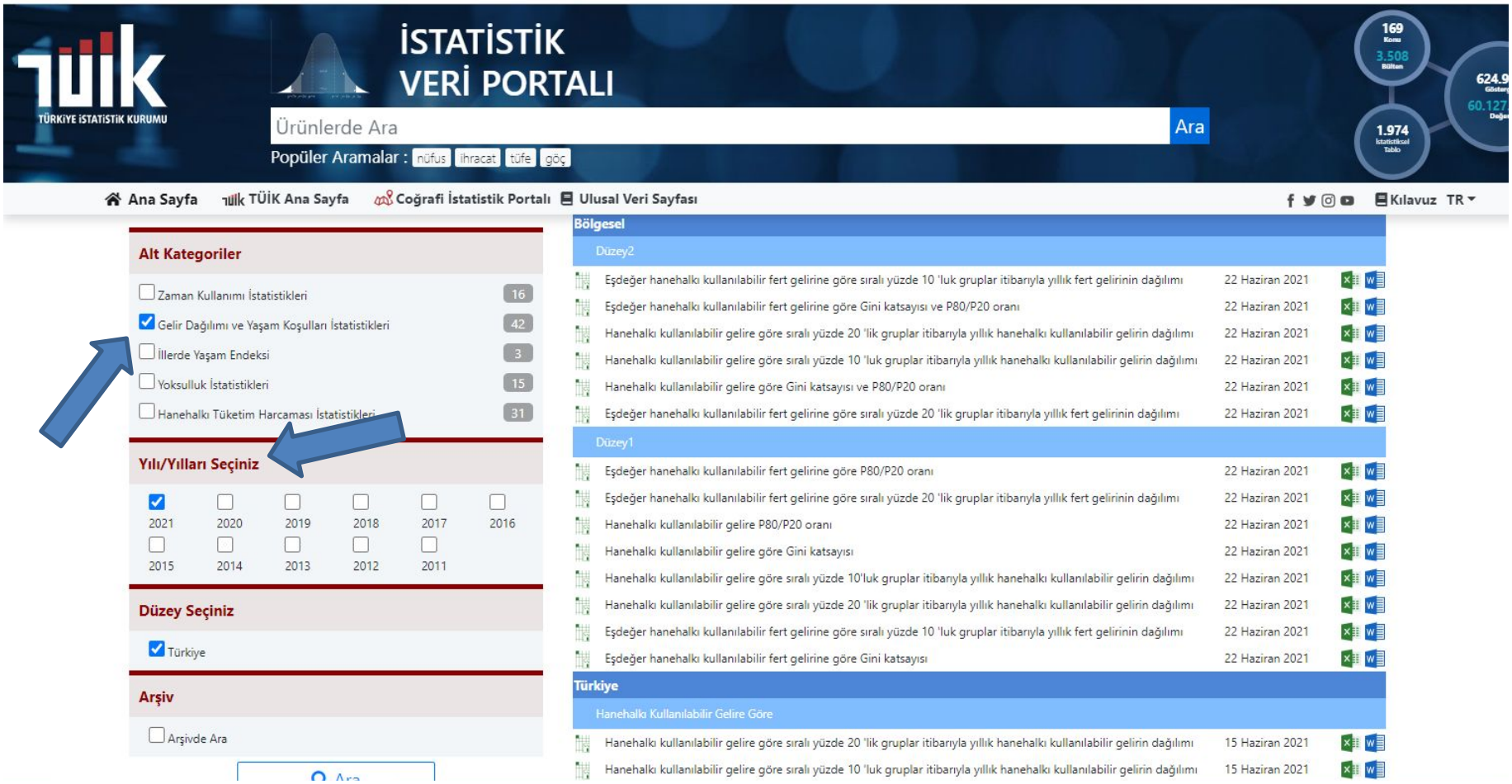
Why is distribution of income important?

