

# **Methodology of the Fiscal Incidence Analysis**

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# Outline

- What is the Commitment to Equity (CEQ) assessment?
- Methodology
- A sampler of results
- Application with African data

# CEQ

- CIPR and Dept. of Economics at Tulane University and, for Latin America, the Inter-American Dialogue
- Currently: 12 countries from Latin America; one 'local' team per country
- 7 finished: Argentina (2003, 2006, 2009), Bolivia (2007), Brazil (2009), Mexico (2008, 2010), Peru (2009), Uruguay (2009), Paraguay (2010)
- 5 in progress: Chile, Colombia, Costa Rica, El Salvador, Guatemala
- Upcoming/possibilities: African countries with AfDB; Ecuador; Honduras, Nicaragua, Panama with ICEFI; U.S.; pilots in other regions in partnership with WB

# Background

- CEQ is designed to assess how aligned fiscal policies are with supporting a minimum living standard and with reducing ‘post-fisc’ inequality
- CEQ can provide a roadmap for governments, multilateral institutions, and nongovernmental organizations in their efforts to build more equitable societies

# Questions

- How much inequality and poverty reduction is being accomplished through social spending, subsidies and taxes?
- Who bears the burden of taxes and benefits from social spending? By socioeconomic class; rural vs. urban; by race
- Within the limits of fiscal prudence, what could be done to make taxes and transfers more pro-poor?

# Progressivity and Poverty Reduction

- How much redistribution and poverty reduction is being accomplished through social spending, subsidies and taxes at the national, rural and urban levels and for different ethnic/racial/religious groups?
- How progressive are taxes and benefits overall and by individual categories?

# Tax Burden and Benefits

- Which socioeconomic groups (extreme poor, moderate poor, vulnerable, middle class and rich) are net receivers from/net payers to the fiscal system?
- Do socioeconomic groups get a “fair share” of in-kind government benefits?
- Which socioeconomic groups experience upward and downward fiscal mobility?
- Is free health care and tertiary education primarily a subsidy to the middle class and the rich?
- Does the benefits system have an “urban bias”?
- Are benefits (taxes) captured (paid) more by particular ethnic, racial or religious groups in the existing system?

# Shortcomings, Policy Directions

- If redistribution and poverty reduction are limited, is this because government collects too little revenue and/or spends too little for redistributive purposes?
- If it turns out that the government collects too little, is this is so because the country is too poor or the government's capacity to tax is too low?
- If it turns out that the government spends too little for redistributive purposes, is this so because public spending on other items (military expenditures or debt servicing, for example) is high?
- Is redistributive spending *reaching the poor* sufficient?
  - Is redistributive spending progressive enough?
  - Does the safety net system cover the universe of the poor?
  - Is the per-poor person transfer as high as required?
  - Are transfers sufficiently progressive among the poor?



# Outputs

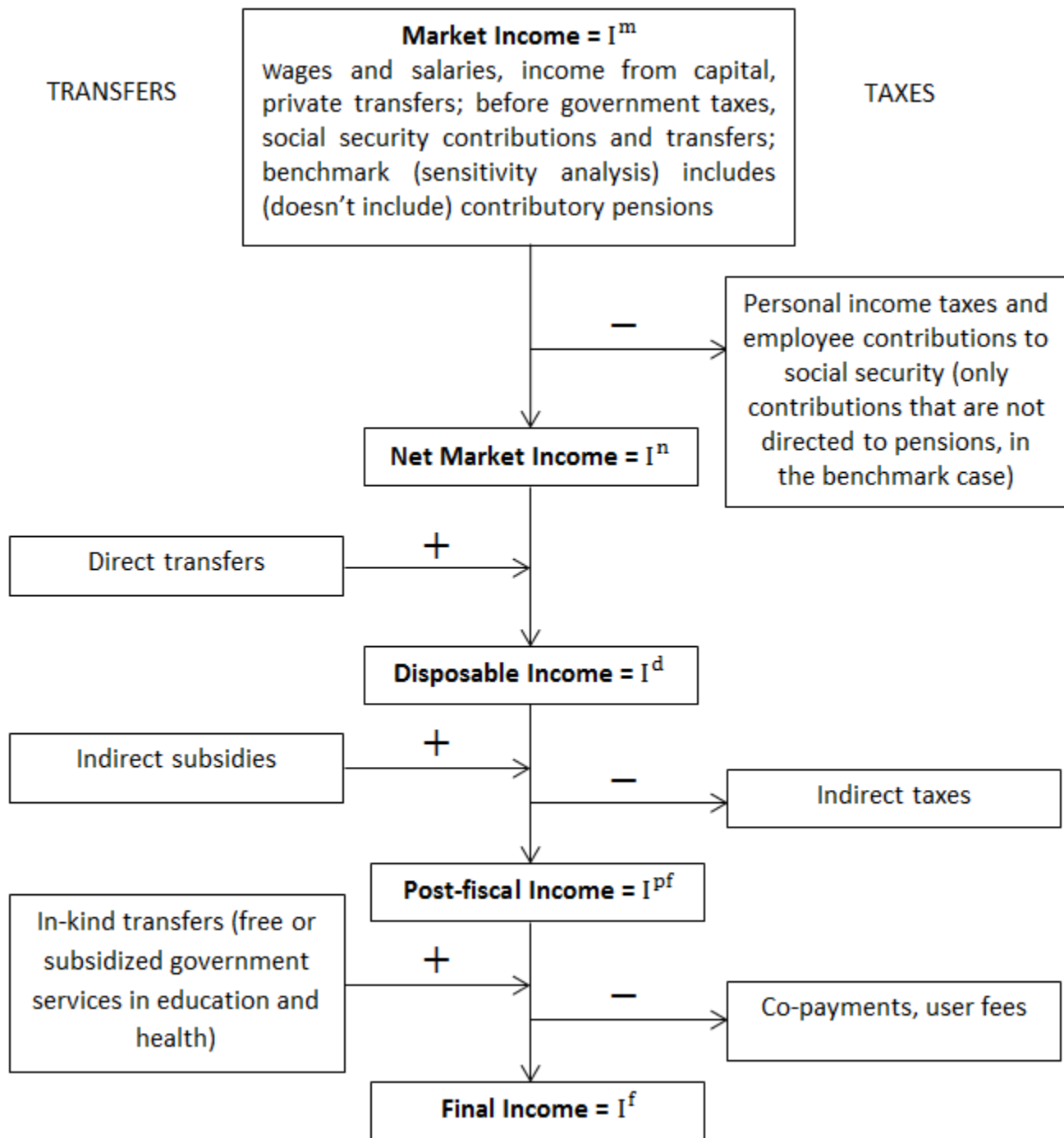
- Methodology: Handbook & Diagnostic Questionnaire
- Forthcoming special issue of *Public Finance Review*
- World Bank working papers (Uruguay and Paraguay) and Tulane and other additional working papers
- Chapter for Asian Development Bank publication
- In 2013, edited volume with LA cases

