BETTER POLICIES FOR BETTER LIVES

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

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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 set 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**

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- Different metrics raise difficulties in assessing poverty and inequality **simultaneously**, while inequality could be deem 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 part 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

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- 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: $x = (x_1, ..., x_n)$

  - ✓ Class of generalized means:

$$\mu_\alpha(x) = \left[\left(x_1^\alpha + ... + x_n^\alpha\right)/n\right]^{1/\alpha} \text{ for all } \alpha \neq 0$$

$$\mu_\alpha(x) = \left(x_1 ... x_n\right)^{1/n} \text{ for } \alpha = 0$$

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- 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

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- 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)?

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A. Measuring inequality using income standards (6)

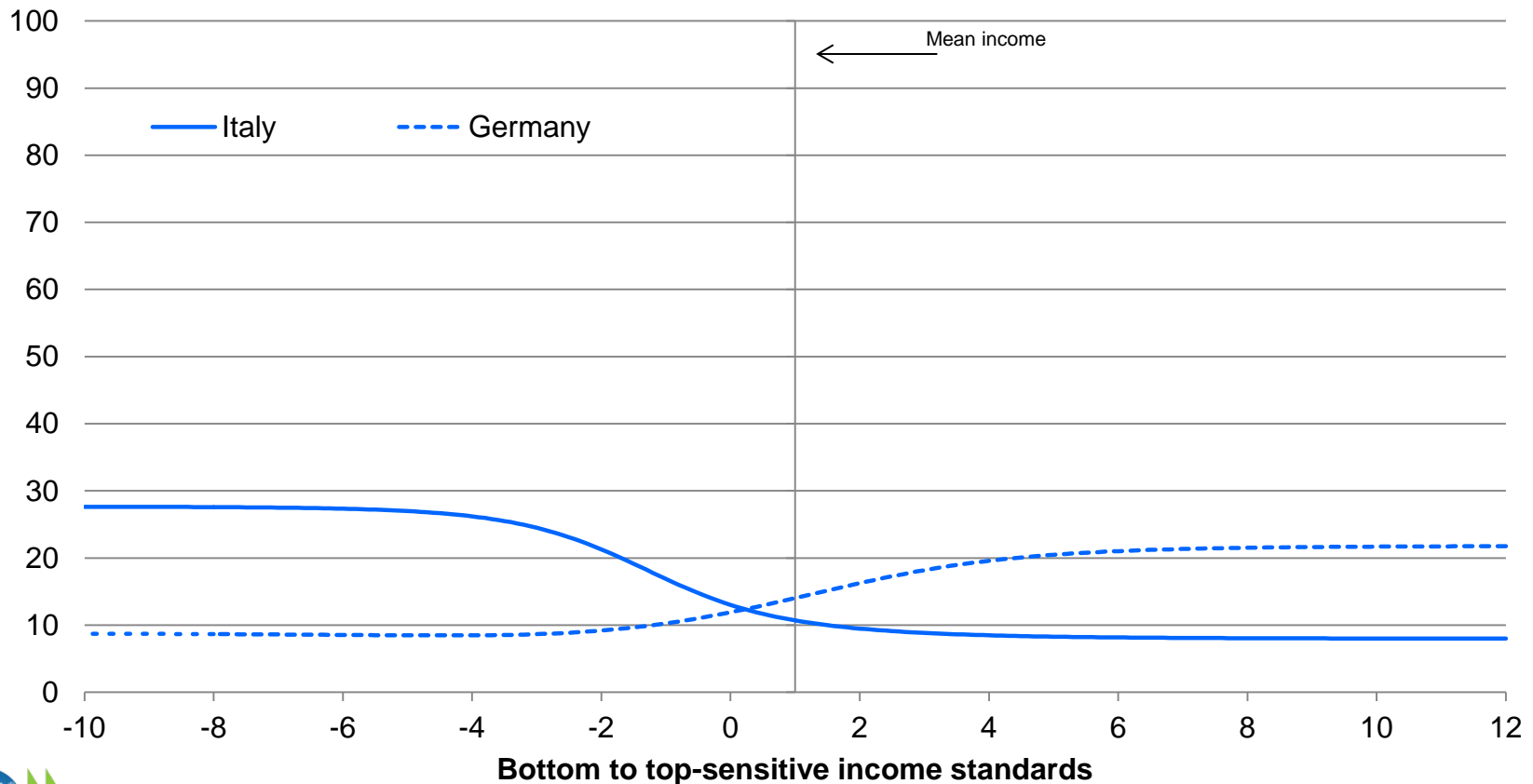- Generalized means curves for **Sweden** and **Turkey** between the mid-1990s and late 2000s

