

Fiscal Policy, Inequality and Poverty in Low and Middle Income Countries

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CEQ Institute: Brief Description

Mission: The CEQ Institute works to reduce inequality and poverty through comprehensive and rigorous tax and benefit incidence analysis, and active engagement with the policy community

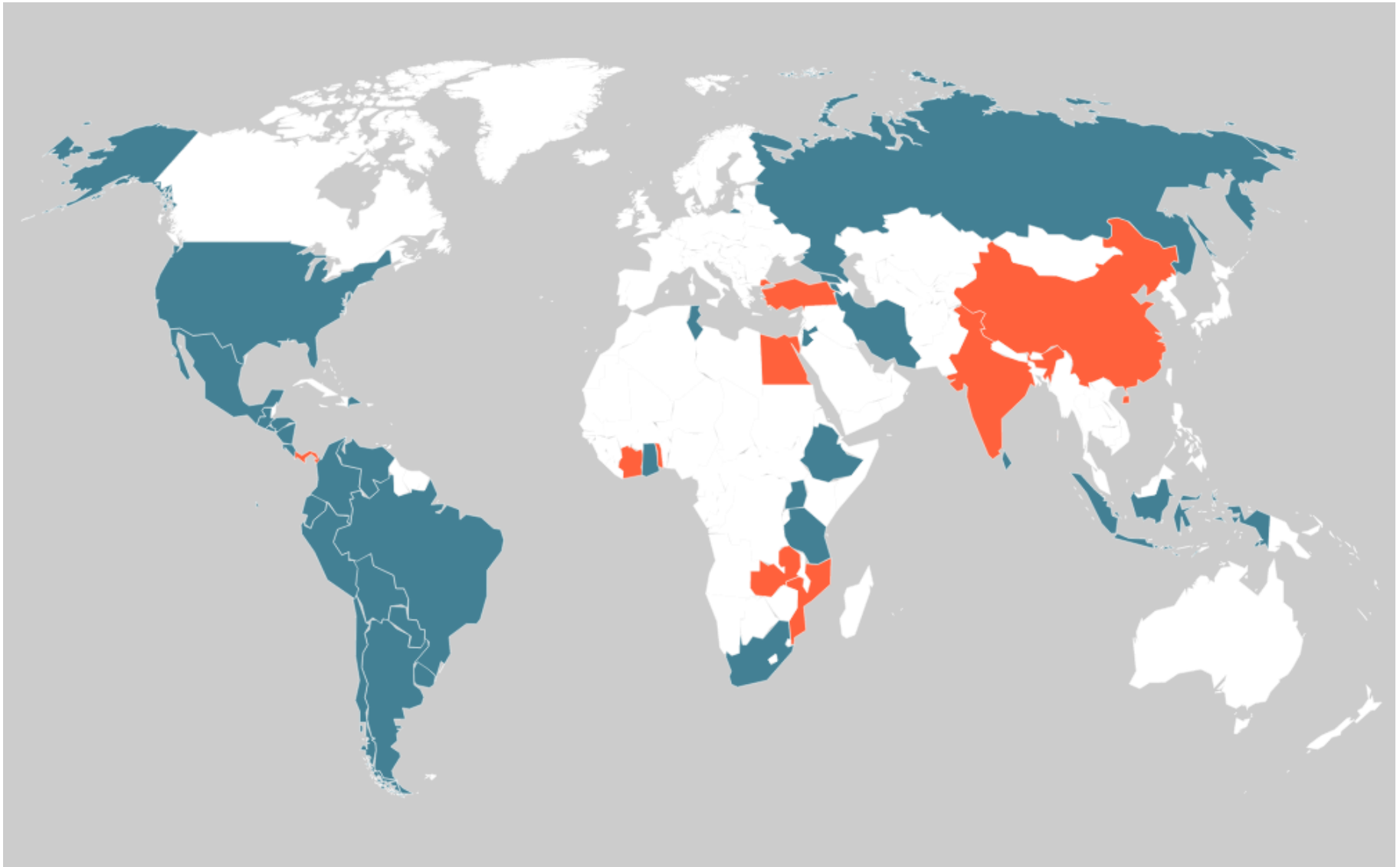
Objective: To measure the impact of fiscal policy on inequality and poverty across the world using a comparable framework

Workstreams:

- Research-based policy tools
- [Data Center](#)
- Advisory and training services
- Bridges to policy

➤ Grant from Bill & Melinda Gates Foundation US\$4.9 million for 5 years (2016 – 2020)

<http://www.commitmenttoequity.org/>



Methodological Highlights

CEQ Assessment

- How much income redistribution and poverty reduction is being accomplished through fiscal policy?
- How equalizing and pro-poor are specific taxes and government spending?
- How effective are taxes and government spending in reducing inequality and poverty?
- What is the impact of fiscal reforms that change the size and/or progressivity of a particular tax or benefit?

CEQ Assessment: Tools

▪ CEQ Handbook

Lustig, Nora, editor. forthcoming. *Commitment to Equity Handbook. Estimating the Impact of Fiscal Policy on Inequality and Poverty.* Brookings Institution and the CEQ Institute.

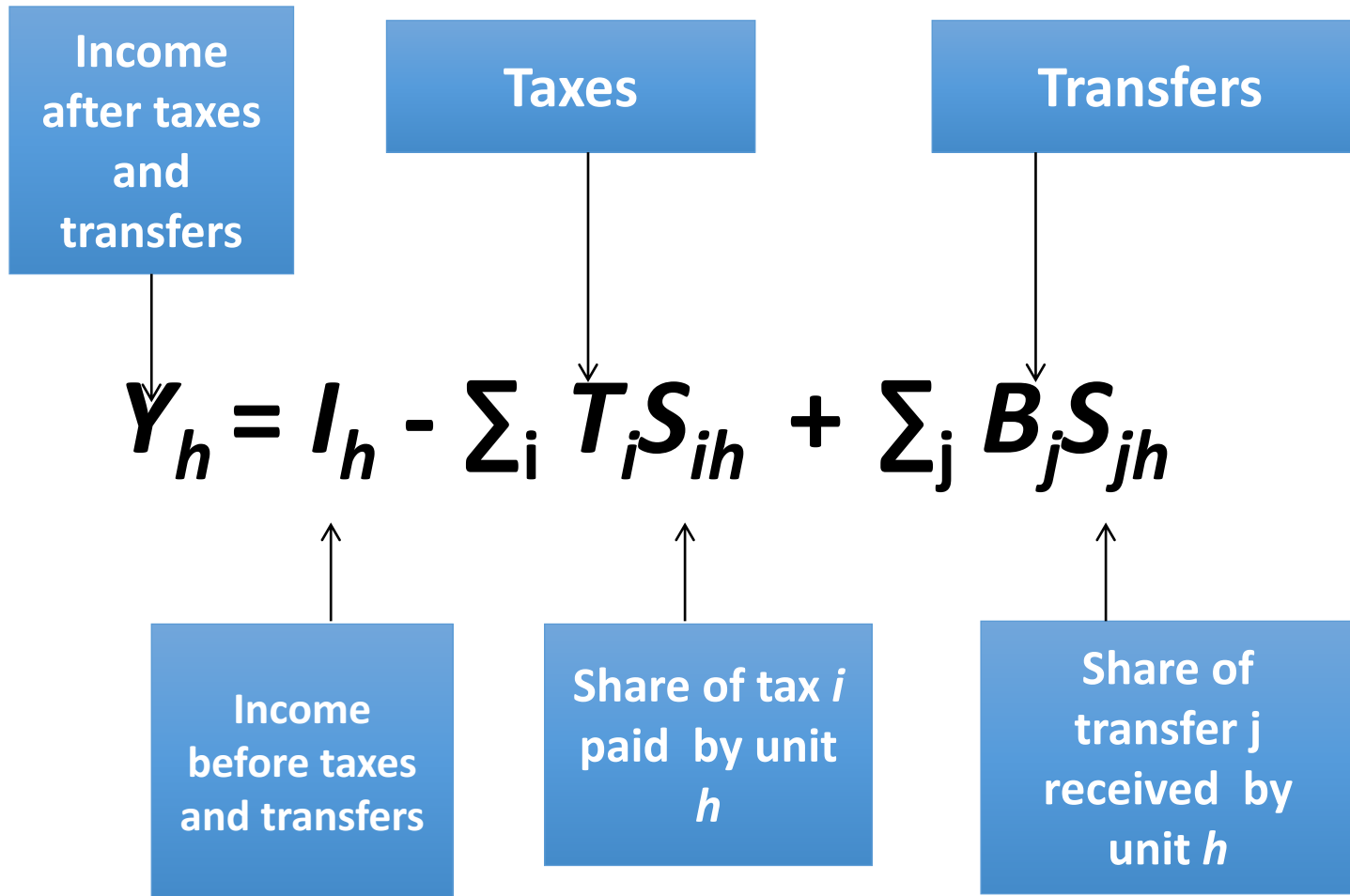
Online edition:

<http://www.commitmenttoequity.org/publications/handbook.php>

- **CEQ Methodology, Implementation and Applications**
- **CEQ Master Workbook:** Excel spreadsheet to present background information, assumptions and results.
- **CEQ Checking Protocol**
- **CEQ Stata Package**

Based on Nora Lustig “Fiscal Policy, Income Redistribution and Poverty Reduction in Low and Middle Income Countries.” Chapter 9 in Lustig, Nora, editor. 2017. *Commitment to Equity Handbook. Estimating the Impact of Fiscal Policy on Inequality and Poverty*. Brookings Institution and the CEQ Institute. (June 2017 online edition available: <http://www.commitmenttoequity.org/publications/handbook.php>)

CEQ Assessment: Fiscal Incidence Analysis



CEQ Assessment: Data & Software Requirements

- A recent Household Survey (possible options: expenditure-income, expenditure, employment, LSMS, etc.) representative at the national level
- Detailed description of the characteristics of each tax and spending item to be included in the analysis
- Audited or confirmed budget and administrative data for year of the survey
- Input-output table, SAM (Social Accounting Matrix), or SUT (Supply and Use table)

CEQ Assessment: Fiscal Interventions

- Currently included:
 - Direct taxes (PIT and payroll taxes)
 - Direct cash transfers
 - Non-cash direct transfers such as school uniforms and breakfast
 - Contributions to pensions and social insurance systems
 - Indirect taxes on consumption
 - Indirect subsidies
 - In-kind transfers such as spending on education and health at average government costs

CEQ Assessment: Income Concepts

MARKET INCOME



PLUS DIRECT TRANSFERS MINUS DIRECT TAXES



DISPOSABLE INCOME



PLUS INDIRECT SUBSIDIES MINUS INDIRECT TAXES



POST-FISCAL or CONSUMABLE INCOME



PLUS MONETIZED VALUE OF PUBLIC SERVICES: EDUCATION & HEALTH

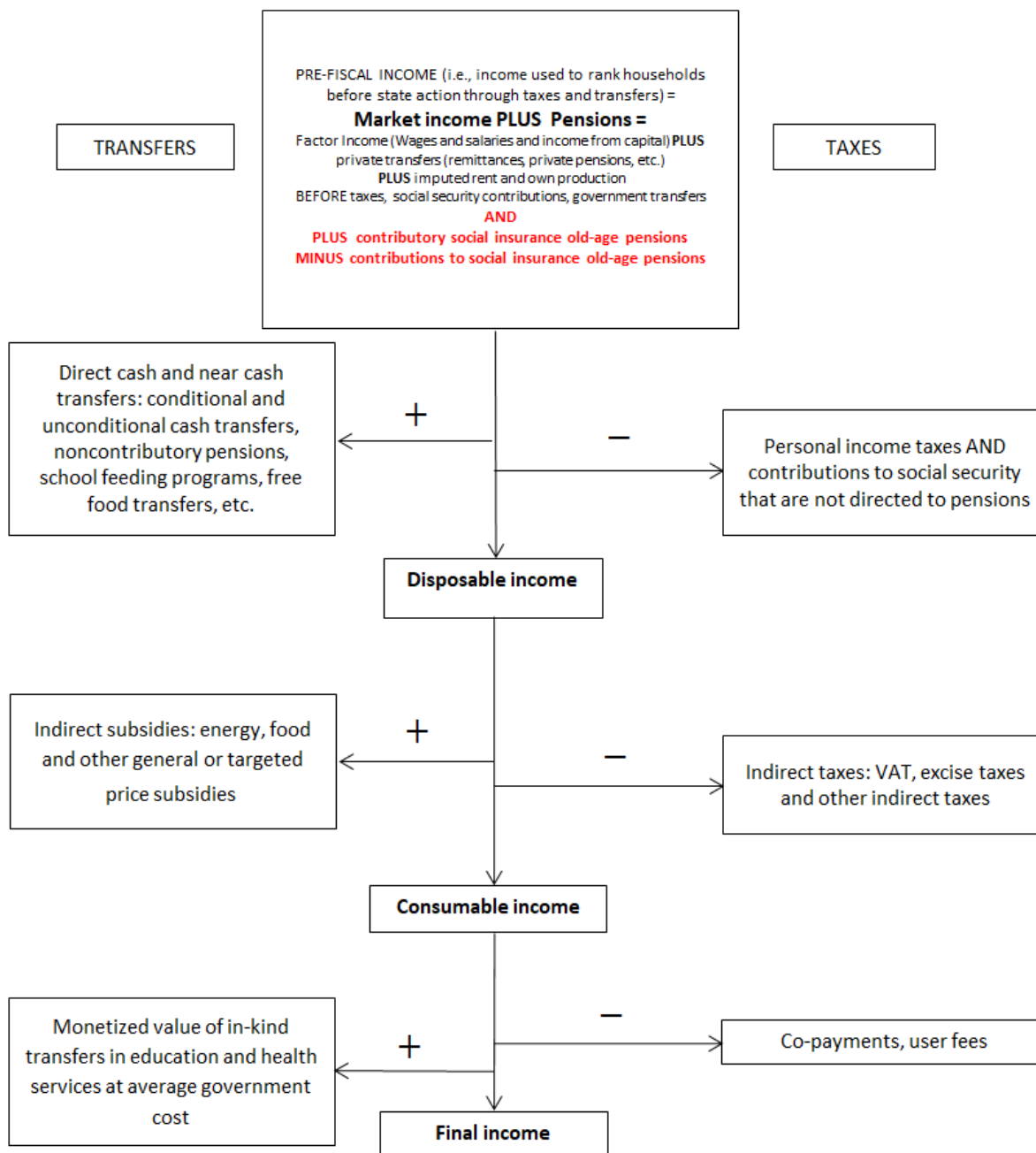


FINAL INCOME

Treatment of Contributory Social Insurance Pensions in CEQ:

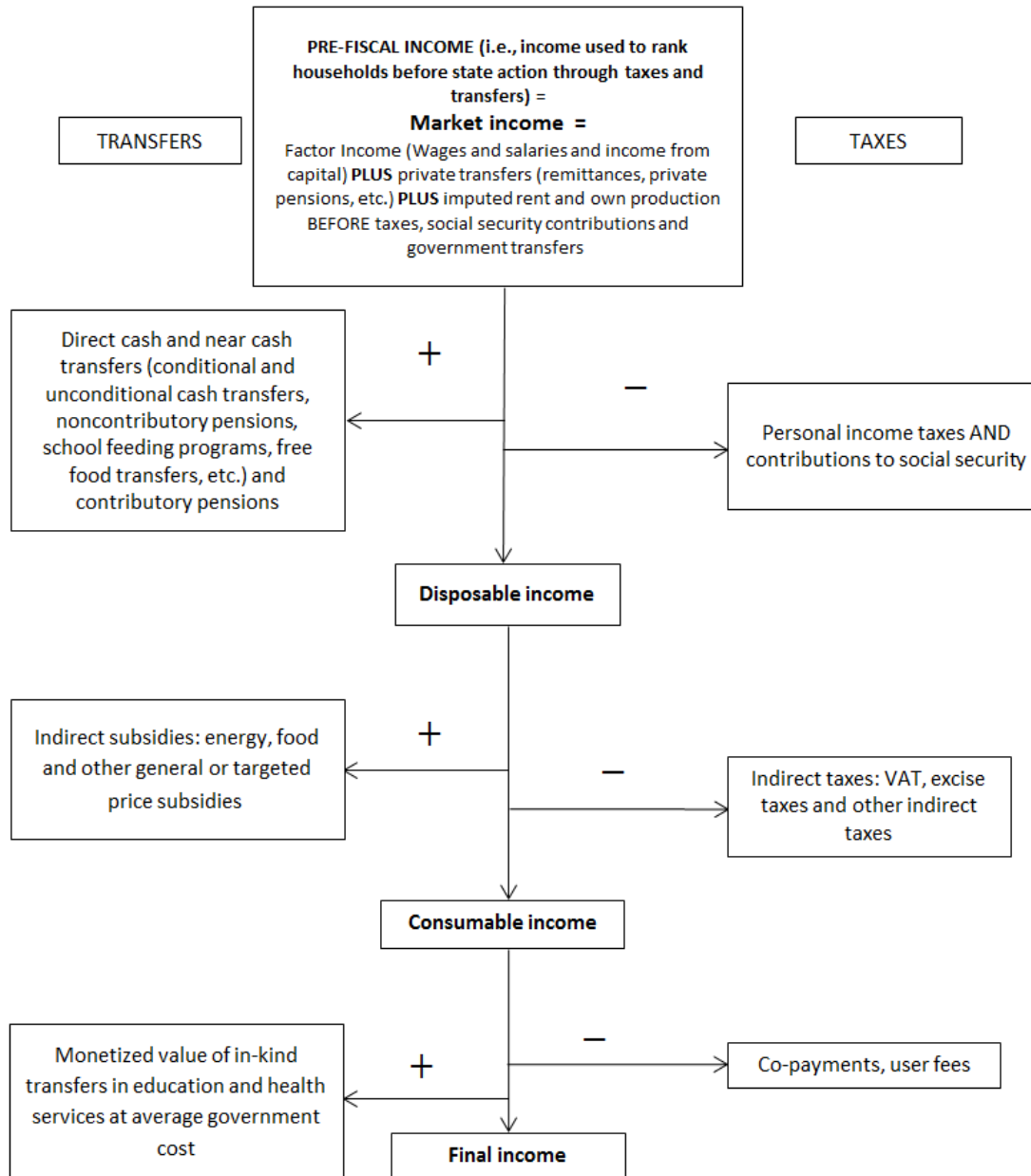
Two extreme scenarios:

- Deferred income in actuarially fair systems: pensions included in *pre-fiscal income* and contributions treated as mandatory savings
- Government transfer: pensions included among direct transfers and contributions treated as a direct tax



CORE INCOME CONCEPTS

SCENARIO: CONTRIBUTORY PENSIONS AS DEFERRED INCOME (PDI)



CORE INCOME CONCEPTS

SCENARIO:
CONTRIBUTORY
PENSIONS AS
PURE
GOVERNMENT
TRANSFER (PGT)

Main Messages

1. Analyzing the tax side without the spending side, or vice versa, is not very useful

- Taxes can be unequalizing but spending so equalizing that the unequalizing effect of taxes is more than compensated [we knew this]

Lambert (2001)

$$RE_N = \frac{(1-g)RE_t + (1+b)RE_B}{1-g+b} > 0$$

Condition 1:

$$\rightarrow RE_t > -\frac{(1+b)}{(1-g)} RE_B$$

Main Messages

1. Analyzing the tax side without the spending side, or vice versa, is not very useful
 - Taxes can be unequalizing but spending so equalizing that the unequalizing effect of taxes is more than compensated [we knew this]
 - Taxes (transfers) can be regressive (progressive) but when combined with other taxes and transfers make the system more (less) equalizing than without the regressive taxes [surprised?]
 - VAT in Chile is regressive (Kakwani index is negative) but its marginal contribution is equalizing
 - User fees in Iran are progressive (Kakwani index is positive) but their marginal contribution is unequalizing

When could a regressive tax exert an equalizing force?

For the reduction in inequality to be higher with the tax than without it, the following condition must hold:

Lambert (2001); CEQ Handbook chapter 2

$$RE_N = \frac{(1 - g)RE_t + (1 + b)RE_B}{1 - g + b} > RE_B$$

Condition 2

$$\rightarrow RE_t > -\frac{(g)}{(1 - g)} RE_B$$

Main Messages

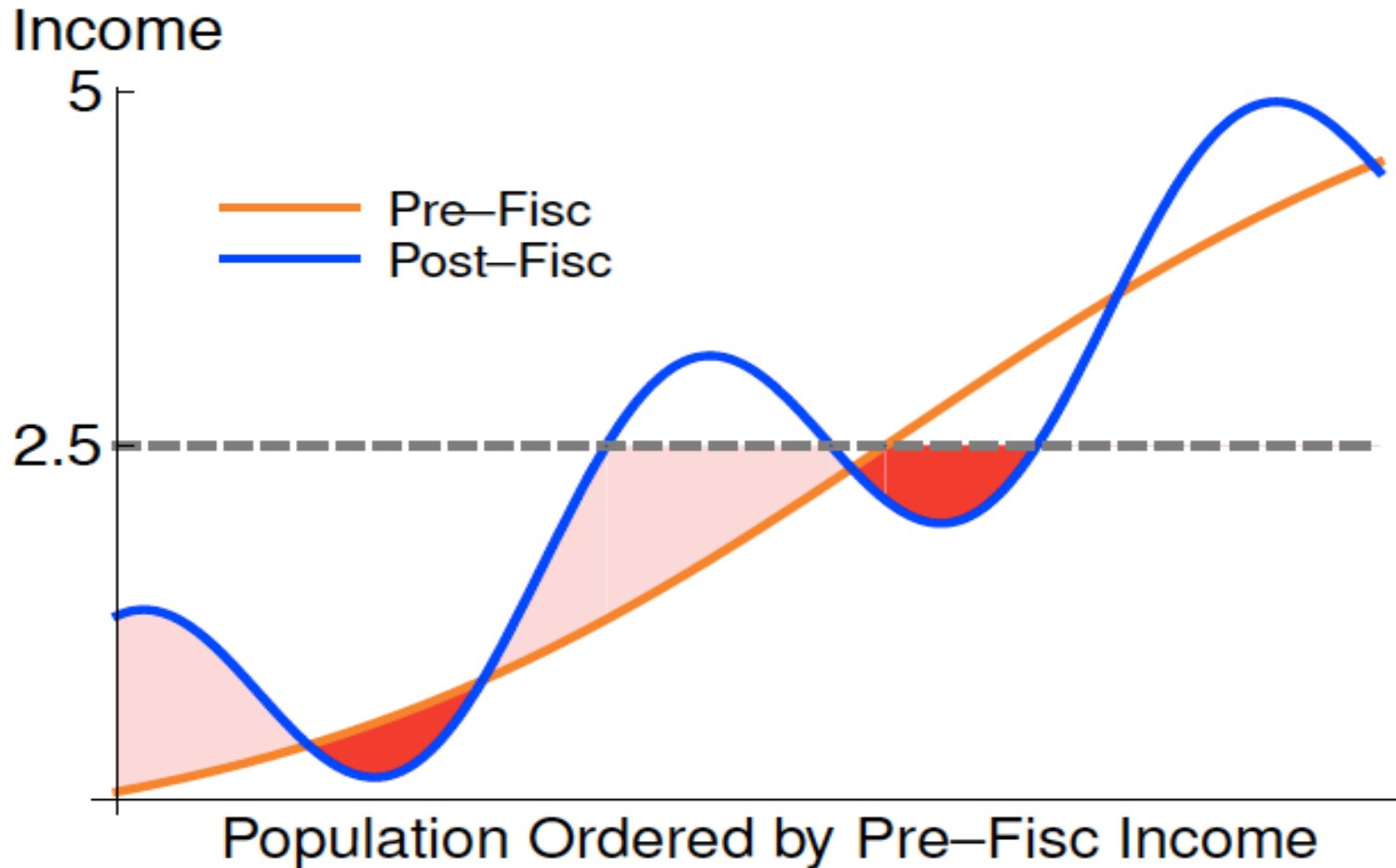
2. Analyzing the impact on inequality only can be misleading

➤ Fiscal systems can be equalizing but poverty increasing [surprised?]

Main Messages

3. Analyzing the impact on traditional poverty indicators can be misleading
 - Fiscal systems can show a reduction in poverty and yet a substantial share of the poor could have been impoverished by the combined effect of taxes and transfers [surprised?]

Fiscal Impoverishment and Fiscal Gains to the Poor



Source: Higgins and Lustig (2016)

Fiscal Redistribution: A Glance at Results

- Empirical results for 30 countries based on fiscal incidence studies from the Commitment to Equity Institute for around 2010
 - Advanced countries: United States
 - East & South Asia: Indonesia and Sri Lanka
 - Europe and Central Asia: Armenia, Georgia, Russia
 - Latin America & the Caribbean: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Peru, Uruguay and Venezuela
 - Middle East and North Africa: Iran, Jordan, and Tunisia
 - Sub-Saharan Africa: Ethiopia, Ghana, South Africa, Tanzania, and Uganda