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# Fiscal Incidence Analysis

- Data sources:
  - household income/expenditure surveys
  - in one case (Colombia), tax return data
- Definition of Income Concepts
- Construction of Income Concepts: allocating taxes & transfers to each household



# Contributory Pensions

- Government transfer or market income?
  - No agreement in literature for pay as you go systems
- Benchmark
  - Contributory pensions are part of market income
  - Contributions to pensions are not subtracted
- Sensitivity Analysis
  - Contributory pensions are a government transfer
  - Contributions to pensions are subtracted like tax

# Market Income

- In addition to the uncontroversial wages and salaries, income from capital and private transfers (e.g., remittances), it includes:
  - Auto-consumption (with some exceptions)
  - Imputed rent for owner's occupied housing
  - Contributory pensions from individualized accounts
  - Benchmark: Contributory pensions from social security

# Net Market Income

- Start with market income
- Subtract direct taxes
  - individual income taxes
  - corporate taxes (when possible)
  - property and other direct taxes (when possible)
- Subtract contributions to social security
  - Benchmark: contributions going to pensions are NOT subtracted; all the other contributions are
  - Sensitivity Analysis: all contributions to social security are subtracted

# Disposable, Post-fiscal, Final Income

- Disposable income
  - Add direct transfers
  - Includes cash transfers and food transfers
  - Sensitivity analysis: pensions are a direct transfer
- Post-fiscal income
  - Add indirect subsidies
  - Subtract indirect taxes
- Final income
  - Add in-kind transfers from free or subsidized public services in education, health, housing



# Scaling Up

- Household surveys understate “true” income
  - Underreporting
  - Lack of adequate questions
  - Society’s richest not captured by survey
- No scaling up for poverty measures
- Scaling up for inequality and distributional measures
  - To avoid overstating impact of in-kind transfers

# Constructing Income Concepts: Allocation Methods

- Direct Identification
- Imputation
- Inference
- Simulation
- Alternate Survey
- Secondary Sources