Percentage growth of income standard

Mean income

Sweden — — — Turkey

Bottom to top-sensitive income standards
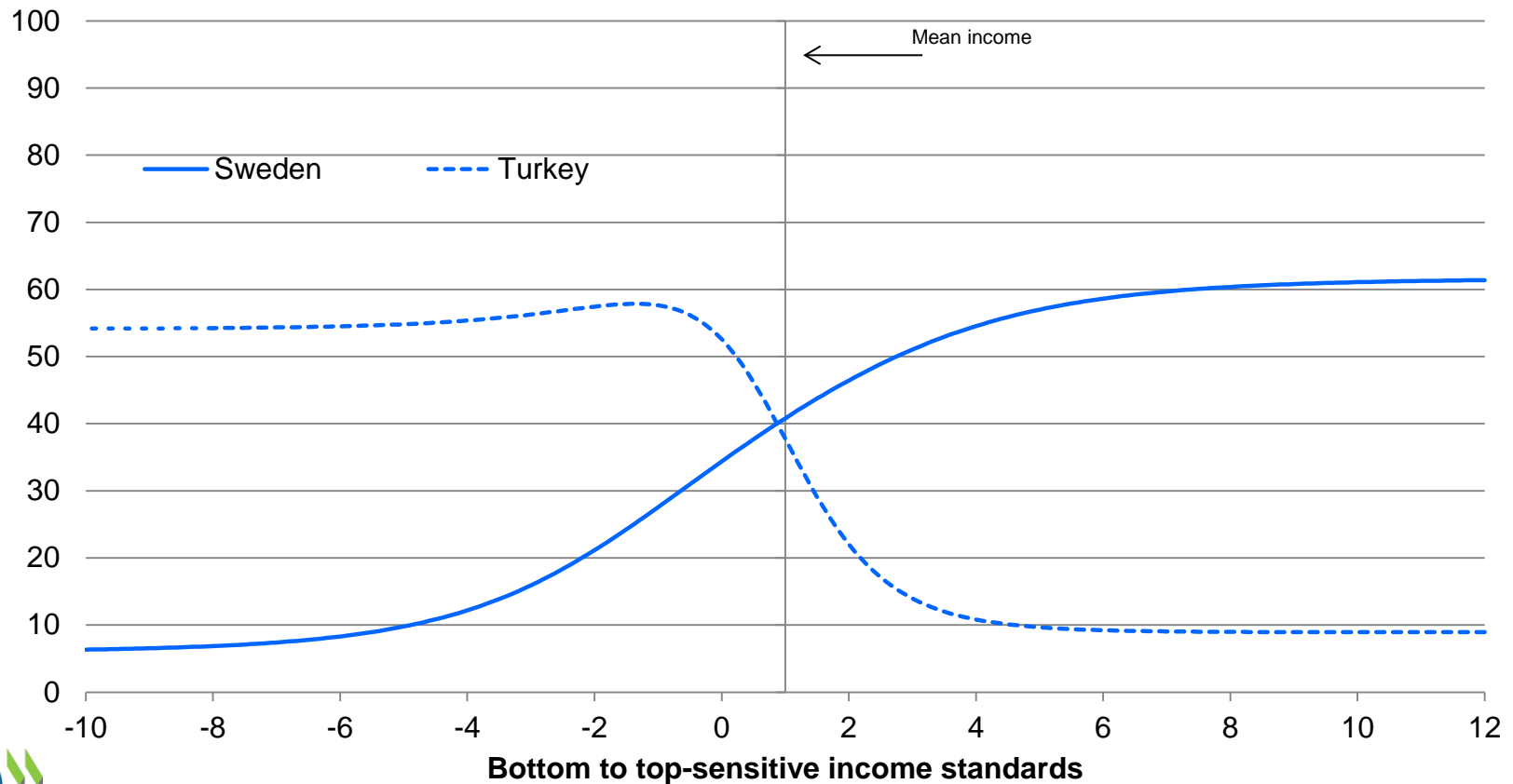
- Generalized means curves for **Italy** and **Germany** between the mid-1990s and late 2000s
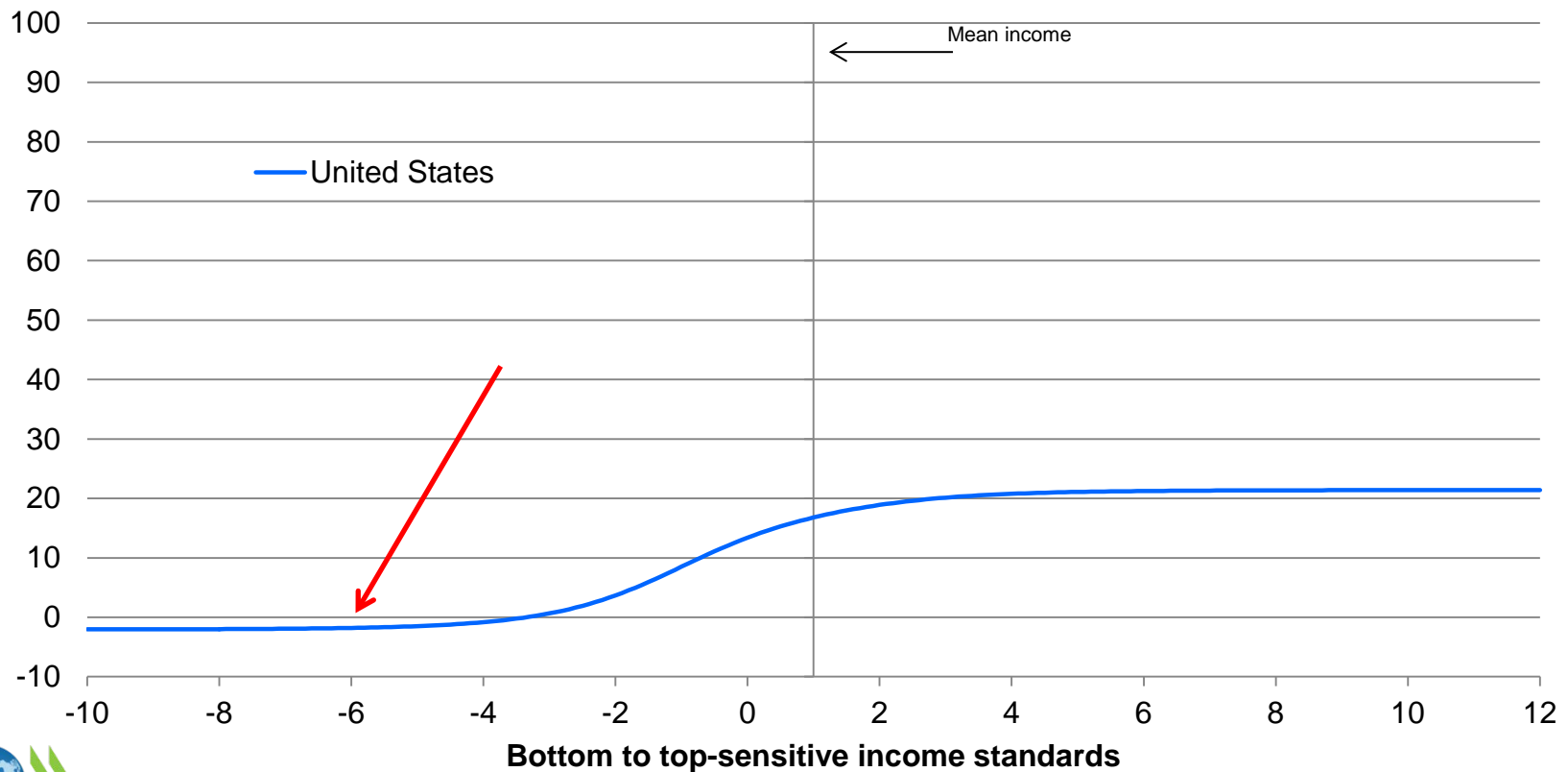
Percentage growth of income standard