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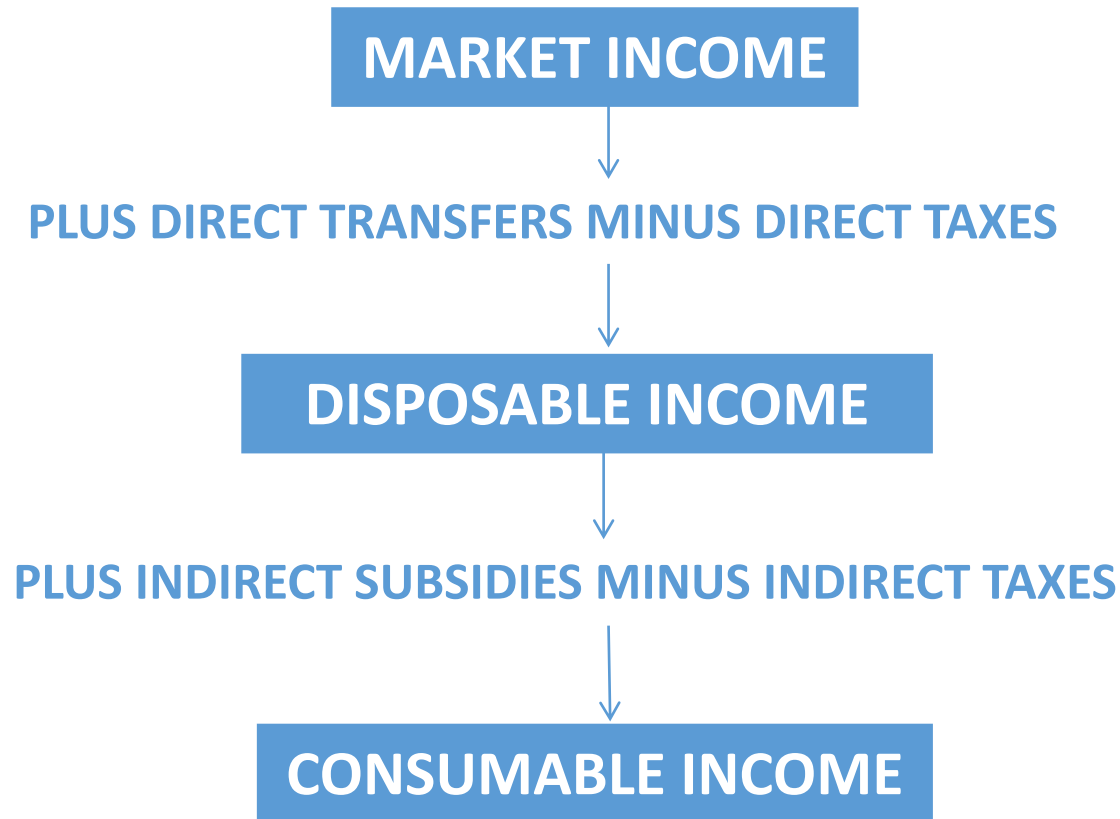
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Key Questions

- Inequality
 - How much income redistribution is being accomplished through fiscal policy?
 - How significant is the assumption made about contributory pensions?
 - Is there a Robin Hood paradox?
 - Which taxes and transfers are equalizing?
- Poverty
 - Are net taxes poverty-reducing?

CEQ Assessment: Income Concepts

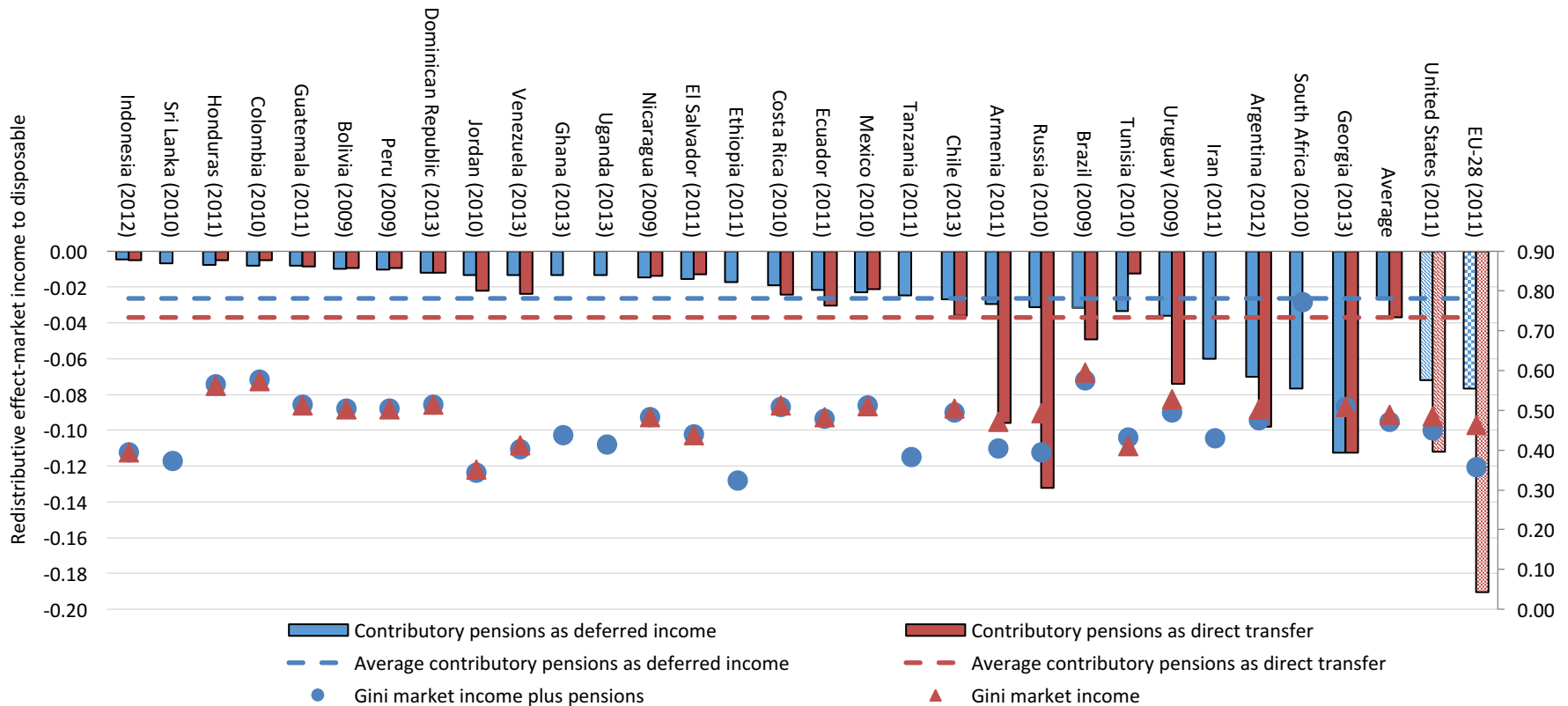


Source: Lustig (2017)

Redistributive Effect

(Change in Gini: market income plus pensions and market income to disposable income, circa 2010)

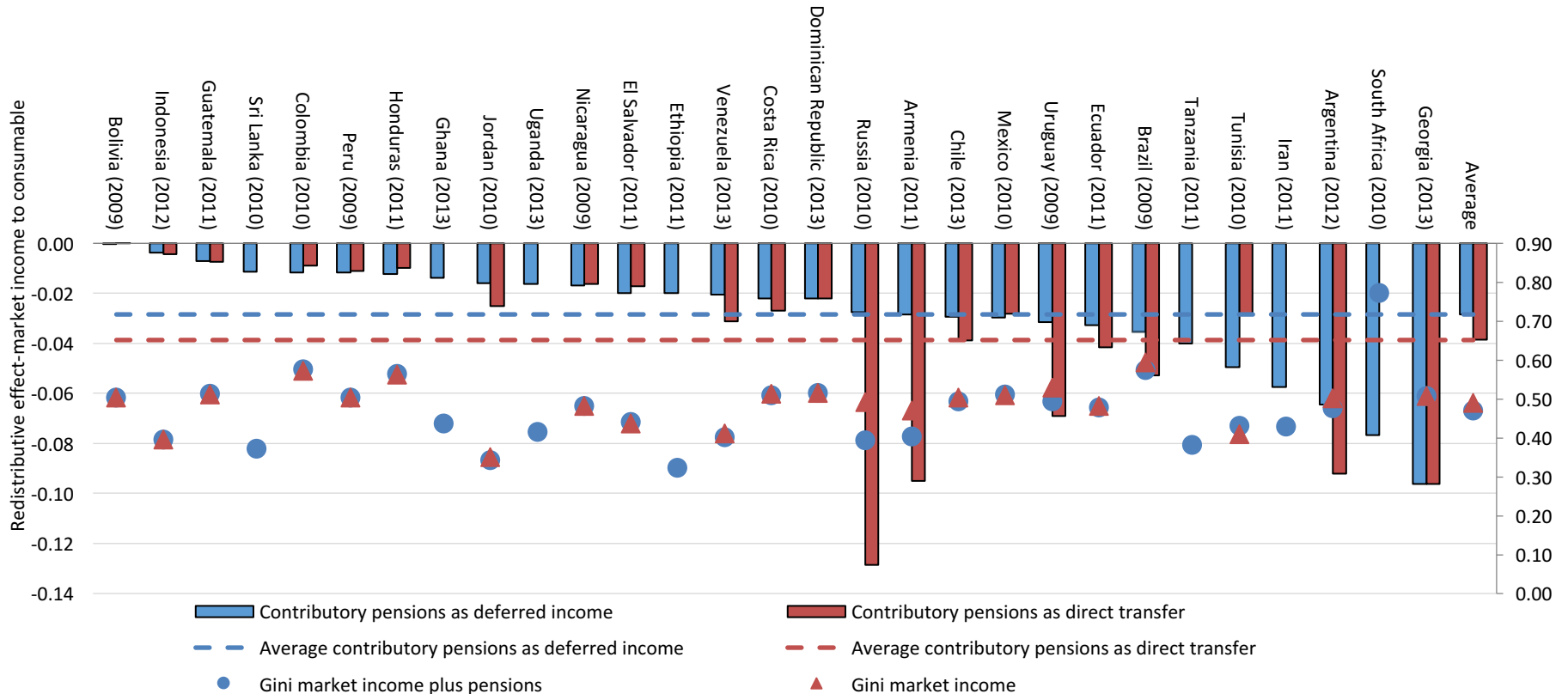
(ranked by redistributive effect (left hand scale); Gini coefficients right hand scale)