- Because of its relation to poverty:
  - Holding the average level of income fixed, a more unequal income distribution means more poverty.
  - That leads to social unrest
- Reducing inequality is frequently an important goal of governments.



https://www.tuik.gov.tr



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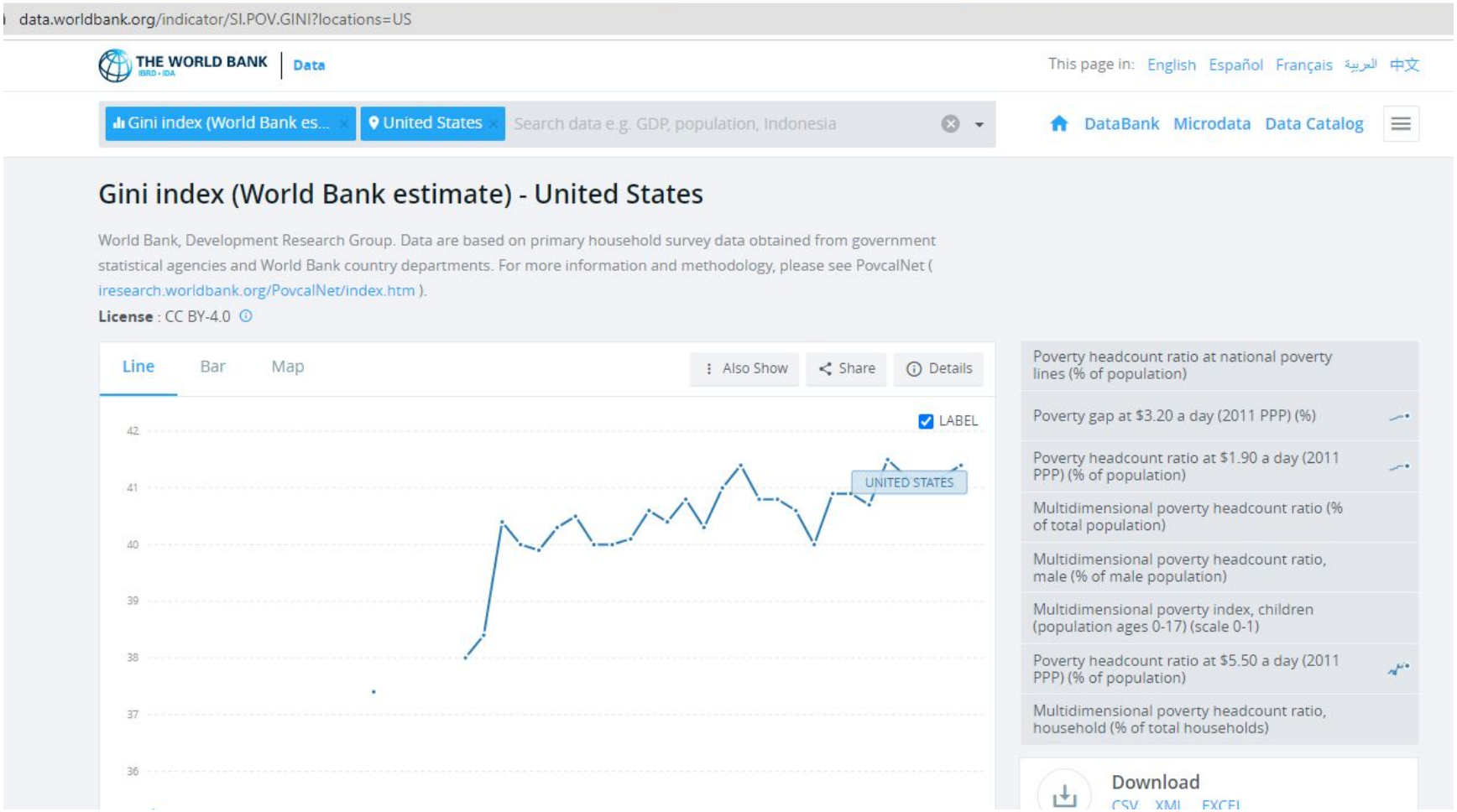
TURKSTAT 2015 Data on Income distribution in quintiles

