Can pro-growth policies lift all boats? An analysis based on household disposable incomes

Orsetta Causa, Alain De Serres & Nicolas Ruiz

OECD - Economics Department
Motivation

- Factors distribution and the channels from GDP to households
  How GDP trickles down to household income
- Equity
  Equity, a multi-faceted concept, is deemed to be an essential ingredient of any successful growth strategy
- Data
  Recent changes in the statistical landscape have made such work more attainable than 20 years ago
- Demands
  Governments and other organizations
Challenges

- Integrating two strands of analyses (growth and inequality) and developing an empirical proposal for measuring the effects of pro-growth policies on these two outcomes.

Desiderata

- It must be **understandable** and easy to describe.
- It must conform to a **common sense notion of growth**.
- It must encompass **common sense notions of inequality and poverty**.
- It must rely to a large extent on **tools and knowledge already available** while enhancing their scopes.
- It must fit the **purpose** for which it is being developed.
- It must be **technically solid**.
- It must be **operationally viable**.
- It must be easily **replicable**.
The proposal

A. Measuring inequality using income standards

B. Framework for the growth/inequality nexus

C. Some examples of the effects of pro-growth policies on household incomes across the distribution

D. The way forward
A. Measuring inequality using income standards (1)

• The existing empirical literature makes use of **two main approaches** for tracking inequality and poverty:
  - Inequality indexes, which summarize traditionally income distribution through a single value
  - Poverty measures, which use a poverty line to identify the poor and a poverty index to summarize the extent of poverty

• But each approaches relies on **different metrics** and **different set of assumptions**, which lead to **different sets of conclusions**:
  - Inequality indexes use **various aggregation assumptions** that make them **differently sensitive** to various parts of the income distribution: the Gini is overly sensitive to the middle, the Theil index to the top, deciles ratio are insensitive to the middle
  - Poverty measures are hampered by the lack of coherent framework for **setting poverty lines**
A. Measuring inequality using income standards (2)

- Different metrics raise difficulties in assessing poverty and inequality simultaneously, while inequality could be deemed to be a matter of income dispersion and income deprivation at the same time.
- The different assumptions embodied in inequality measures or poverty lines could be considered to be reasonable and useful within one country, but not within others.
- More generally, inequality measurement should avoid fundamental arbitrariness while at the same time being able to cope with various degrees of social preferences among countries.
- As such, income inequality needs to be measured using an encompassing framework which emphasizes progressively different parts of the income distribution:
  - from top to upper middle class income
  - from upper middle class to mean income
  - from mean to median income
  - from median to lower middle class income
  - from lower middle class to income of the poor
A. Measuring inequality using income standards (3)

- Inequality can be tracked using **income standards** built upon the **generalized mean** concept (cf. Foster & Szekely, IER, 2008)

- What is a generalized mean?
  - **Income distribution:** \( x = (x_1, \ldots, x_n) \)
  - **Class of generalized means:**
    \[
    \mu_\alpha (x) = \left[ \left( x_1^\alpha + \ldots + x_n^\alpha \right) / n \right]^{1/\alpha} \quad \text{for all } \alpha \neq 0
    \]
    \[
    \mu_\alpha (x) = (x_1 \ldots x_n)^{1/n} \quad \text{for } \alpha = 0
    \]
A. Measuring inequality using income standards (4)

- How to read it?
  - The generalized mean reduces to the **standard mean** when \( \alpha = 1 \) thus providing a natural dividing line
  - When \( \alpha \to -\infty \) the generalized mean is equal to the **minimum income** in the society
  - When \( \alpha \to +\infty \) the generalized mean is equal to the **top income** in the society

- The generalized mean is an income standard which summarizes the **affluence** of a society, placing **progressively** more or less weight on incomes further up or down the distribution

- Income standards robustly consider inequality and poverty using the same metric while not using arbitrary cut-offs

- They are based on a powerful **axiomatic** justification
A. Measuring inequality using income standards (5)

- A typology of income standards for measuring inequality:
  - $\alpha > 1$: top-sensitive income standards
  - $\alpha < 1$: bottom-sensitive income standards
  - $\alpha = 1$: mean income; $\alpha = 0$: median income

- Based on this typology, one can build **generalized means curves** to assess changes in inequality and poverty for given patterns of growth in mean household income.