Bottom to top-sensitive income standards

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**
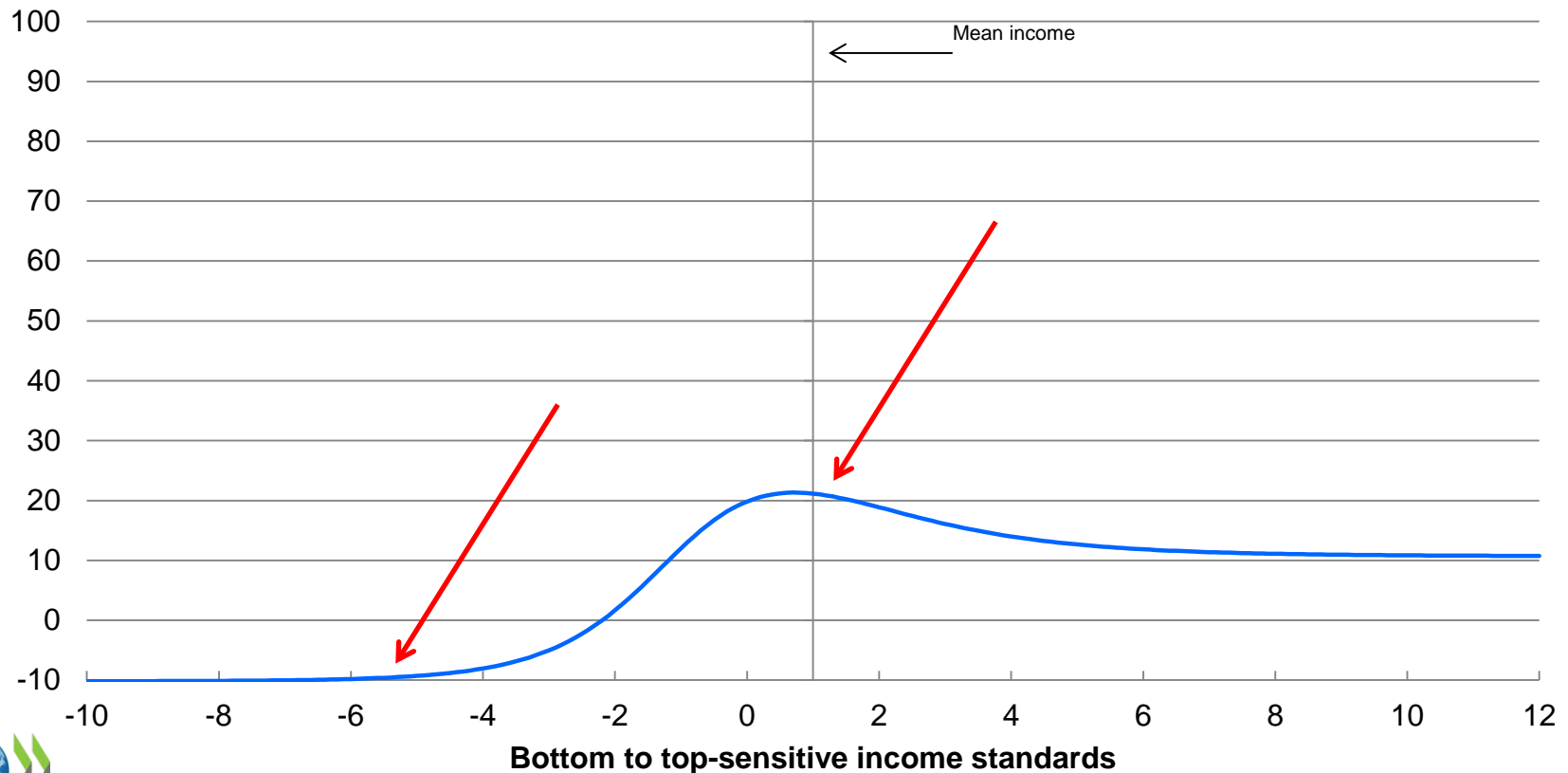
Percentage growth of income standard