	Income percentage (%)	cumulative income percentage (%)
First quintile (20%)	6.3	6.3
Second quintile (40%)	10.9	17.1
Third quintile (60%)	15.5	32.7
Fourth quintile (80%)	22.0	54.7
Last quintile (100%)	45.3	100.0

World Bank - GINI data and graphs

https://data.worldbank.org/indicator/SI.POV.GINI



How to measure the degree of income inequality?

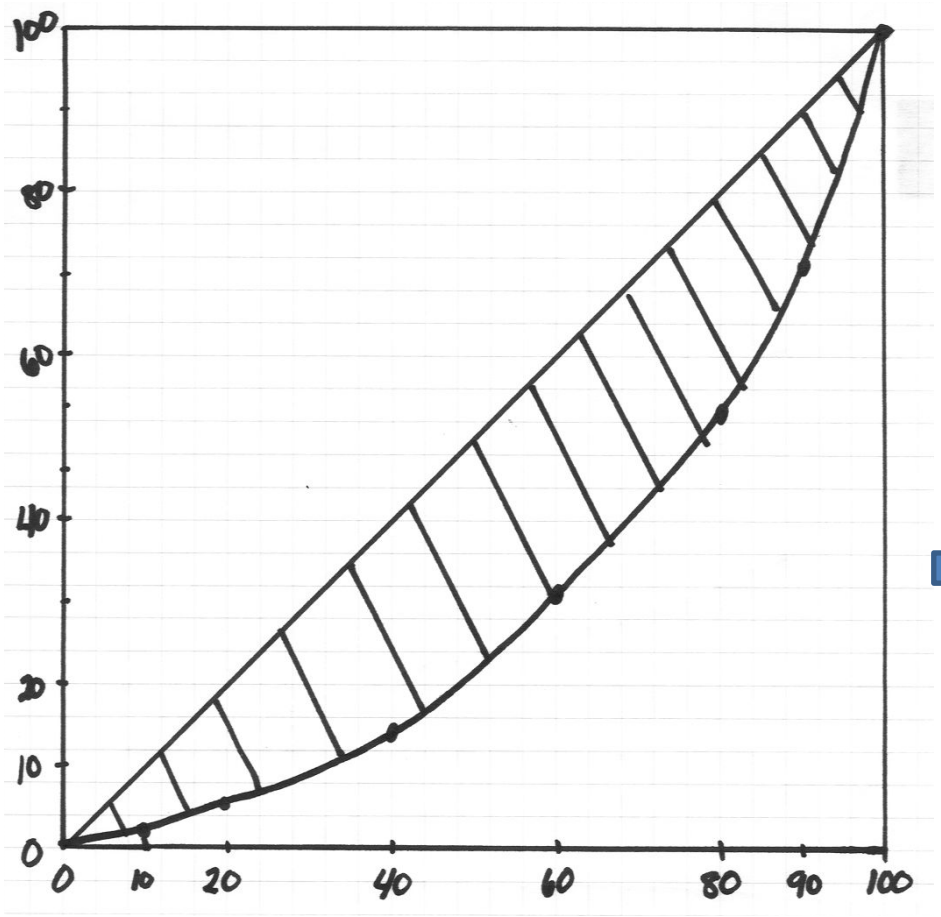
- Lorenz Curve and Gini coefficient are ways of measuring the degree of income inequality in a society.

- The Lorenz-curve was developed first by Max O. Lorenz in 1905.
- A Lorenz curve shows a country's income distribution on a graph.
- On the vertical axis of the Lorenz curve is shown the cumulative percentage of income or wealth.
- The curve depicts on its horizontal axis a defined broken down into percentiles, or deciles or quintiles or quartiles and ordered from (from left to right on the horizontal axis) the poorest to the richest (families or countries).