- Generalized means curves go beyond any standard inequality and poverty measures by providing a **synthetic but comprehensive picture** of changing income distribution:
  - How inequalities are generated and structured?
  - How poverty evolves?
  - Who gain/loose in absolute terms?
  - Did a society become more polarized (i.e. has its middle class shrunk)?
A. Measuring inequality using income standards (6)

- Generalized means curves for **Sweden** and **Turkey** between the mid-1990s and late 2000s

![Diagram showing percentage growth of income standard for Sweden and Turkey over a range of bottom to top-sensitive income standards.](image-url)
A. Measuring inequality using income standards (7)

- Generalized means curves for **Italy** and **Germany** between the mid-1990s and late 2000s
A. Measuring inequality using income standards (8)

- Generalized means curve for USA between the mid-1990s and late 2000s: inequality on the rise, combined with losses for the poor in absolute terms
A. Measuring inequality using income standards (9)

- Generalized means curve for Spain between the mid-1990s and late 2000s: relative advantage for the middle class, combined with losses for the poor in absolute terms
A. Measuring inequality using income standards (10)

- Generalized means curve for **France** between the mid-1990s and late 2000s:
B. Framework (1)

- The empirical literature on growth and inequality is made of two major strands:
  - The Kuznets’ approach, which identifies a **mechanical** relationship between the levels of growth and inequality
  - A causal approach, which aims to identify the factors influencing growth and inequality **independently**

- Both approaches don’t try to identify factors and policies which could influence growth and inequality **simultaneously** (one attempt: Lundberg & Squire, TEJ, 2003)...

- ... but the evolution of growth and inequality is undoubtedly the outcome of similar process and influenced by the same policies

- Growth and inequality are also likely to influence each other

- An overriding need of the policy maker is the **simultaneous balance** of policy impact on growth and inequality to understand how to advance both outcomes simultaneously
B. Framework (2)

- Proposed approach: looking at GDP and income standards simultaneously, taking GDP per capita as a starting point and then adding inequality through the use of income standards at several points of the income distribution.

- The approach literally looks beyond GDP.

- **Growth equation**: human capital augmented neoclassical growth model (Mankiw, Romer and Weil, 1992)

- **Income standards equation**: (Foster & Szekely, IER, 2008) where GDP per capita acts as a “production factor” for long term levels of household income at different points of the distribution.

- The system is ran for a continuum of income standards.
\[ \Delta \ln(GDP_t) = \beta_0 - \beta_1 \ln(GDP_{t-1}) + \beta_2 \ln(s_t) + \beta_3 \ln(h_t) - \beta_4 n_t + \beta_5 t + \delta_1 \Delta \ln(s_t) + \delta_2 \Delta \ln(h_t) + \delta_3 \Delta \ln(n_t) + \varepsilon \]

\[ \Delta \ln(\mu_\alpha(x_t)) = \eta_{0,\alpha} + \eta_{1,\alpha} \ln(TT_t) + \eta_{2,\alpha} \Delta \ln(GDP_t) + \eta_{3,\alpha} \ln(GDP_t) - \eta_{4,\alpha} \mu_\alpha(x_{t-1}) + \nu \]

where:
- \( \Delta \ln(GDP_t) \) is the variation in GDP per capita between year \( t \) and year \( t-1 \)
- \( \Delta \mu_\alpha(x_t) \) is the variation in income standards between year \( t \) and year \( t-1 \) for a given value of \( \alpha \), estimated for a continuous range of \( \alpha \)
- \( s \) is the investment rate
- \( h \) is the stock of human capital, measured as mean years of schooling
- \( n \) is the growth rate of the working age population
- \( TT \) measures terms of trade effects (i.e. changes in export relative to import prices)
- \( \varepsilon \) et \( \nu \) are error terms, assumed to be correlated across the two equations (\( \text{cov}(\varepsilon, \nu) \neq 0 \))
B. Framework (4)

