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Inequality and Growth

By the way, how do we measure poverty?

- You have probably heard about measures of poverty. Does "less than $1 a day" (or "less than $2 a day") remind you of anything?
- The most frequently used poverty indicator is the head-count ratio: HCR= HC/n
- HC is the number of people below the "poverty line" in the country of interest; n is total population.
- Poverty line? Either country-specific, or international
- The World Bank has adopted two international poverty lines: less than $1 a day and less than $2 a day. These amounts refer either to people's consumption or their income.

HCR is easy but limited

- Good to have a general idea of countries' progress in terms of poverty reduction.
- But what if some poor people (already below the poverty line) become poorer? HCR will remain unaffected.
- Moreover, if a government wants to look good by reducing poverty and that its achievements are measured by HCR, it may focus on lifting out of poverty those that are just below the line (hence reducing HC), that is, the least poor among the poor.
- Economist Amartya Sen (Nobel 1998) suggested that a proper poverty indicator should convey information on the incidence of poverty (the extent to which incomes fall below the line)

Foster, Greer and Thorbecke (1984)

- Proposed a class of poverty indicators (FGT):
- $FGT(\alpha) = (1/n) \Sigma_{i=1,..m} [(p-y_i)/p]^{\alpha}$
- where p is the poverty line, i indexes people below p, m the number of people below p, n, the total population, α the coefficient of aversion to poverty ($\alpha \geq 0$), and y_i the income of individual i.
- Note that $\Sigma_{i=1,..m} (p-y_i)$ measures the total revenue that would have to be given to these m people for them to reach p.
- Finally, note that with α=0, individual differences (p-yi) are ignored and FGT(0)=HCR.

Economic Inequality

- Economic inequality: disparity in wealth or income.
- Slipery concept, linked to other things (political freedoms, personal capabilities, etc)
- Still, disparities in income and wealth, while not representing all the differences, are an important part of those differences.

Measuring economic inequality

4 criteria for good measurement

- Anonymity: from an ethical point of view, it does not matter who is earning the income.
- Population principle: population size does not matter: all that matters is the proportion of population earning different levels of income.
- Relative income principle: only relative incomes should matter and not the absolute size of incomes.
- Dalton principle: if one income distribution can be achieved from another by regressive transfers, then the former distribution must be deemed more unequal than the latter (a regressive transfer: consider two incomes; a transfer of income from the “not richer” to the “not poorer” is a regressive transfer)

2 IMPORTANT MEASURES OF INCOME INEQUALITY

- **The Lorenz curve** (a graphical measure, satisfies the 4 criteria above) (figure on the white board)
- The "overall distance" between the 45 degree line (perfect equality) and the Lorenz curve indicates the amount of inequality in the society it represents. (the further the curve, the more unequal the society)
- **The Gini coefficient** (G, most commonly used numerical measure): this the ratio of shaded area and triangle OAB (look on white board)
- G=0 is perfect equality, and G=1 perfect inequality
- Note that two Lorenz curves of different shapes can, in some cases, correspond to the same value of G.
- Ex: In 2005, Brazil 0.59, Mali 0.39; in 2000, Canada 0.33.

Advantages and disadvantages

- Lorenz curve satisfies all 4 principles; it I a simple and informative picture of the income distribution
- However: the lorenz curves for 2 different societies can cross, and then you can't compare them.
- This problem is more likely for countries with similar distributions.

Why care about inequality?

- First, we might care about inequality for itself, from an ethical point of view.
- But even if not, we may still care if it affects income and/or growth.
- Note that the relationship can go both ways, growth can affect inequality and vice versa.
- Let's see four little theoretical models of the relationship between inequality and growth

Model 1: Aspirations, savings and inequality

- Like we did in Harrod Domar: savings rate is likely to depend on the level of income in the following way:
- Low s at low Y (subsistence level)
- High s at high Y (passed mere subsistence, aspiration to accumulate more)
- Low s at high Y: less necessary to accumulate even more, rather consume a lot. (note that S may be a large amount, but this may well represent a low fraction of their Y.
- Now remember: s affects Y in the long run and possibly (though in Solow, not in the long run) growth. Hence, here is how redistribution, given out story about s, might affect income.

Model 1 (continued)

- Redistribution increases s (and hence Y) if it moves resources towards high savers, but decreases s if if it takes resources from them.
- If there are many rich, few middle class, and many poor people (like in a middle income country), then redistribution may create a larger ambitious middle class, thereby raising the average savings rate (and hence income and possibly growth)
- However, in an extremely poor country, with few rich, many middle class and many poor, redistribution may bring down the savings rate, because the money for redistribution is taken primarily from those who have the desire and the means to accumulate wealth (the middle class)

Model 1 (continued)

- The causality may as well go the other way: effect of income on inequality (savings behaviour may affect inequality)
- For many groups in the society, there is a difference between their notion of a desired standard of living and their actual standard of living. And aspirations may depend on inequality.
- If inequality is low to begin with, s is similar across classes, their incomes are evolving quite similarly as a result, which keeps the distribution unchanged (that is, keep inequality low, like at the beginning).