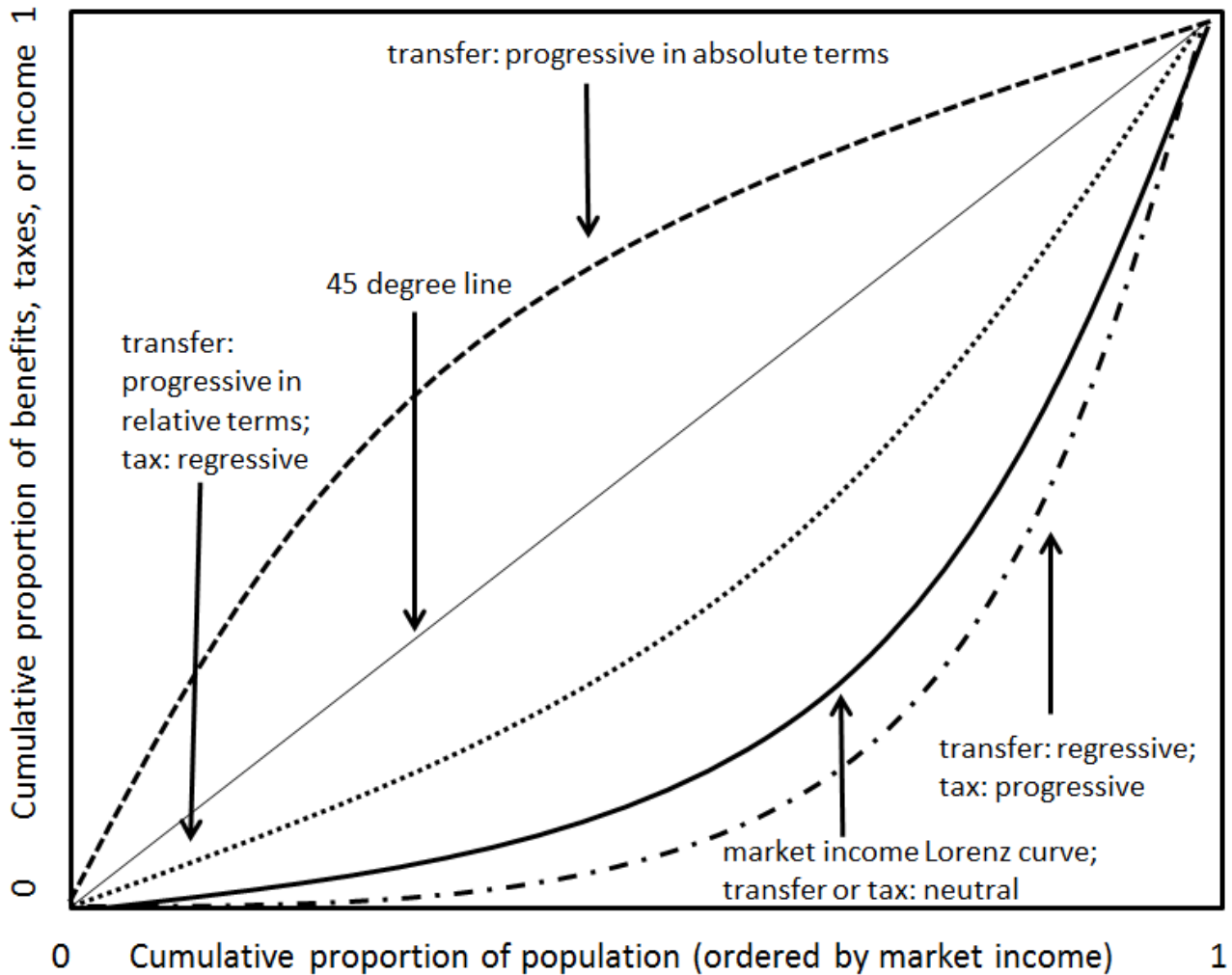
# Fiscal Incidence Analysis: A Primer

- Indicators:
  - Changes in inequality and poverty
  - Incidence by decile, socioeconomic class, rural/urban, race and ethnicity
  - Concentration shares by decile, socioeconomic class, rural/urban, race and ethnicity
  - Concentration curves for taxes and transfers
  - Lorenz curves for income concepts
  - Cumulative distribution functions of income

# Fiscal Incidence Analysis: A Primer

- Indicators (continued):
  - Progressivity indicators
  - Decompositions of Gini changes into vertical and horizontal equity
  - Coverage and leakages of transfers and their size per beneficiary
  - Probit of “excluded poor”
  - Fiscal mobility (transition) matrices