Mean income

United States

Bottom to top-sensitive income standards

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- 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**
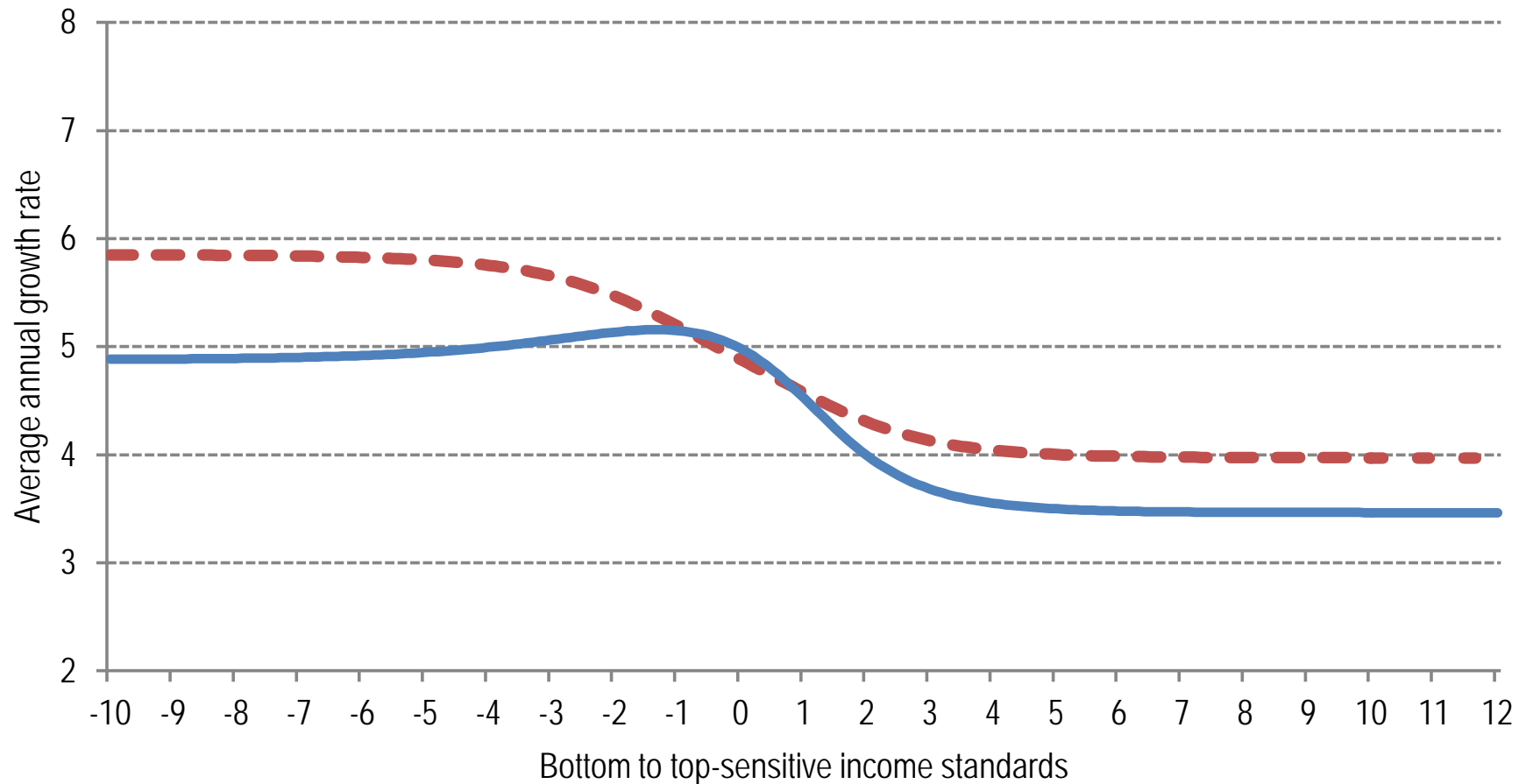
Percentage growth of income standard

Bottom to top-sensitive income standards

A. Measuring inequality using income standards (10)

- Differences between pre (red) and post-tax and transfers (blue) income:

Turkey (2004-11)

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

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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

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$$\Delta\ln(\text{GDPt}) = \beta_0 - \beta_1\ln(\text{GDP}_{t-1}) + \beta_2\ln(s_t) + \beta_3\ln(h_t) - \beta_4\, n_t + \beta_5 t + \delta_1\Delta\ln(s_t) + \delta_2\Delta\ln(h_t) + \delta_3\Delta\ln(n_t) + \varepsilon$$

$$\Delta\ln(\mu_\alpha(x_t)) = \eta_{0,\alpha} + \eta_{1,\alpha}\ln(\text{TT}_t) + \eta_{2,\alpha}\Delta\ln(\text{GDP}_t) + \eta_{3,\alpha}\ln(\text{GDP}_t) - \eta_{4,\alpha}\mu_\alpha(x_{t-1}) + \upsilon$$

- with $\text{cov}(\varepsilon, \upsilon) \neq 0$ and where:
- $\Delta\ln(\text{GDPt})$ is the variation in GDP per capita between year t and year t-1
- $\Delta\mu\alpha$ (xt) is the variation in income standards between year t and year t-1 for a given value of α, estimated for a continuous range of αs.
- 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).
- ε et υ are error terms, assumed to be correlated across the two equations

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B. Framework (4)

- **Baseline elasticities** : From GDP to household income across the distribution