Redistributive Effect

(Change in Gini: market income plus pensions and market income to consumable income, circa 2010)

(ranked by redistributive effect (left hand scale); Gini coefficients right hand scale)

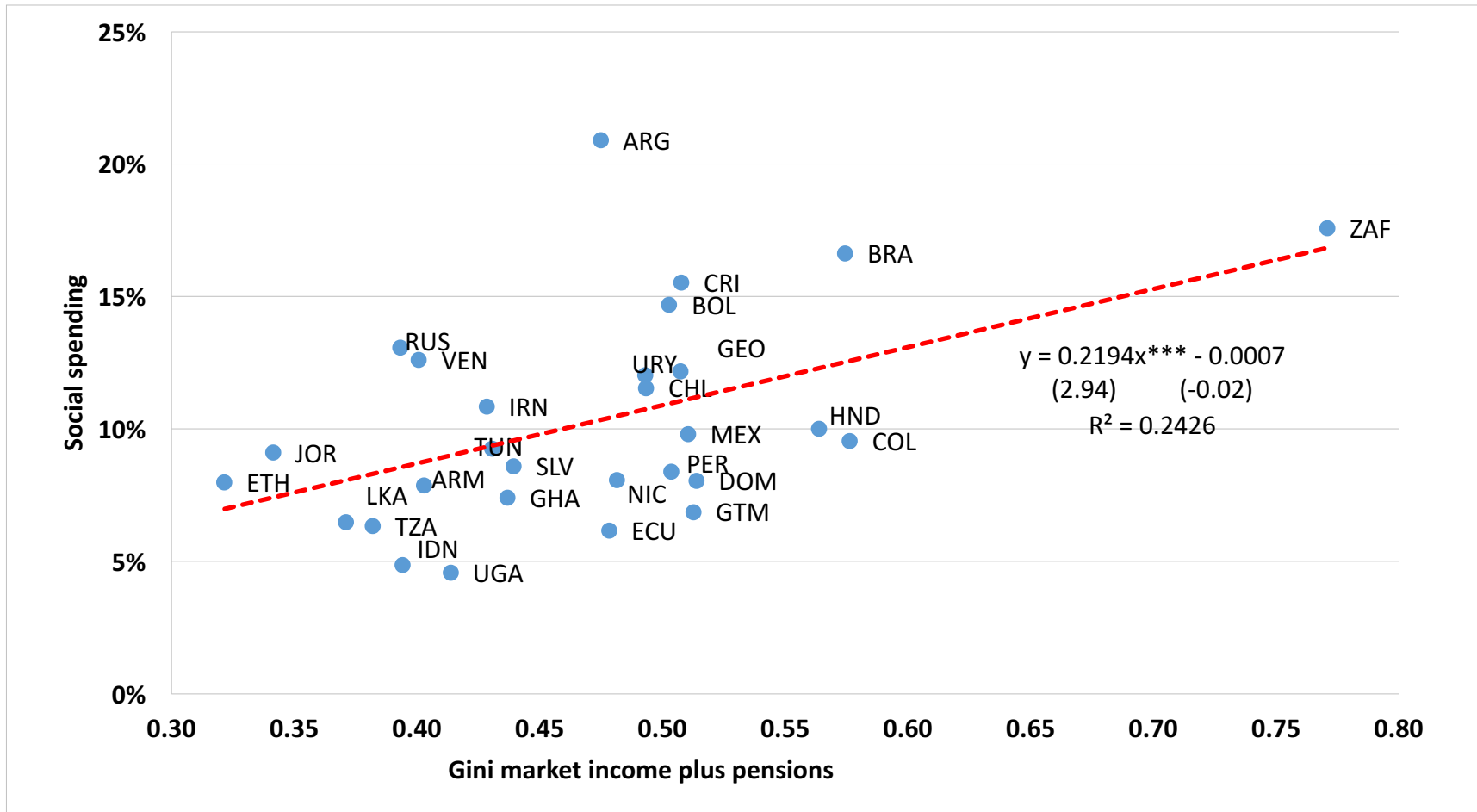


What is the Robin Hood Paradox? Do we find evidence in our sample of countries?

- Lindert (2004) found that-historically- there was an inverse relationship between pre-fiscal inequality and the amount of resources societies were willing to devote for tax-based redistribution
 - This Lindert called the “Robin Hood Paradox”
- We tested the hypothesis for the sample of 29 countries:
 - Two “dependent” variables: social spending/GDP and redistributive effect
 - For the three possible ways to measure the redistributive effect in terms of comprehensiveness of fiscal interventions
 - For the two pensions scenario: deferred income and transfer
 - For two ways to measure the redistributive effect: change in Gini points (or, percentage points more generally) and change in percent

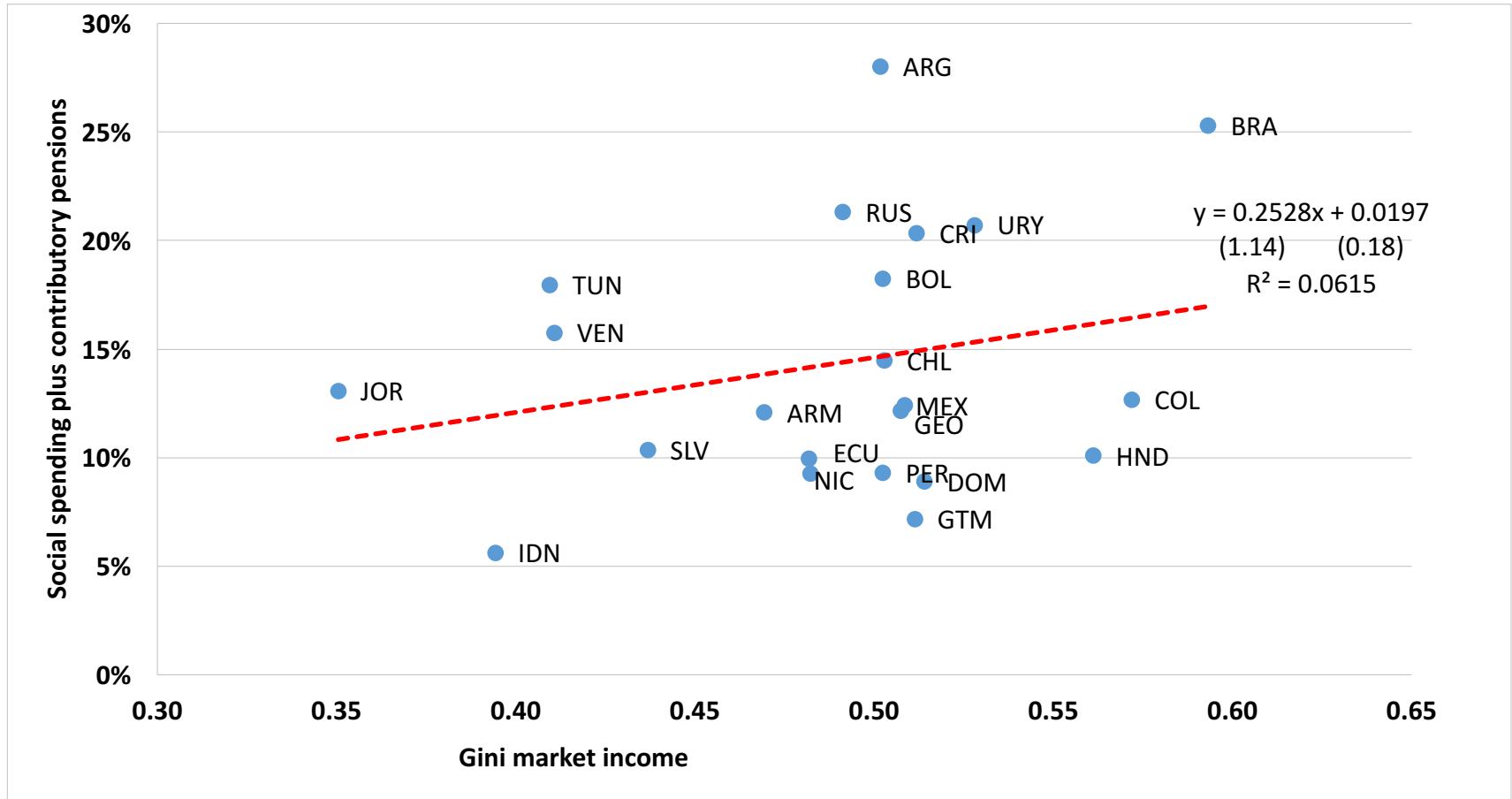
More Unequal, More Social Spending/GDP No “Robin Hood Paradox”

Contributory pensions as deferred income



More Unequal, More social Spending/GDP Cannot reject “Robin Hood Paradox”

Contributory pensions as direct transfer



Testing the Robin Hood Paradox: Do we find that at more pre-fiscal inequality less redistribution? Results for 29 countries

Scenario	Redistributive Effect From	Percentage Points	Percent
Deferred Income	Disposable	NO	CANNOT REJECT
	Consumable	NO	CANNOT REJECT
	Final	NO	NO
Transfers	Disposable	CANNOT REJECT	CANNOT REJECT
	Consumable	CANNOT REJECT	CANNOT REJECT
	Final	CANNOT REJECT	CANNOT REJECT

What is the contribution of a particular tax or transfer to the change in inequality?