  - Needs vs. Resources

# Defining Progressive/Regressive Taxes and Transfers



# Fiscal Incidence: “Plain vanilla” case

- Current version does not include:
  - behavioral responses (or almost none)
  - inter-temporal dimensions
  - general equilibrium effects
  - fiscal sustainability analysis
- Welfare indicator: income per capita
  - No adjustment for age, gender, or economies of scale
  - No adjustment for under-reporting
  - So far, have used income data as welfare indicator and consumption data to calculate indirect taxes

# Outline

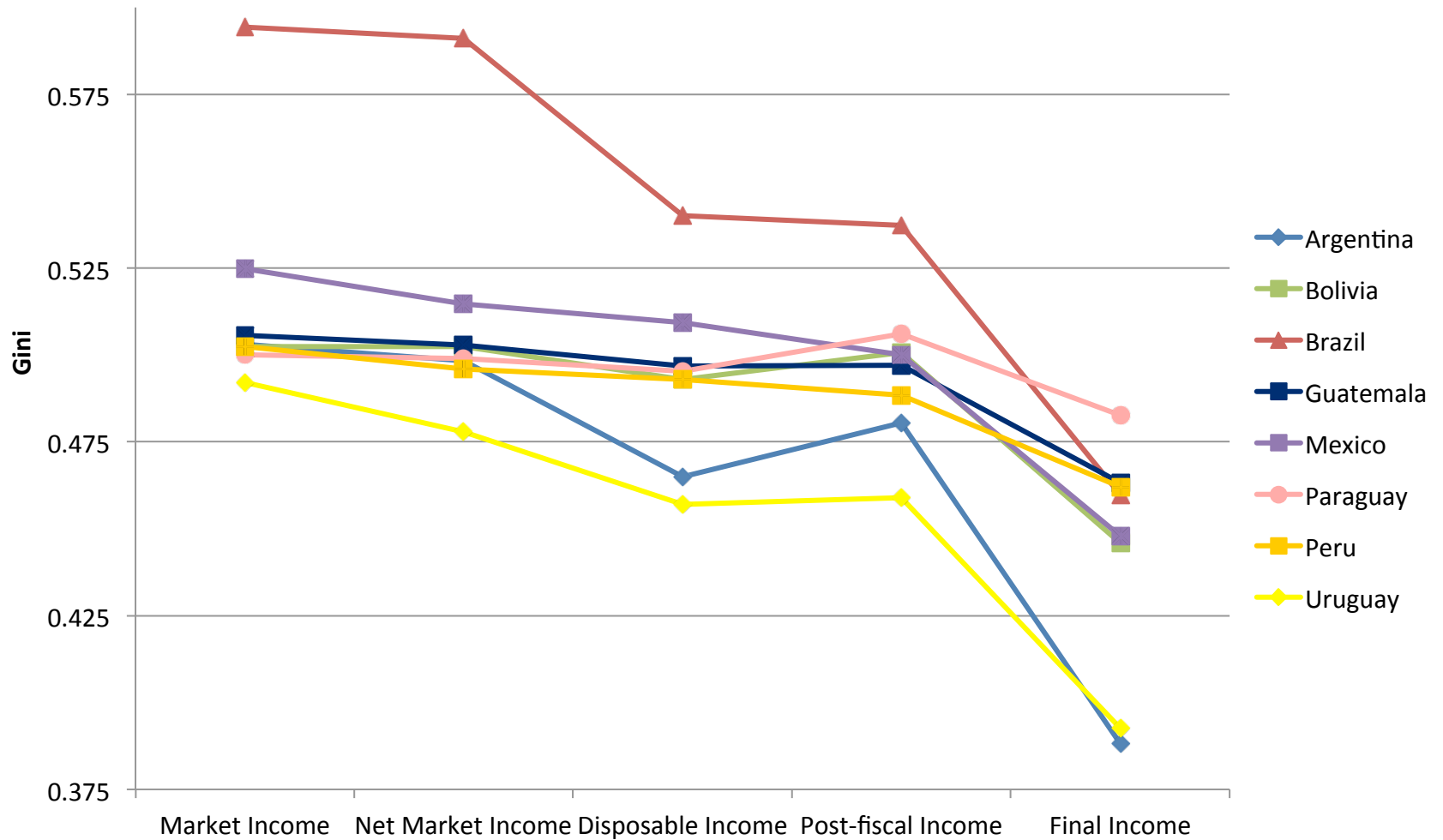
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# Heterogeneous Government Size & Composition: Expenditures