How to draw Lorenz Curve

- Collect the income data
- Rank the data from lowest income to highest income.
- Count the number of units (families or countries) divide the total by 5 (or 4 or 10).
- Group the units into five (or 4 or 10) equally-sized groups from poorest to richest. Each of these groups is called a quintile (or quartile of decile).
- Add up the total income earned by each quintile (or quartile of decile).
- **Express the income earned by each quintile (or quartile of decile) as a percentage of the total income** (earned by all families or all countries)
- Moving from the poorest quintile (or quartile of decile) to the richest, sum income earned by that quintile (or quartile of decile) and all of the earlier quintiles.
- Plot this information on a graph.

An example



Quintile	% of total	% of Income	Cumulative (% of Income)
1	20	4.8	4.8
2	40	10.5	15.3
3	60	16	31.3
4	80	23.5	54.8
5	100	45.2	100

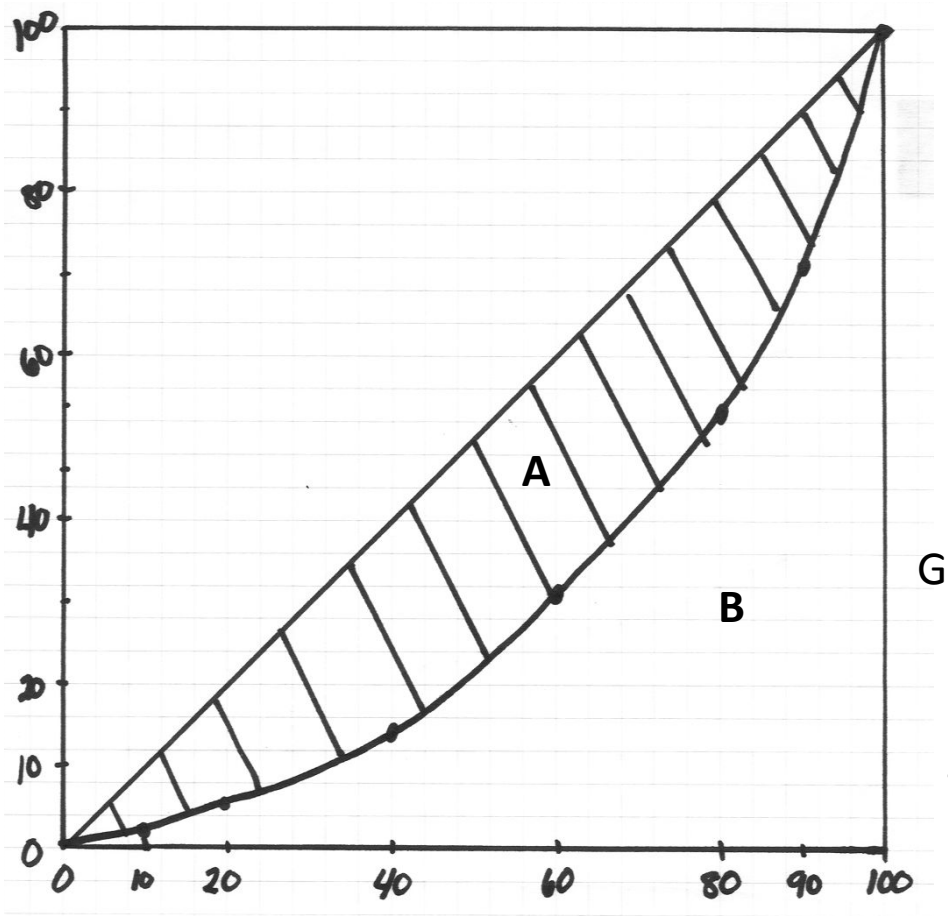
LORENZ CURVE

GINI coefficient

- Given a Lorenz-curve plot, we can measure the degree of inequality of the distribution of the thing in question by a one-dimensional number, the so-called GINI-coefficient.