- Treatment of time is **absolutely crucial**
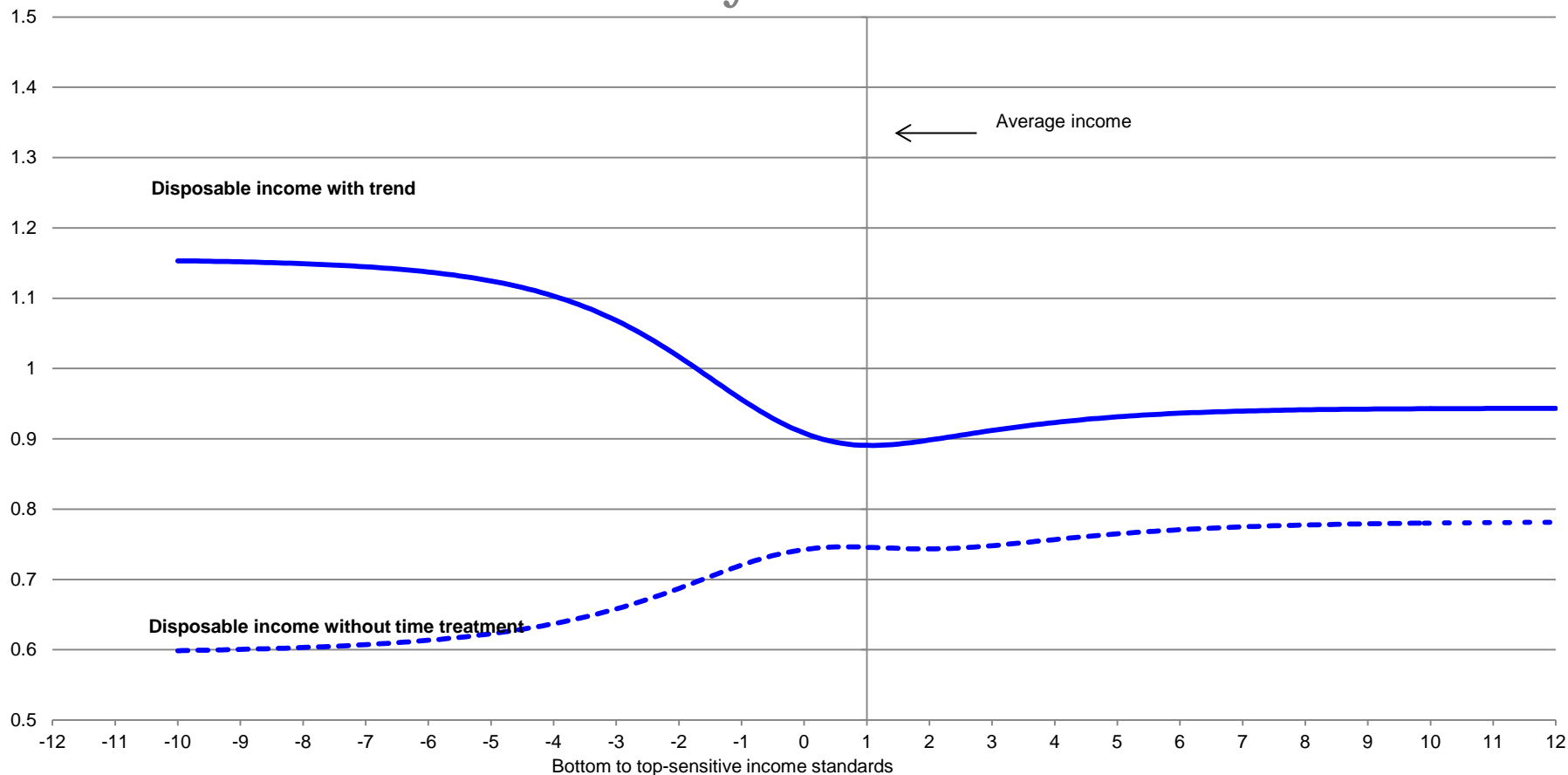
- Alternative framework (forthcoming): single household income equation to capture the effect of policies <u>in addition to growth</u>

$$\Delta \ln \mu_\alpha(x_{it})$$
$$= \beta_{0,\alpha} - \beta_{1,\alpha} \ln \mu_\alpha(x_{it-1}) + \boldsymbol{\beta_{2,\alpha} \Delta lnGDP_{it}} + \boldsymbol{\beta_{3,\alpha} lnGDP_{it-1}} + \beta_{4,\alpha} \ln TT_{it}$$
$$+ \gamma_t + \eta_i + \varepsilon_{it}$$
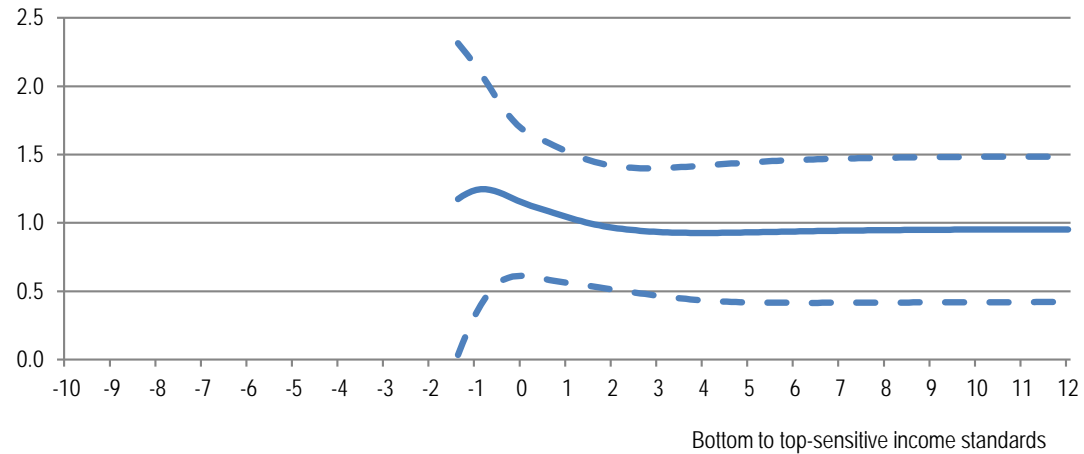
Or

$$\Delta \ln \mu_\alpha(x_{it}) =$$
$$\theta_{0,\alpha} - \theta_{1,\alpha} \ln \mu_\alpha(x_{it-1}) + \boldsymbol{\theta_{2,\alpha} \Delta lnLP_{it}} + \boldsymbol{\theta_{3,\alpha} lnLP_{it-1}} + \boldsymbol{\theta_{4,\alpha} \Delta lnLRU_{it}} +$$
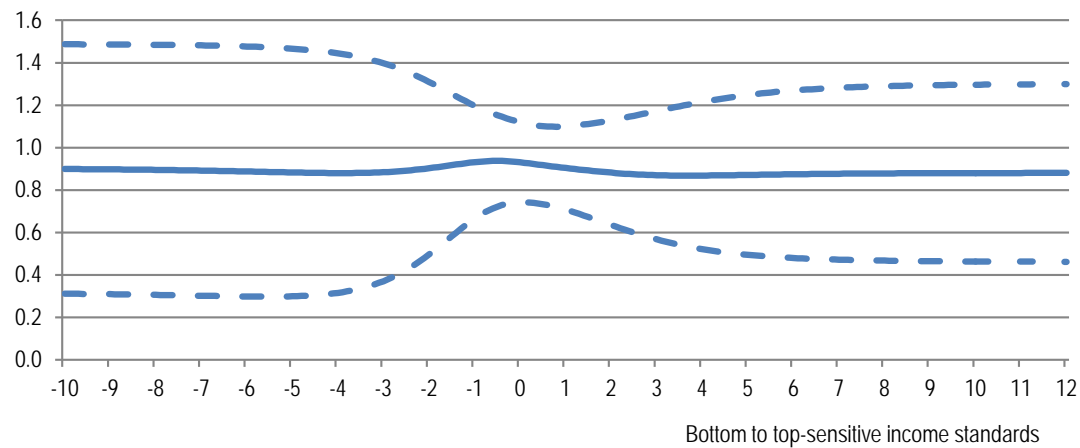$$\boldsymbol{\theta_{5,\alpha} lnLRU_{it-1}} + \theta_{6,\alpha} \ln TT_{it} + \gamma_t + \eta_i + \varepsilon_{it}$$