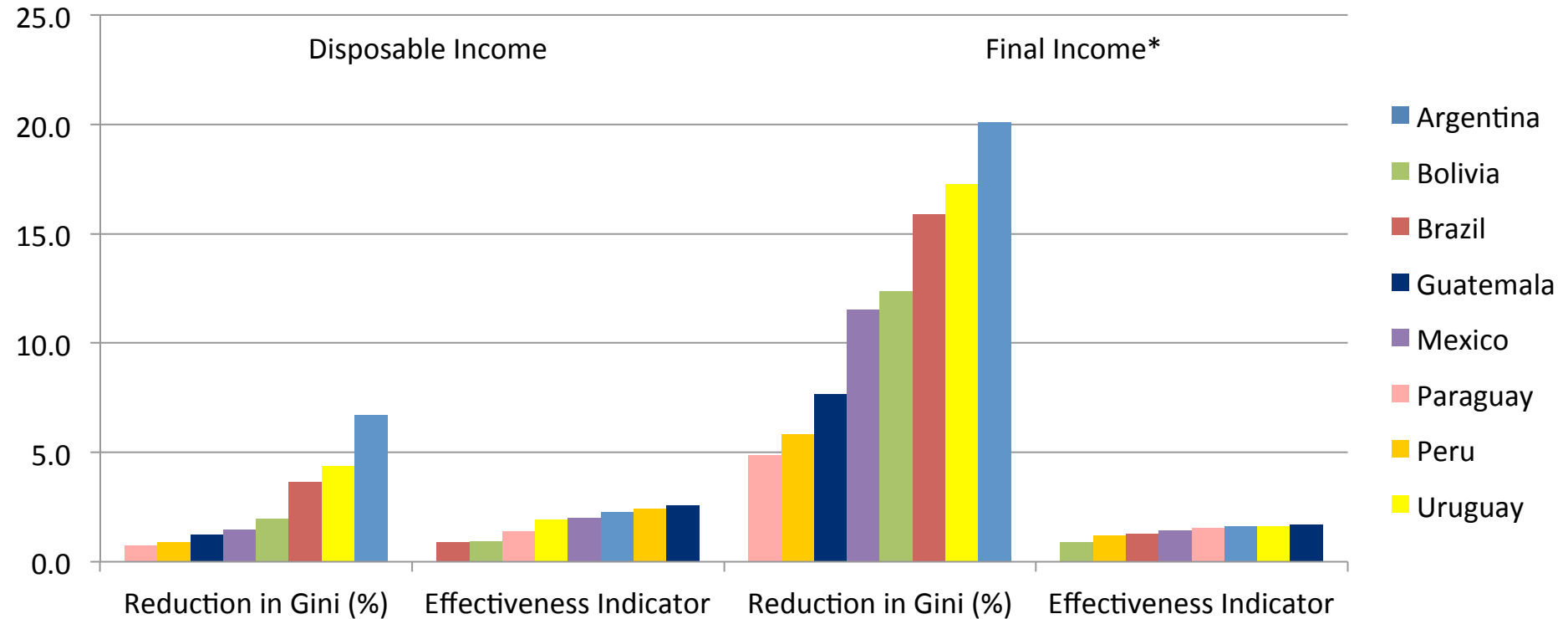
<b>Government Spending and Revenue (as a % of GDP)</b>	Argentina (2009)	Bolivia (2009)	Brazil (2009)	Mexico (2010)	Peru (2009)	Uruguay (2009)
<b>Gross Nat Inc/capita (PPP US\$)</b>	<b>14,230</b>	<b>3,919</b>	<b>10,140</b>	<b>14,390</b>	<b>8,390</b>	<b>12,412</b>
<b>Total Government Spending <sup>a</sup></b>	<b>43.2%</b>	<b>34.8%</b>	<b>51.2%</b>	<b>25.6%</b>	<b>20.0%</b>	<b>30.8%</b>
<b>Primary Government Spending <sup>b</sup></b>	<b>40.6%</b>	<b>33.3%</b>	<b>41.4%</b>	<b>23.7%</b>	<b>18.7%</b>	<b>27.9%</b>
<b>Social Spending <sup>c</sup></b>	<b>20.6%</b>	<b>15.1%</b>	<b>16.2%</b>	<b>9.9%</b>	<b>7.3%</b>	<b>13.0%</b>
<b>Social Spending (In Incidence Analysis Benchmark) <sup>d</sup></b>	<b>11.8%</b>	<b>13.6%</b>	<b>14.7%</b>	<b>8.7%</b>	<b>5.4%</b>	<b>10.6%</b>
<b>Total Cash Transfers</b>	<b>3.7%</b>	<b>2.0%</b>	<b>4.2%</b>	<b>1.0%</b>	<b>0.4%</b>	<b>2.3%</b>
Cash Transfers (excluding all Pensions)	0.8%	0.7%	1.3%	0.8%	0.4%	1.7%
Non-Contributory Pensions <sup>h</sup>	2.9%	1.4%	2.8%	0.2%	--	0.5%
<b>Total In Kind Transfers <sup>e</sup></b>	<b>8.1%</b>	<b>11.6%</b>	<b>10.5%</b>	<b>7.7%</b>	<b>5.0%</b>	<b>8.4%</b>
Education	5.6%	8.0%	5.3%	4.5%	2.3%	3.7%
of which Tertiary Education	1.3%	3.7%	0.8%	0.8%	0.6%	0.8%
Health	<sup>j</sup>	3.6%	5.2%	3.1%	2.6%	4.7%
Contributory	<sup>j</sup>	1.7%	0.0%	1.7%	1.2%	2.3%
Noncontributory	2.6%	1.9%	5.2%	1.3%	1.4%	2.4%
<b>Other Social Spending (Not in Incidence Analysis)</b>	<b>8.8%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.2%</b>	<b>3.1%</b>	<b>2.3%</b>
<b>Non- Social Spending <sup>f</sup></b>	<b>12.8%</b>	<b>14.6%</b>	<b>16.1%</b>	<b>11.1%</b>	<b>9.3%</b>	<b>6.3%</b>
<b>Indirect Subsidies</b>	5.6%	0.6%	--	1.4%	--	0.0%
<b>Other Non Social Spending <sup>g</sup></b>	7.2%	14.0%	16.1%	9.7%	--	6.3%
<b>Contributory Pensions</b>	<b>7.2%</b>	<b>3.5%</b>	<b>9.1%</b>	<b>2.6%</b>	<b>0.9%</b>	<b>8.7%</b>
<b>Debt Servicing</b>	<b>2.6%</b>	<b>1.6%</b>	<b>9.8%</b>	<b>2.0%</b>	<b>1.3%</b>	<b>2.9%</b>