- $0<GINI<1$

Same example to calculate GINI



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GINI-coefficient = Area A / (Area A + Area B)
=2×(Area A)

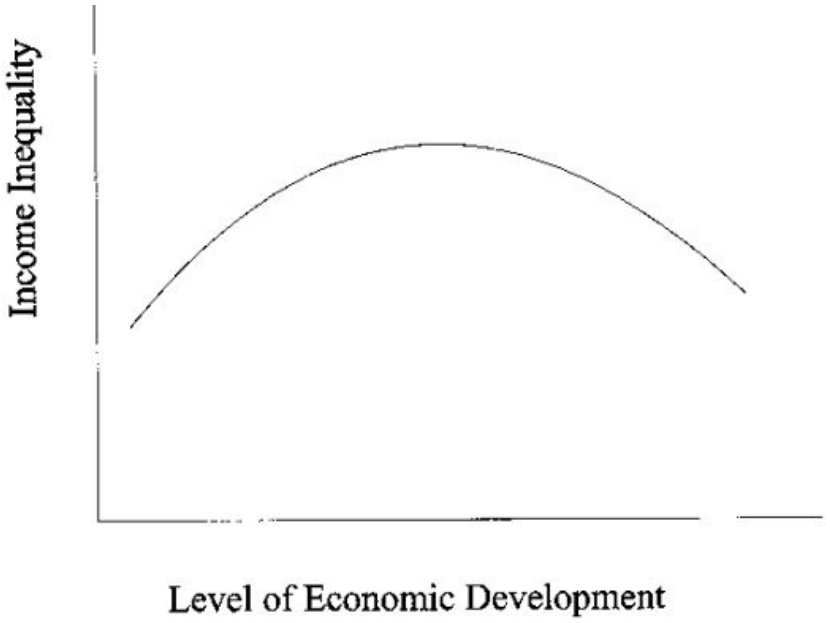
The higher the GINI-coefficient is, the more unequal is the distribution of the thing being distributed across the population in question.

Kuznets (1955)

- The central theme of this paper is the character and causes of long- term changes in the personal distribution of income.
- Does inequality in the distribution of income increase or decrease in the course of a country's economic growth?
- What factors determine the secular level and trends of income inequalities?

Kuznets Curve

- **Kuznets** hypothesized that as a country developed, inequality would first rise and then later fall.
- Kuznets' theory implies that if we graphed the level of inequality as a function of the level of development, the data would trace out an inverted-U shape, i.e., Kuznets Curve.



We can utilize Kuznets curve

- In a single country over time
- In a single point in time at a cross section of countries that have different levels of income.