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B. Framework (5)

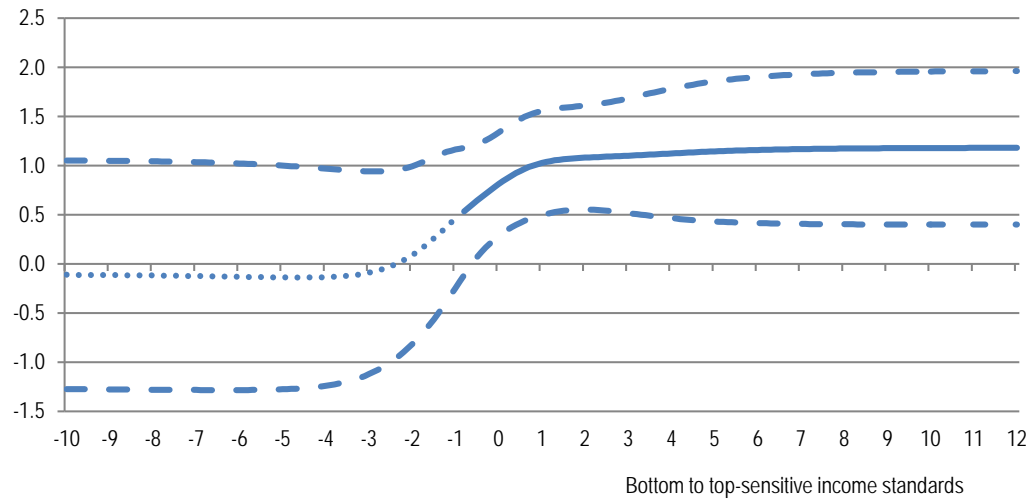**Household incomes elasticity to GDP**

A. Market income

Bottom to top-sensitive income standards

B. Disposable income

Bottom to top-sensitive income standards

B. Framework (6)

Household incomes elasticity to productivity

A. Market income

Bottom to top-sensitive income standards

B. Disposable income

Bottom to top-sensitive income standards
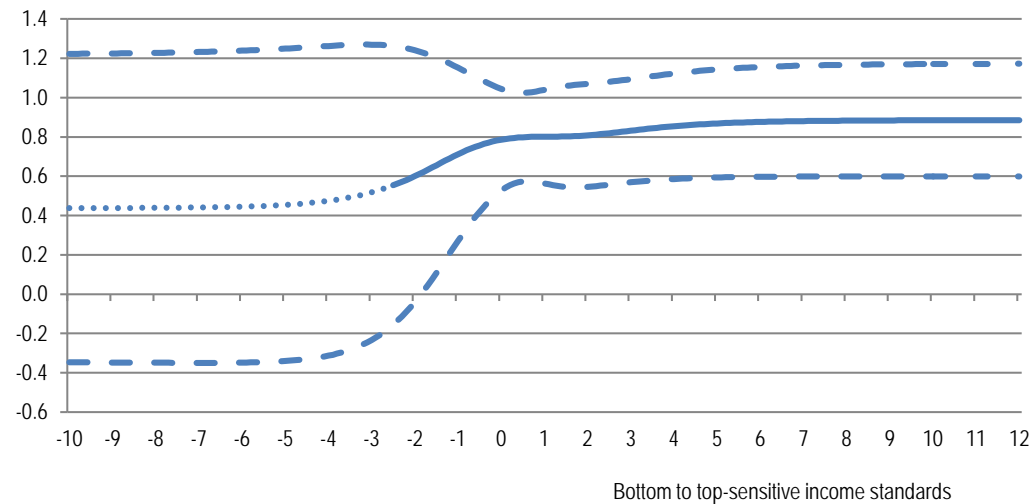
B. Framework (7)