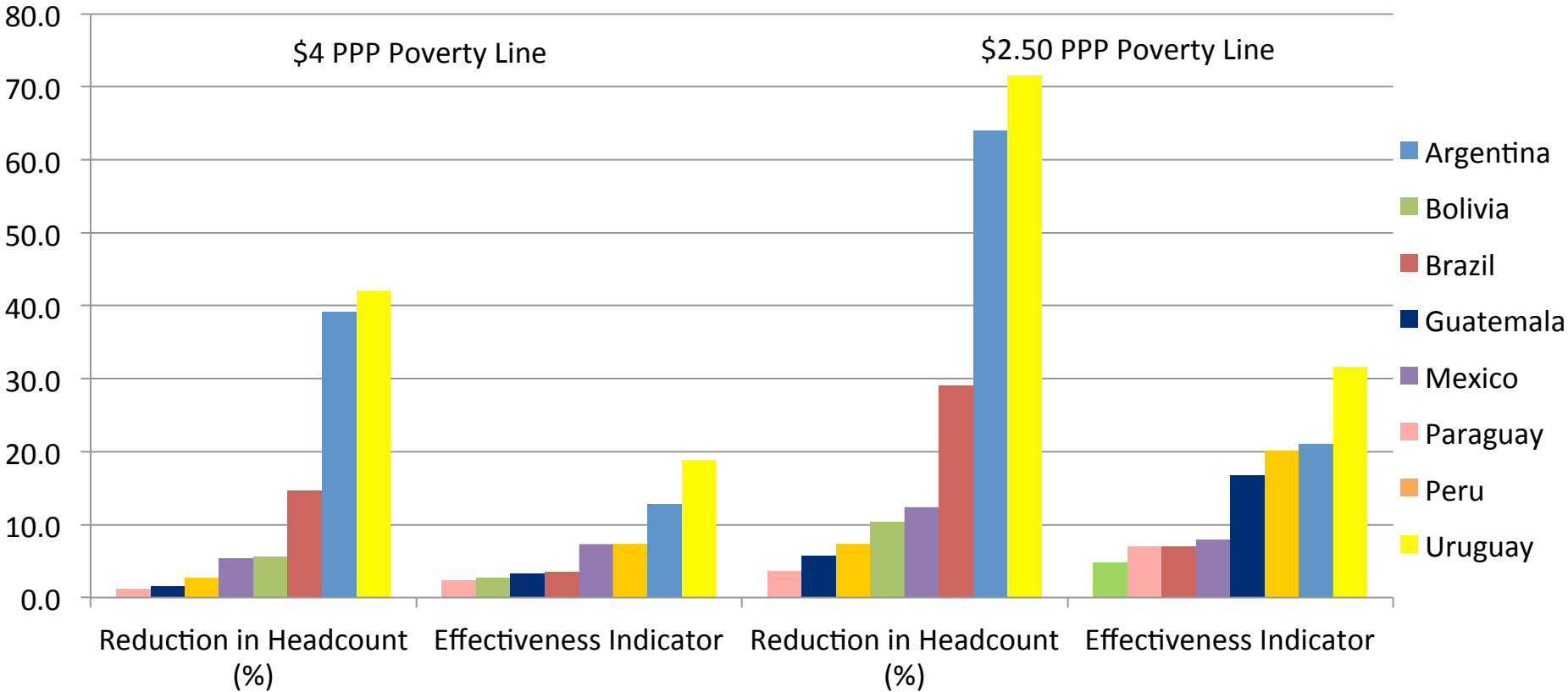
# Redistribution



# Redistributive Effectiveness



# Poverty Reduction Effectiveness



# Progressivity of Taxes and Transfers

## Taxes

	Direct Taxes	Indirect Taxes	All
<b>Bolivia</b>	Not applicable	Regressive	Progressive
<b>Brazil</b>	Progressive	Regressive	Progressive
<b>Guatemala</b>	Progressive	Regressive	Neutral
<b>Peru</b>	Progressive	Progressive	Progressive
<b>Uruguay</b>	Progressive	Regressive	Progressive
<b>Paraguay</b>	Progressive	Regressive	Regressive

## Direct Transfers

	Direct Transfers				Contributory Pensions
	Non-Contributory Pensions	CCT	Others	All	
<b>Bolivia</b>	Relatively Prog.	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Relatively Prog.
<b>Brazil</b>	Absolutely Prog.	Absolutely Prog.	Relatively Prog.	Relatively Prog.	Relatively Prog.
<b>Guatemala</b>	Relatively Prog.	Absolutely Prog.	Relatively Prog.	Absolutely Prog.	Regressive
<b>Peru</b>	Not applicable	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Regressive
<b>Uruguay</b>	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.
<b>Paraguay</b>	Not included	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Relatively Prog.