Model 1 (continued)

- However, if inequality is high to begin with, with the poor being really too poor (so low s and their income stays low), while the middle class accumulates income (high s), inequality persists and may even widen over time:
- The poor may be in a low income trap, with just enough to survive (so no accumulation possible) while middle class' income grows rapidly (high mobility towards the rich class)

Model 2
Inequality, Politics and growth

- High economic inequality might retard economic growth by setting up political demands for redistribution. (if the majority is poor, people will vote for more redistribution)
- But redistribution can take two different forms:
- First, policy makers could redistribute existing wealth among the broader population (ex: land reform: government can confiscate land from large landowners and redistribute it among smaller peasants and the landless)
- But such a policy requires extraordinary political will and access to data (on who has what) on which to base the policy.

Model 2 (2)

- Given these difficulties, the government may choose another form of redistribution: tax *increments* to the stock of wealth (rather than the existing wealth base): sales taxes, taxes on business profits, etc.
- Such taxes, imposed at the margin (i.e on *additional* (the next) units of wealth), tend to reduce investment, thereby reducing growth.
- To sum up: high inequality creates a political demand for redistribution; this demand, for the reasons mentioned above, can only be met by taxing increments in wealth rather than existing wealth. Such taxes reduce the incentive to accumulate wealth, and therefore reduce growth.

Model 3
Inequality, Capital Markets and Development

- Credit market: risk of default (the lender not being repaid by the borrower); as result, lenders often ask borrowers to pledge some of their wealth as collateral (could be some money, land, house…) that they can take in the event of default.
- But the poor often lack collateral, and therefore lack access to the credit market. If credit is necessary to start business, educate your children or buy inputs for your farm, but the poor don't have access to credit, they can't take any of these opportunities to escape poverty.
- Now let's look at a little model

Model 3 (2)

- Start up cost of business = I, which an entrepreneur needs to borrow to start.
- Business consists of hiring m industrial workers to produce output q. Entrepreneur pays wage w to each worker.
- So profit = q – wm
- If the loan is repaid at interest rate r, then net profit of the entrepreneur is = (q-wm) – (1+r)I
- Now, let's see if a person with some given starting wealth W will be granted a loan (and hence will be able to invest in the business)

Model 3 (3)

- Suppose you put up your wealth W as collateral. Then, you start doing business and make profits.
- Now time comes to repay (1+r) to the lender. But you could try not repaying…
- But then it costs you: you loose your collateral, which now has value (1+r)W because of the interest; you may pay a fine F, and even a fraction α of your profits. Therefore, by comparing how much you end up with by repaying and without repaying, you will honor the loan if:
- $(1+r)I \leq (1+r)W + F + \alpha\,(q-wm)$

Model 3 (3)

- Rearranging, we find that you will repay if:
- $W \geq I - [F + \alpha (q-wm)]/(1+r)$
- That is, if your initial wealth is high enough. Anticipating this, lenders will only grant you a loan if you are rich enough (that is, if you can put enough collateral)
- Consequence: if wealth is initially very unequally distributed, those who have enough can borrow and grow while the poor can't borrow and stagnate.
- And inequality widens because of the poor lacking access to credit. We'll go back to the subject in a few weeks…

Model 4: Social Conflict

- Two individuals, A and B, own assets W_a and W_b
- Asset productivity is $d(e_i)$ where e_i stands for effort, equal to 0 or 1, put by individual i; and $d(1)>d(0)=1$
- So each individual can either invest effort to produce with his assets, or, alternatively, steal from the other a fraction B(e) where $B(0)>B(1)=0$ (i.e. if I invest effort e=1, I am not stealing anything, since I decided to produce)
- Individual A's income is given by
- $[(1-B(e_b)]d(e_a)W_a + B(e_a)\, d(e_b)W_b$

Model 4 (2)

- National income is equal to:
- $d(1)(W_a + W_b)$ if both work
- $W_a + d(1)W_b$ if A steals and B works
- $(W_a + W_b)$ if nobody works
- Assume that $(d(1) -1)/d(1) > B(0)$: then, if $W_a = W_b$, nobody steals in equilibrium.

Model 4 (3)

- We just assumed perfect equality. Now assume inequality: $W_a < W_b$
- Then, if $(d(1)-1)W_a < B(0)\ d(1)W_b$
- A, the poorer individual, has an incentive to steal.
- It is easy to show that if the distribution of income is unequal enough, there is a Nash equilibrium in which one individual steals and national income is not maximized.