- **Baseline elasticities**: From GDP to household income across the distribution
- Treatment of time is absolutely crucial
C. The effects of pro-growth policies on household income (1)

- Based on the previous empirical set-up, one can explore the impact of structural policies on household income across the distribution, by incorporating additively policy variables into the two equations.

- Income standards present a double advantage for policy analysis:
  - A direct measure of policies’ effects on household income levels at various points of the distribution.
  - An unambiguous assessment on inequality: if a policy reform has a positive effect which is stronger (weaker) for bottom-sensitive income standards compared with mean incomes, then this implies that this policy reform reduces (increases) income inequality.

- In what follows three bottom-sensitive cases are considered: median incomes ($\alpha=0$), income of the lower middle class ($\alpha=-3$) and income of the poor ($\alpha=-8$).
C. The effects of pro-growth policies on household income

- Change in policy parameters to deliver a 1% long-term increase in GDP per capita:

<table>
<thead>
<tr>
<th>Example of specific structural policy reform</th>
<th>Effects on long-term GDP per capita (%)</th>
<th>Effects on long-term average household income (%)</th>
<th>Effects on long-term household incomes across the distribution (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The median</td>
<td>The lower-middle class</td>
</tr>
<tr>
<td>Relax hiring and firing procedures / Reduce labour market duality</td>
<td>1.0</td>
<td>1.4</td>
<td>1.9</td>
</tr>
<tr>
<td>Reduce the level or duration of unemployment benefits</td>
<td>1.0</td>
<td>1.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Reduce the level of unemployment benefits for the long-term unemployed</td>
<td>1.0</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Reform the tax structure by reducing the share of direct (corporate and income) taxes</td>
<td>1.0</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>and increasing the share of property or indirect taxes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce marginal tax rates on labour</td>
<td>1.0</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Encourage educational upskilling and equity in access to education</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Reduce barriers to entry for foreign firms -- FDI inflows</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Reduce barriers to exports / Encourage exports among domestic firms</td>
<td>1.0</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Encourage innovation and raise the effectiveness of R&amp;D support</td>
<td>1.0</td>
<td>0.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>
C. The effects of pro-growth policies on household income

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</thead>
<tbody>
<tr>
<td>Step-up job-search support and activation programs for the unemployed</td>
<td></td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Increase the minimum cost of labour</td>
<td></td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Relax product market regulation (by easing entry restrictions in non-manufacturing sectors, reducing barriers to firm entry)</td>
<td></td>
<td>1.0</td>
<td>1.4</td>
</tr>
</tbody>
</table>
C. The effects of pro-growth policies on household income

- Many structural reforms have a stronger traction on household incomes -- especially those at the low-end of the distribution -- than on GDP per capita.
- This reflects the fact that reform effects channelled via GDP per capita are often compounded by additional effects beyond and above those via GDP.
- Evidence of long-term policy synergies between growth and equity objectives: reforming job protection to tackle labour market duality; reducing regulatory barriers to domestic competition as well as to trade and FDI; and stepping-up job-search support and activation programs.
- Clear cases of long-term policy trade-offs between the growth and equity objectives are not easy to identify. But there are exceptions: tightening of unemployment benefits for the long-term unemployed, reduction of minimum relative to median wages.
D. The way forward

- Considering the full distribution, including the top 1%:
Growing inequalities can be harmful to long-term level of GDP per capita:

GDP elasticity to inequality across the distribution
THANK YOU

orsetta.causa@oecd.org

alain.deserres@oecd.org

nicolas.ruiz@oecd.org