- Sequential method
 - May give the wrong answer to the “without vs. with comparison” because it ignores path dependency
- **Marginal contribution method (same for poverty)**
 - Gives correct answer to the “without vs. with comparison” but does not fulfill the principle of aggregation: i.e., the sum of the marginal contributions will not equal the total change in inequality (except by coincidence)
- Average Contribution with all possible paths considered (Shapley value)
 - Fulfills the principle of aggregation, takes care of path dependency but the sign may be different from the marginal contribution => problematic?

Calculating the Marginal Contribution of a Tax (Transfer)

The marginal contribution of a tax is defined as

$$MC_t = G_{x+B} - G_{x+B-t}$$

Where G_{x+B} , G_{x+B-t} and are the Gini coefficient of income with the transfer but **without** the tax and the Gini coefficient with the transfer and **with** the tax, respectively

If $MC_t > 0$, remember, the tax is equalizing

Which interventions are equalizing and which are unequalizing?

- Direct taxes are always equalizing
- Direct transfers are always equalizing
- Indirect taxes net of indirect subsidies are equalizing in 18 of the 29 countries (surprised?)

Key Questions

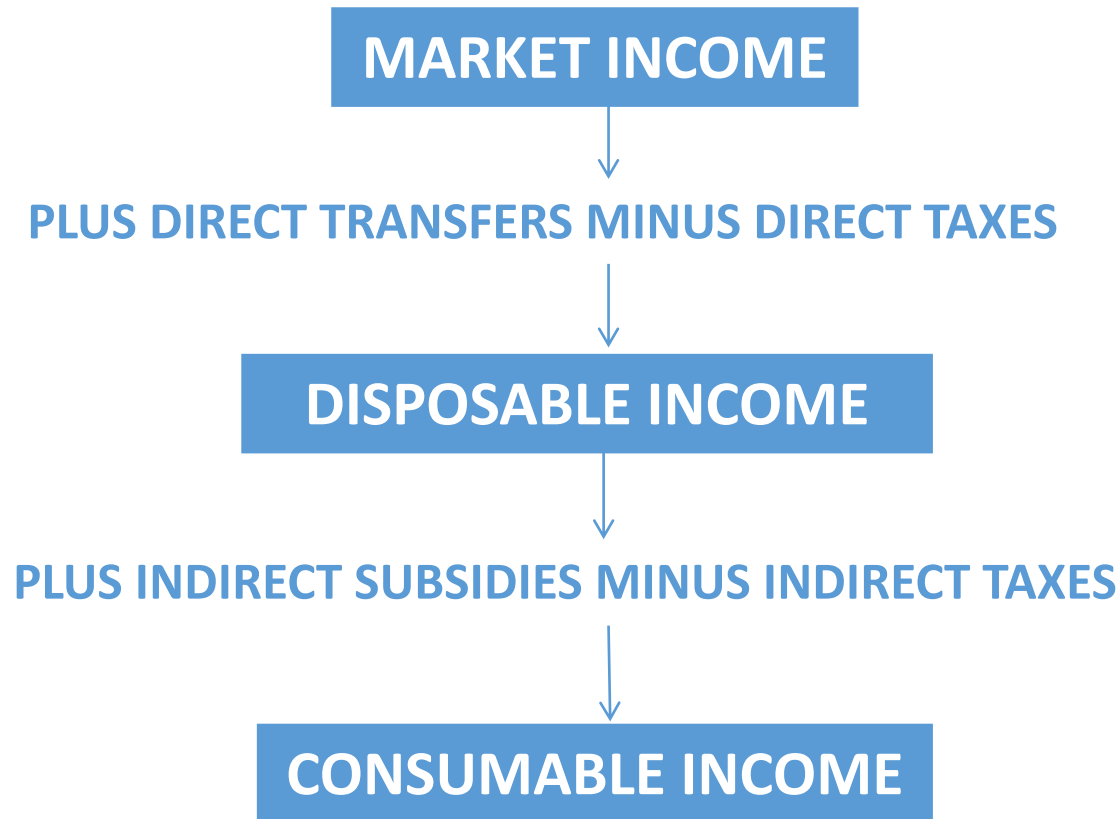
- Inequality
 - How much income redistribution is being accomplished through fiscal policy?
 - How significant is the assumption made about contributory pensions?
 - Is there a Robin Hood paradox?
 - Which taxes and transfers are equalizing?
- Poverty
 - Are net taxes poverty-reducing?

- Fiscal policy can be equalizing but poverty increasing (in terms of the poor's ability to consume private goods and services):
 - 1.25/day line: Ethiopia, Ghana, Guatemala, Nicaragua, Tanzania and Uganda
 - 2.50/day line: Armenia, Bolivia, Ethiopia, Ghana, Guatemala, Honduras, Nicaragua, Sri Lanka, Tanzania and Uganda
 - 4/day line: all of the above plus Argentina, Brazil, Costa Rica, Dominican Republic, El Salvador, Peru, Tunisia and Venezuela
- This worrisome result stems mainly from consumption taxes

Note: Poverty lines in 2005 ppp

Lustig (2017)

CEQ Assessment: Income Concepts

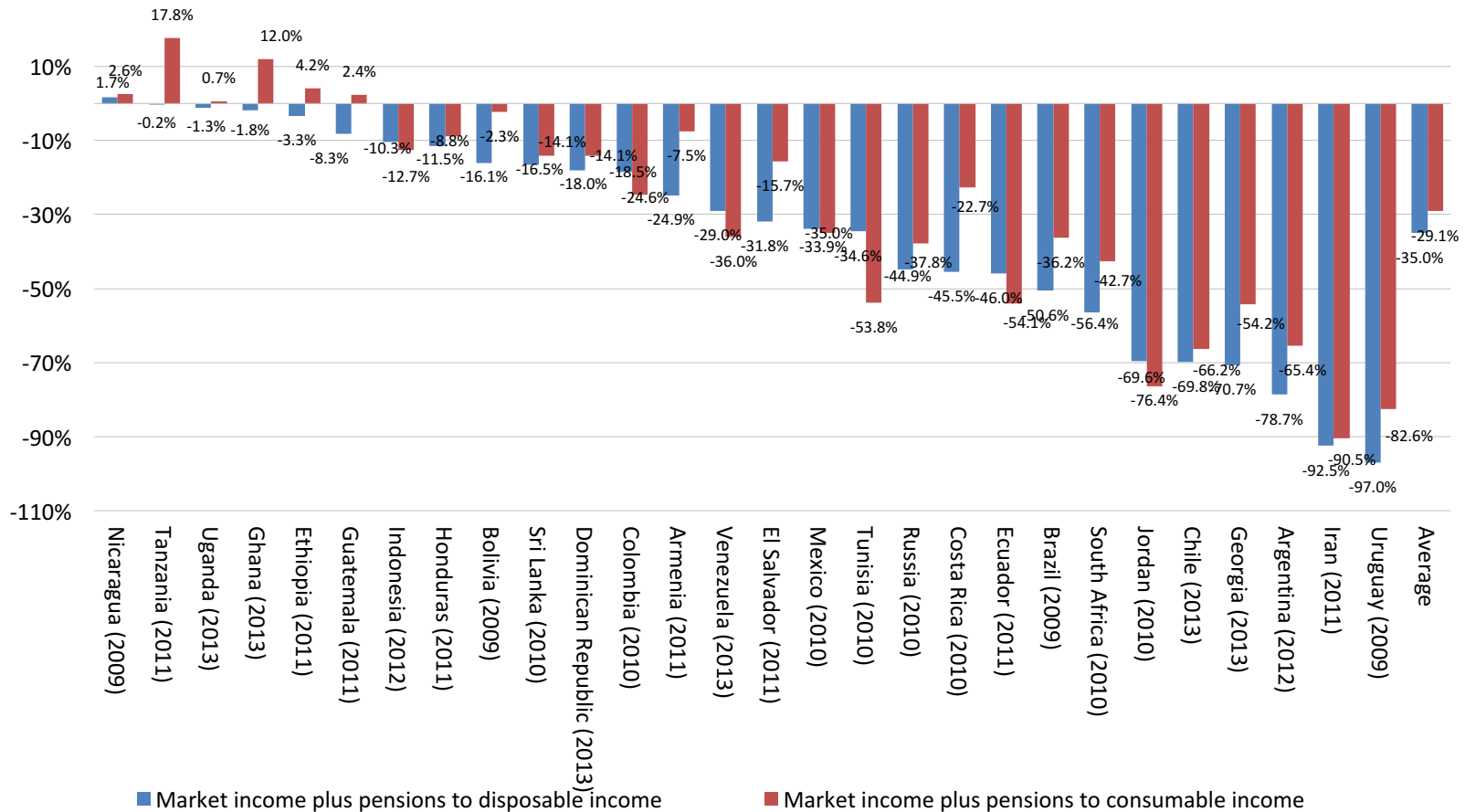


Source: Lustig (2017)