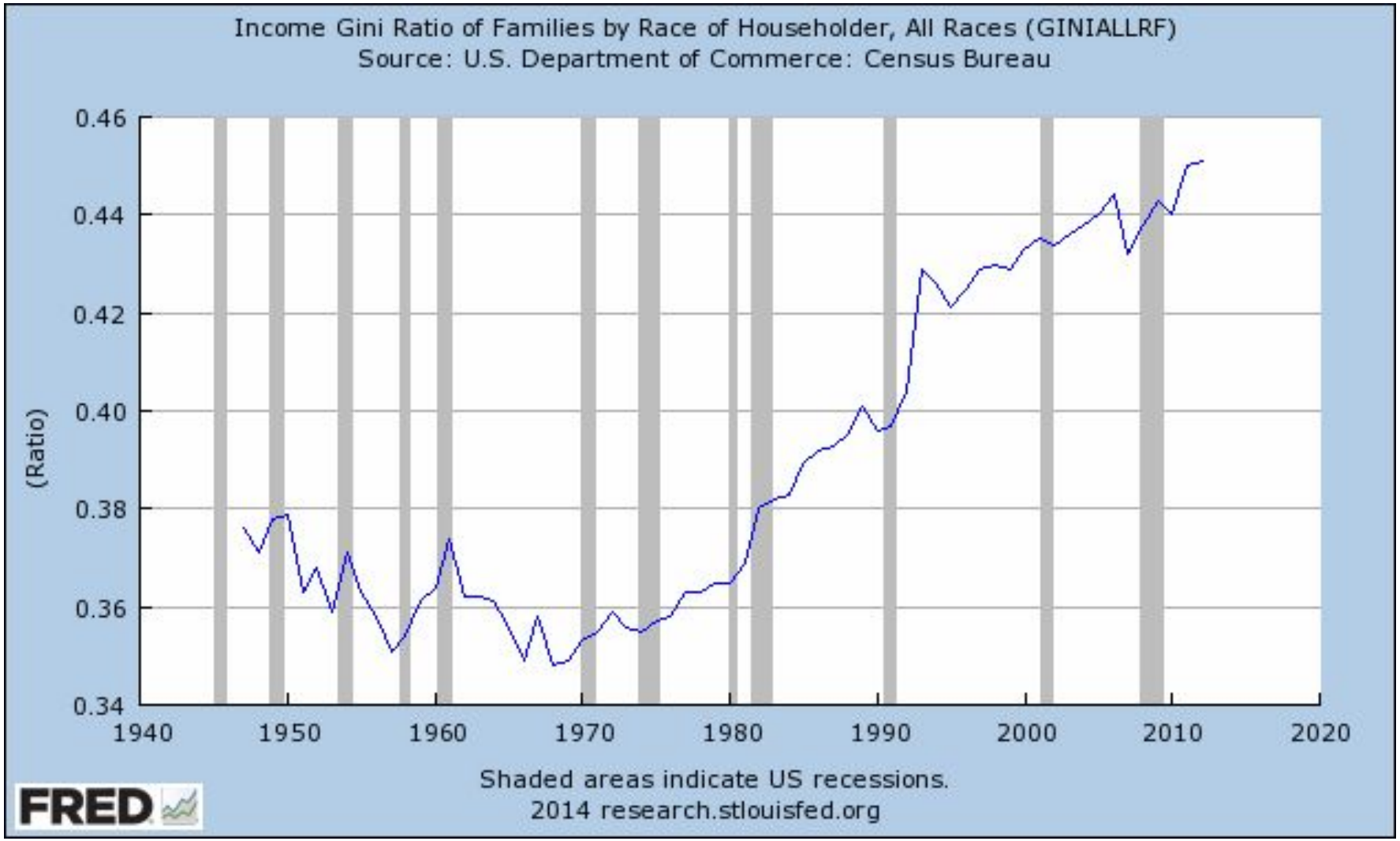
  – If there is a Kuznets curve – then it is theoretically possible that economic growth can actually be bad for the poorest people in a country.

Sources of Income Inequality

Why is there income inequality at all?

Because people differ in many ways which are relevant to their incomes:

- in human capital (education and health),
- in where they live (city vs. countryside),
- in their ownership of physical capital,
- in the particular skills they have,
- in their luck.



In the US, starting in the 1970s, income inequality has increased dramatically.

Several possible explanations for this phenomenon:

- Technological change:
  - Introduction of a new technology, information technology, increased the rate of return to certain characteristics of workers – most importantly education:
  - Computers complemented skills of educated workers, making them more productive while doing little to raise the productivity of uneducated workers.
- Government policies discriminating educated positively and uneducated negatively.

UN Sustainable Development Goals

https://www.un.org/sustainabledevelopment/sustainable-development-goals

The Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice.

What is Sustainable development?

- Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- Sustainable development calls for concerted efforts towards building an inclusive, sustainable and resilient future for people and planet.
- For sustainable development to be achieved, it is crucial to harmonize three core elements: economic growth, social inclusion and environmental protection. These elements are interconnected and all are crucial for the well-being of individuals and societies.
- Eradicating poverty in all its forms and dimensions is an indispensable requirement for sustainable development. To this end, there must be promotion of sustainable, inclusive and equitable economic growth, creating greater opportunities for all, reducing inequalities, raising basic standards of living, fostering equitable social development and inclusion, and promoting integrated and sustainable management of natural resources and ecosystems.