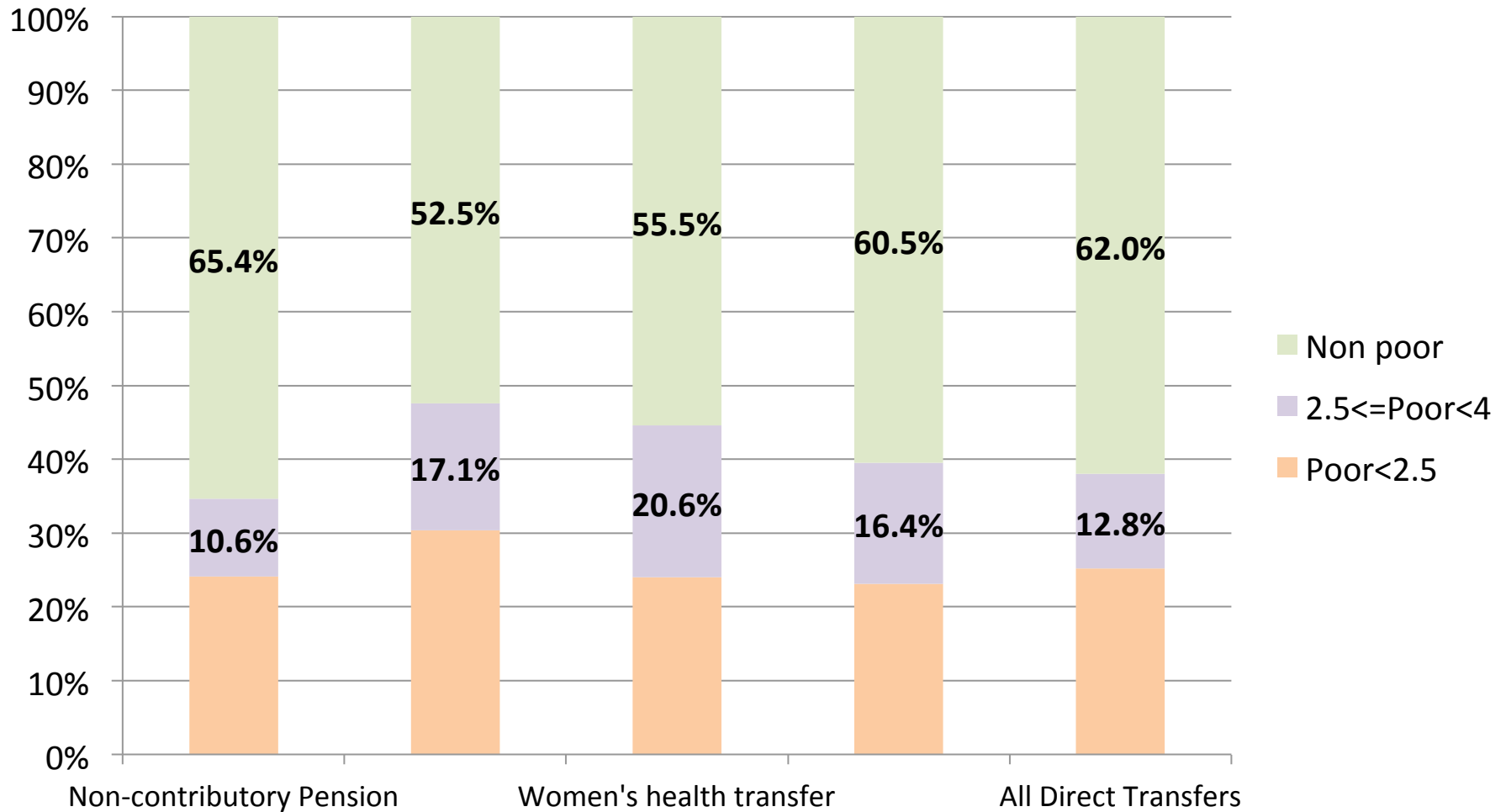
# Progressivity of Taxes and Transfers

## Education Spending

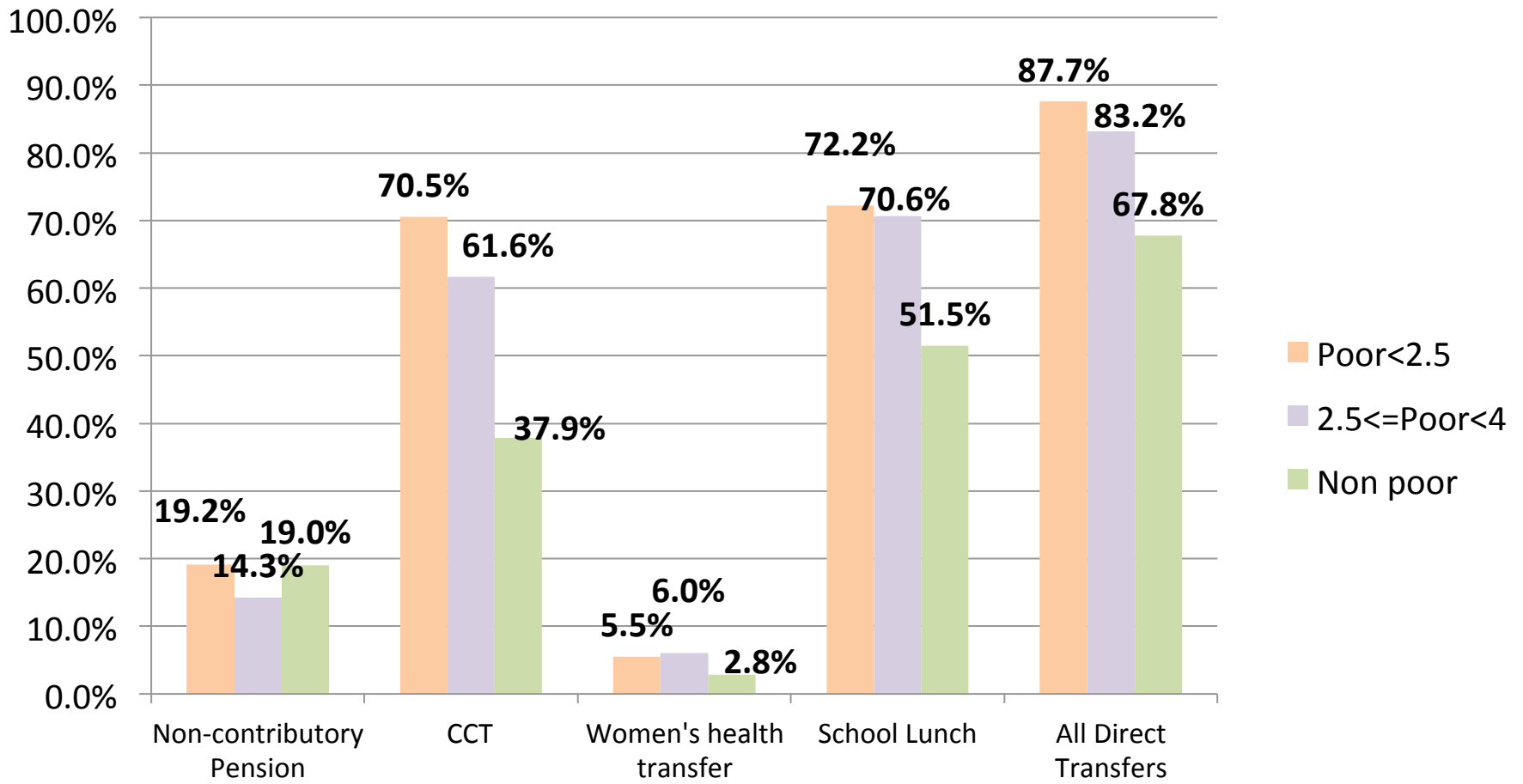
	Pre-school	Primary	Secondary	Tertiary	All
<b>Bolivia</b>	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Relatively Prog.	Absolutely Prog.
<b>Brazil</b>	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Relatively Prog.	Absolutely Prog.
<b>Guatemala</b>	Absolutely Prog.	Absolutely Prog.	Relatively Prog.	Relatively Prog.	Absolutely Prog.
<b>Peru</b>	Absolutely Prog.	Absolutely Prog.	Absolutely Prog.	Relatively Prog.	Absolutely Prog.
<b>Uruguay</b>	Absolutely Prog.	Absolutely Prog.	Relatively Prog.	Neutral	Absolutely Prog.
<b>Paraguay</b>	Not applicable	Absolutely Prog.	Relatively Prog.	Regressive	Relatively Prog.