Fiscal Policy and Poverty Reduction

Change in Headcount Ratio from Market Income plus Pensions to Consumable Income (Poverty line \$1.25 2005 PPP/day); in %
Contributory pensions as deferred income

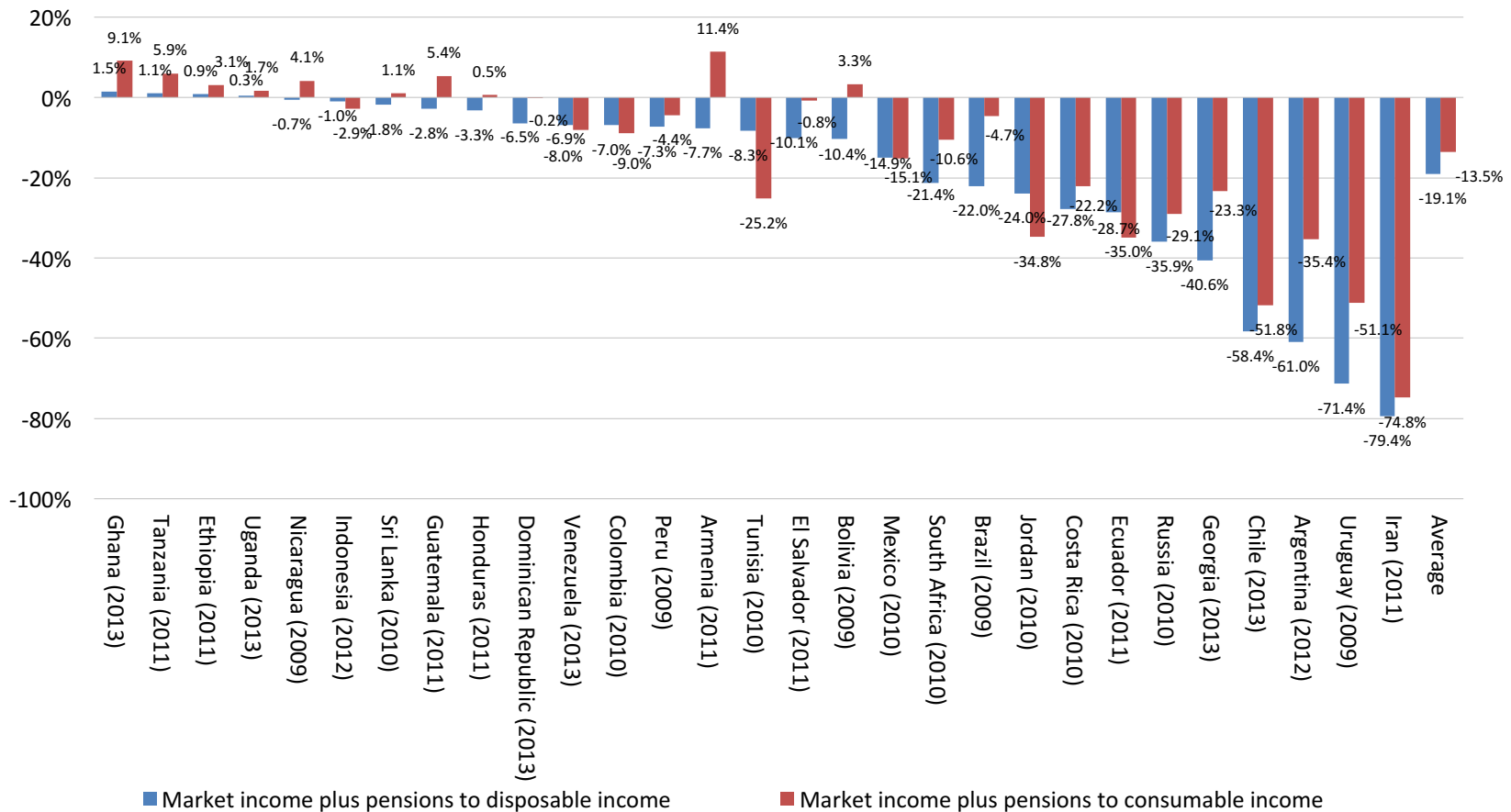
(ranked by poverty reduction in %; poverty line \$1.25 2005PPP/day)



Fiscal Policy and Poverty Reduction

Change in Headcount Ratio from Market Income plus Pensions to Consumable Income (Poverty line \$2.5 2005 PPP/day); in %
 Contributory pensions as deferred income

(ranked by poverty reduction in %; poverty line \$2.5 2005PPP/day)

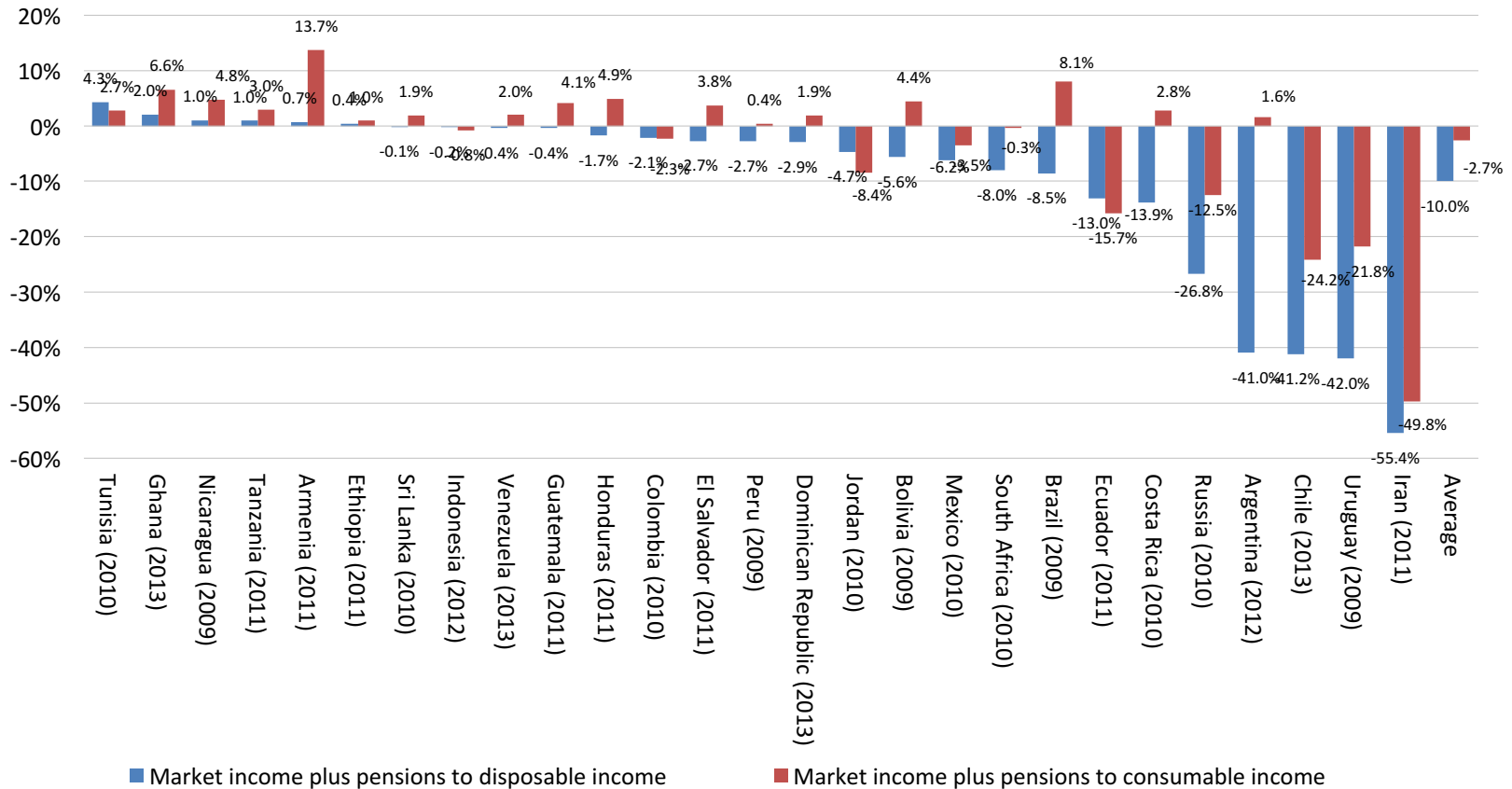


Source: Lustig (2017)