Source: https://www.un.org/sustainabledevelopment/development-agenda/

Goal 10: Reduce inequality within and among countries

https://www.un.org/sustainabledevelopment/inequality/

Reducing inequalities and ensuring no one is left behind are integral to achieving the Sustainable Development Goals.
Inequality within and among countries is a persistent cause for concern. Despite some positive signs toward reducing inequality in some dimensions, such as reducing relative income inequality in some countries and preferential trade status benefiting lower-income countries, inequality still persists.

COVID-19 has deepened existing inequalities, hitting the poorest and most vulnerable communities the hardest. It has put a spotlight on economic inequalities and fragile social safety nets that leave vulnerable communities to bear the brunt of the crisis. At the same time, social, political and economic inequalities have amplified the impacts of the pandemic.

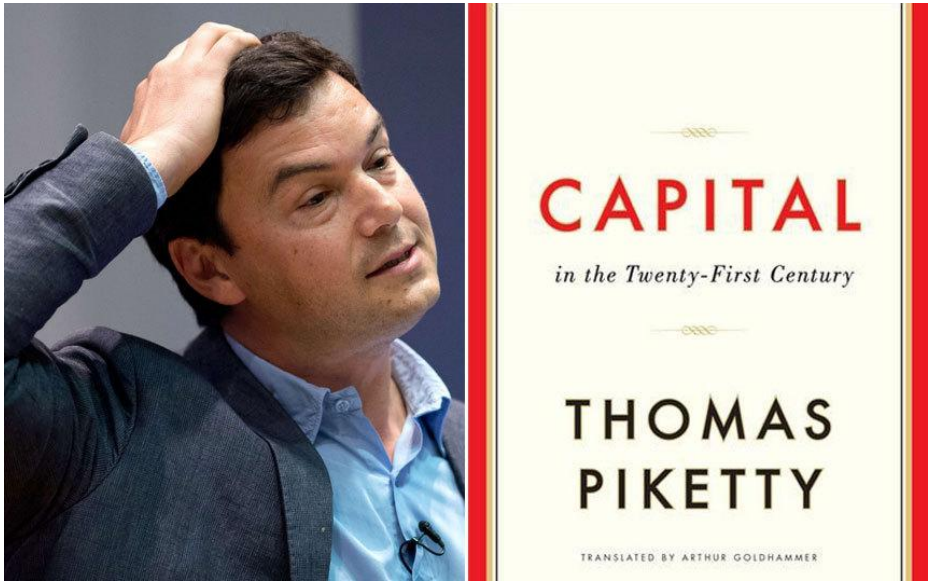
On the economic front, the COVID-19 pandemic has significantly increased global unemployment and dramatically slashed workers' incomes.

Source: https://www.un.org/sustainabledevelopment/inequality

How to remove this problem?

- Government policies
  - Higher income or consumption taxes
  - Social transfers
  - Or wealth tax
  - Or **global wealth tax proposed by Thomas Piketty in his famous book**

Are they efficient?



Inequality within and between countries

The gap between rich and poor

and

The gap between rich and the poor countries

References

- http://web.mit.edu/14.75j/www/lecture%20notes%208.pdf
- http://www.princeton.edu/~reinhard/pdfs/597-F2009LORENZ-CURVES-AND-INEQUALITY-IN-HEALTH-CARE.pdf
- Kuznets, S. (1955). Economic growth and income inequality. *The American economic review*, *45*(1), 1-28.
- http://www.cbsnews.com/news/dreaming-of-a-better-gini/
- www.**people**.vcu.edu/~smitchel/315/lecture4
- https://www.un.org/sustainabledevelopment/