Household incomes elasticity to labour utilisation

A. Market income

Bottom to top-sensitive income standards

B. Disposable income

Bottom to top-sensitive income standards
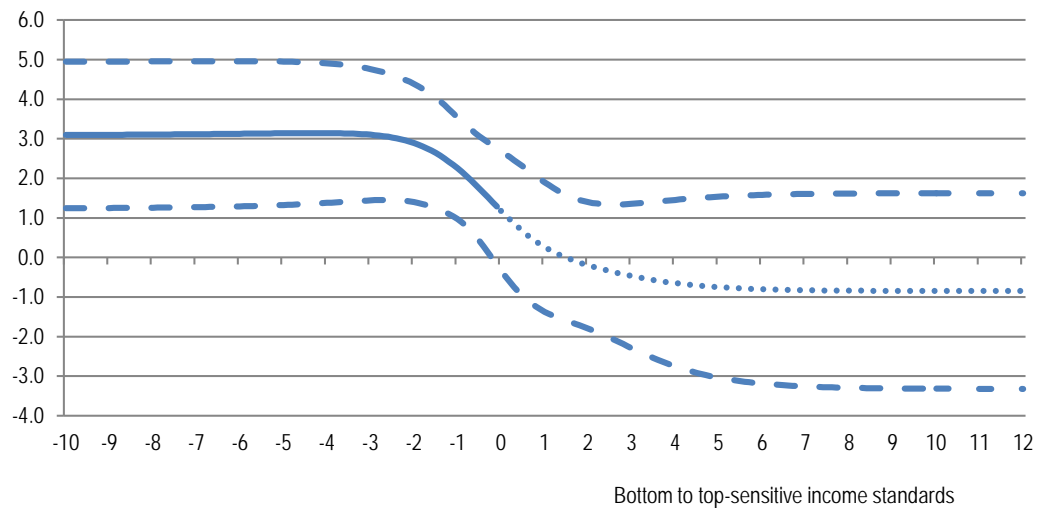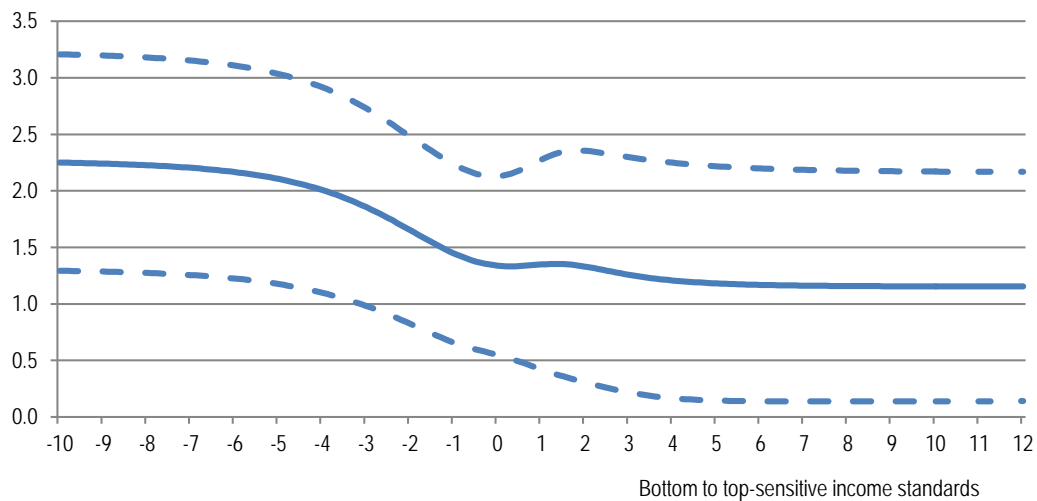
C. The effects of pro-growth policies on household income (1)

- Based on the first 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 (2)

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

Example of specific structural policy reform	Effects on long-term GDP per capita (%)	Effects on long-term average household income (%)	Effects on long-term household incomes across the distribution (%)		
			The median	The lower-middle class	The poor
Relax hiring and firing procedures / Reduce labour market duality	*1.0*			1.4	1.9
Reduce the level or duration of unemployment benefits	*1.0*	1.3	1.5	1.5	1.5
Reduce the level of unemployment benefits for the long-term unemployed	*1.0*	0.8	0.8	-1.5	-2.4
Reform the tax structure by reducing the share of direct (corporate and income) taxes and increasing the share of property or indirect taxes	*1.0*	0.5	0.5	0.5	0.5
Reduce marginal tax rates on labour	*1.0*	1.3	1.3	1.3	1.3
Encourage educational upskilling and equity in access to education	*1.0*	0.9	0.9	0.9	0.9
Reduce barriers to entry for foreign firms -- FDI inflows	*1.0*	1.0	1.0	1.3	1.3
Reduce barriers to exports / Encourage exports among domestic firms	*1.0*	1.1	1.1	1.1	1.2
Encourage innovation and raise the effectivenness of R&D support	*1.0*	0.7	0.7	0.7	0.7

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Example of specific structural policy reform	Effects on long-term GDP per capita	Effects on long-term average household income	Effects on long-term household incomes acr[oss]		
			The median	The lower-middle class	The poor
Step-up job-search support and activation programs for the unemployed		*1.0*	1.0	1.0	1.3
Increase the minimum cost of labour		*1.0*	1.0		
Relax product market regulation (by easing entry restrictions in non-manufacturing sectors, reducing barriers to firm entry)		*1.0*	1.4	1.8	2.9

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# C. The effects of pro-growth policies on household income (4)

- 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**

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D. The way forward

- Considering the full distribution, including the top 1%:

United States

Percentage growth of income standard

Legend: adj (dashed), non adj. (solid)