Fiscal Policy and Poverty Reduction

Change in Headcount Ratio from Market Income plus Pensions to Consumable Income (Poverty line \$4 2005 PPP/day); in %
 Contributory pensions as deferred income

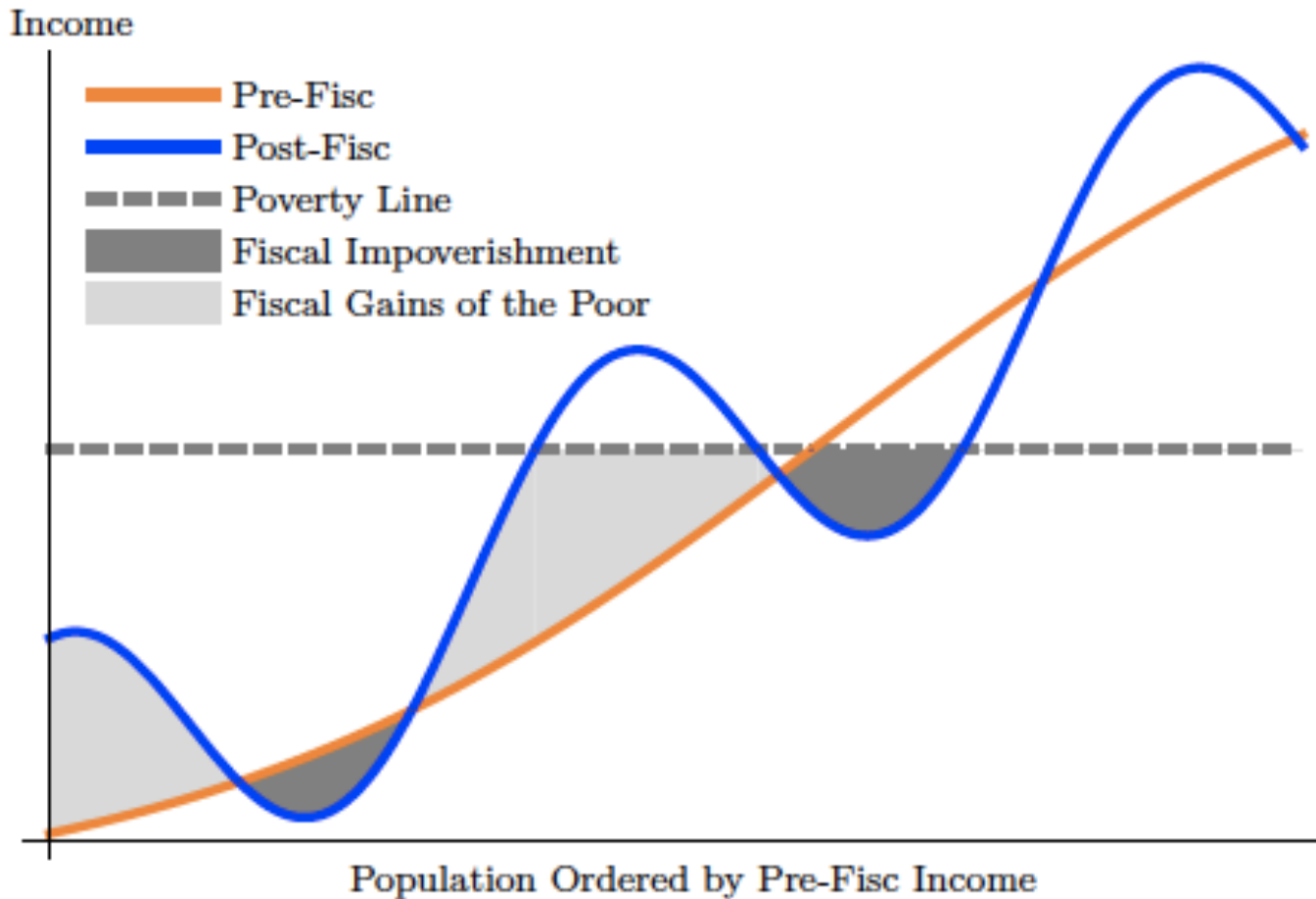
(ranked by poverty reduction in %; poverty line \$4 2005PPP/day)



Source: Lustig (2017)

Analyzing the impact on traditional poverty indicators can be misleading

- Fiscal systems can show a reduction in poverty and yet a substantial share of the poor could have been impoverished by the combined effect of taxes and transfers



Source: Higgins and Lustig (2016). Can a poverty reducing and progressive tax and transfer system hurt the poor? *Journal of Development Economics* 122, 63-75, 2016

Fiscal Impoverishment

(Market to Consumable Income)

Country (survey year)	Market income plus pensions Poverty headcount (%)	Change in poverty headcount (p.p.)	Market income plus pensions inequality (Gini)	Reynolds-Smolensky	Change in inequality (▲Gini)	Fiscally impoverished as % of population	Fiscally Impoverished as % of consumable income poor
<i>Panel A: Upper-middle income countries, using a poverty line of \$2.5 2005 PPP per day</i>							
Brazil (2009)	16.8	-0.8	57.5	4.6	-3.5	5.6	34.9
Chile (2013)	2.8	-1.4	49.4	3.2	-3.0	0.3	19.2
Ecuador (2011)	10.8	-3.8	47.8	3.5	-3.3	0.2	3.2
Mexico (2012)	13.3	-1.2	54.4	3.8	-2.5	4.0	32.7
Peru (2011)	13.8	-0.2	45.9	0.9	-0.8	3.2	23.8
Russia (2010)	4.3	-1.3	39.7	3.9	-2.6	1.1	34.4
South Africa (2010)	49.3	-5.2	77.1	8.3	-7.7	5.9	13.3
Tunisia (2010)	7.8	-0.1	44.7	8.0	-6.9	3.0	38.5

Fiscal Impoverishment

(Market to Consumable Income)

Country (survey year)	Market income plus pensions Poverty headcount (%)	Change in poverty headcount (p.p.)	Market income plus pensions inequality (Gini)	Reynolds-Smolensky	Change in inequality (▲Gini)	Fiscally impoverished as % of population	Fiscally Impoverished as % of consumable income poor
<i>Panel B: Lower-middle income countries, using a poverty line of \$1.25 2005 PPP per day</i>							
Armenia (2011)	21.4	-9.6	47.4	12.9	-9.3	6.2	52.3
Bolivia (2009)	10.9	-0.5	50.3	0.6	-0.3	6.6	63.2
Dominican Republic (2013)	6.8	-0.9	50.2	2.2	-2.2	1.0	16.3
El Salvador (2011)	4.3	-0.7	44.0	2.2	-2.1	1.0	27.0
Ethiopia (2011)	31.9	2.3	32.2	2.3	-2.0	28.5	83.2
Ghana (2013)	6.0	0.7	43.7	1.6	-1.4	5.1	76.6
Guatemala (2010)	12.0	-0.8	49.0	1.4	-1.2	7.0	62.2
Indonesia (2012)	12.0	-1.5	39.8	1.1	-0.8	4.1	39.2
Sri Lanka (2010)	5.0	-0.7	37.1	1.3	-1.1	1.6	36.4
Tanzania (2011)	43.7	7.9	38.2	4.1	-3.8	50.9	98.6

Source: Higgins and Lustig (2016)

- Fifteen of the eighteen countries with a reduction in poverty and inequality due to the tax and transfer system experienced various degrees of fiscal impoverishment.
- In ten countries—Armenia, Bolivia, Brazil, El Salvador, Guatemala, Indonesia, Mexico, Russia, Sri Lanka, and Tunisia—between one-quarter and two-thirds of the post-fisc poor lost income to the fiscal system.
- In the three countries where the headcount ratio rose (Ethiopia, Ghana and Tanzania), the proportion of the poor who were impoverished by the fiscal system is staggering (above 75 percent).
- In Armenia, Ethiopia, Indonesia, Tunisia, and Russia, between 25 and 50% are still fiscally impoverished when the monetized value of education and health services are included as transfers

In sum...

- In **NO** country, inequality increases as a result of taxes, subsidies and social spending
 - Fiscal policy is always equalizing
- Assumptions about contributory pensions can make a big difference in countries with large social security systems and a high proportion of retirees
 - Pensions, however, can be equalizing or unequalizing
- Robin Hood Paradox:
 - More unequal, higher share of social spending to GDP (different from Lindert's results from history; Lindert, 2004)
 - HOWEVER, the more unequal not necessarily the larger redistributive effect (cannot reject "Robin Hood" paradox)
- Due mainly to consumption taxes, post-fisc poverty is higher than pre-fisc poverty; in a number of countries, the (extreme) poor are net payers into the fiscal system

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Thank you!