Average income

Bottom to top-sensitive income standard
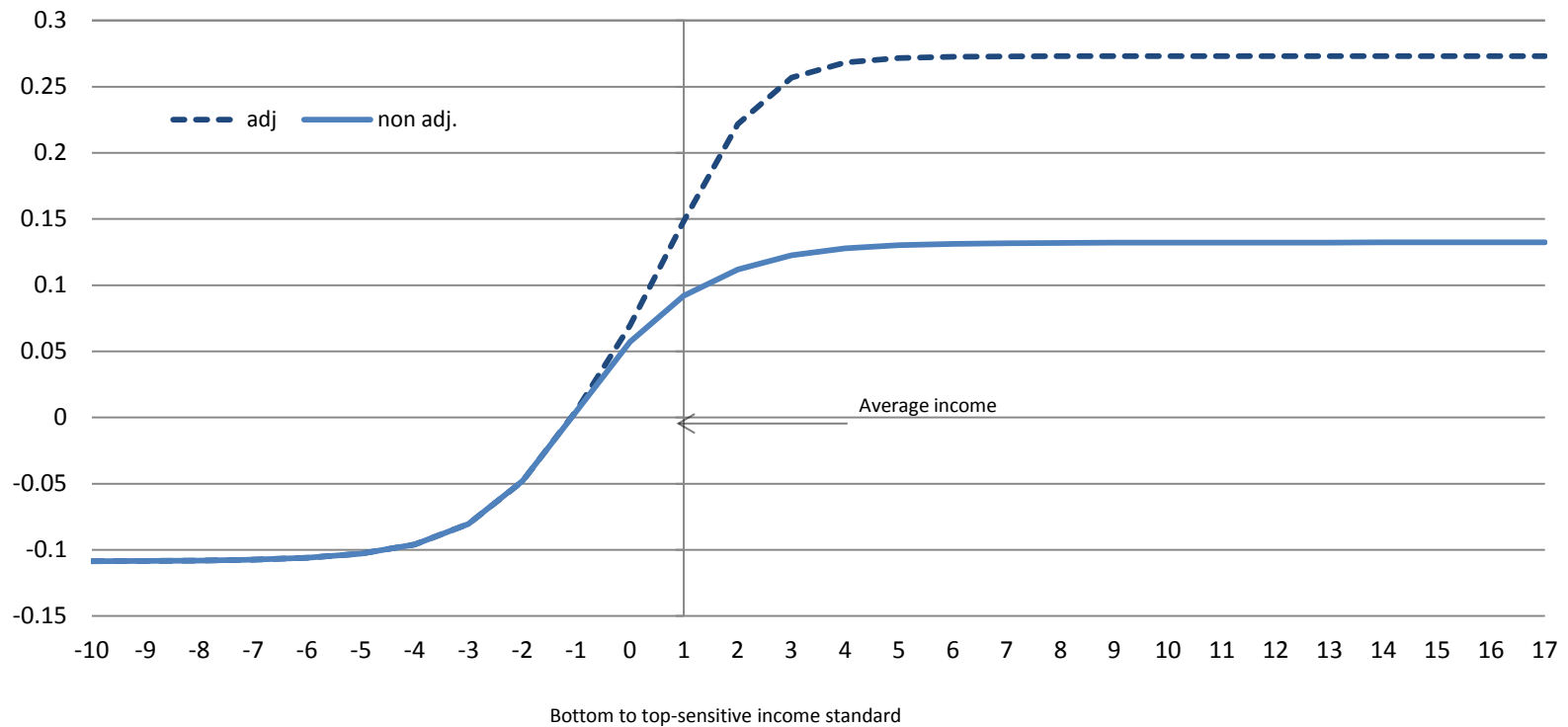
- Growing inequalities can be harmful to long-term level of GDP per capita:

GDP elasticity to inequality across the distribution

Bottom to top-sensitive Atkinson measures
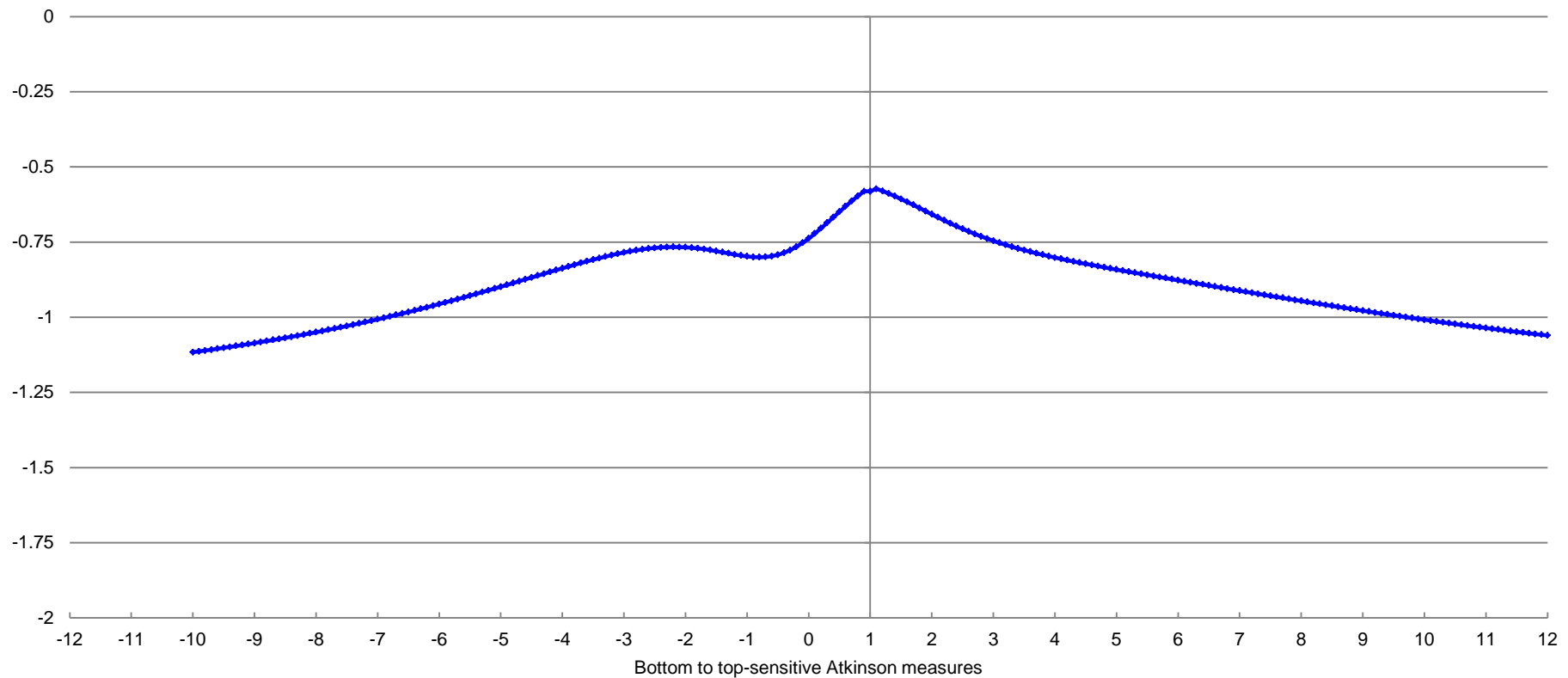
THANK YOU

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