	Health Spending	Social Spending	Indirect Subsidies
<b>Bolivia</b>	Absolutely Prog.	Absolutely Prog.	Relatively Prog.
<b>Brazil</b>	Absolutely Prog.	Absolutely Prog.	Not included
<b>Guatemala</b>	Relatively Prog.	Relatively Prog.	Relatively Prog.
<b>Peru</b>	Absolutely Prog.	Absolutely Prog.	Relatively Prog.
<b>Uruguay</b>	Absolutely Prog.	Absolutely Prog.	Not included
<b>Paraguay</b>	Relatively Prog.	Relatively Prog.	Absolutely Prog.

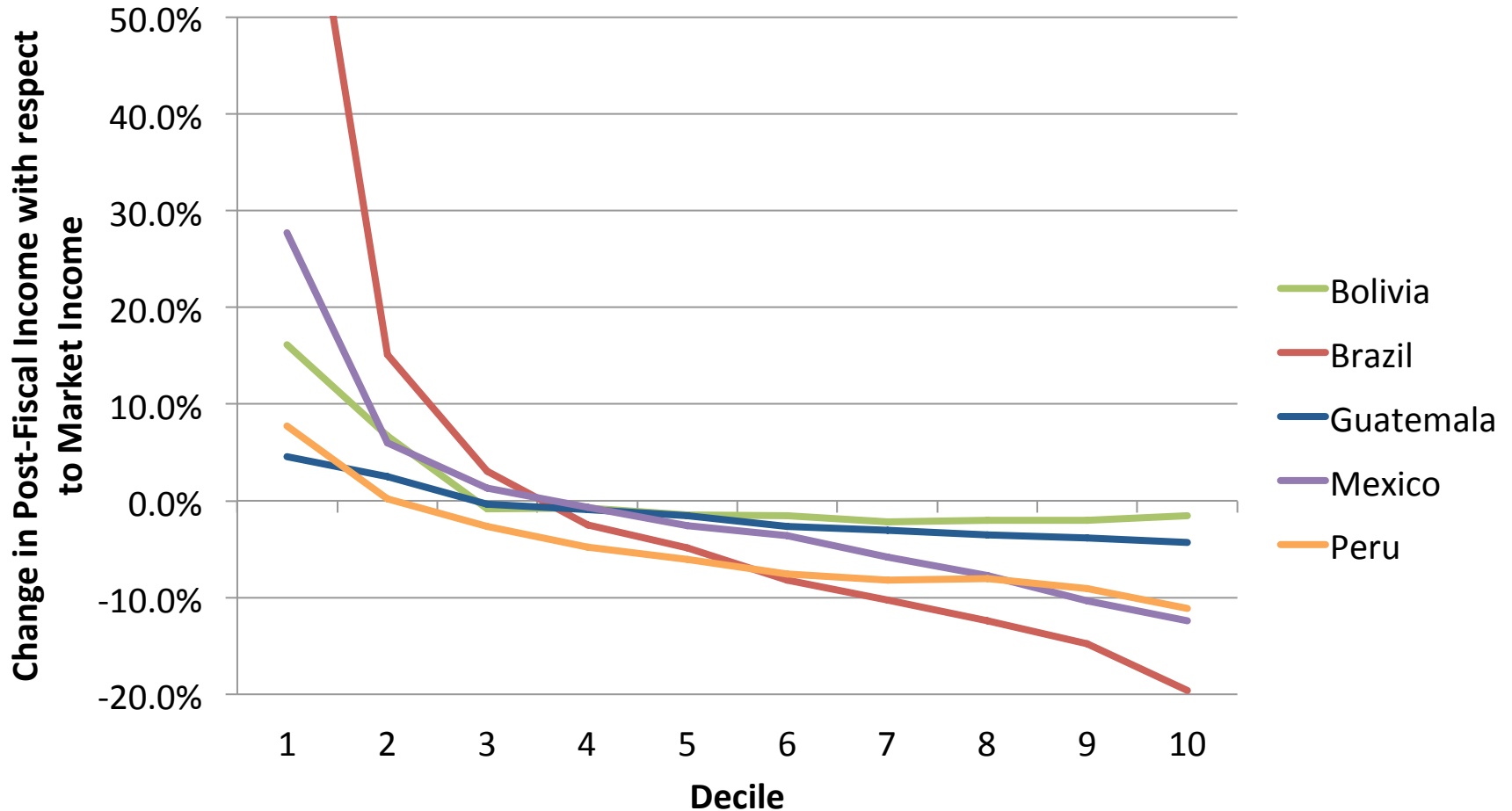
# Direct Transfers in Bolivia: Leakages



# Direct Transfers in Bolivia: Coverage



# Net Change in Income by Decile





# Fiscal Mobility Matrix for Brazil

		After taxes and transfers groups					% of Pop.	Mean Income	
		< 1.25	1.25–2.50	2.50–4.00	4.00–10.00	10.00–50.00	> 50.00		
Before taxes and transfers groups	< 1.25	69%	21%	6%	3%			5.7%	\$0.74
	1.25–2.50	4%	81%	10%	4%			9.6%	\$1.89
	2.50–4.00		15%	75%	9%	1%		11.3%	\$3.24
	4.00–10.00			11%	86%	3%		33.6%	\$6.67
	10.00–50.00				15%	85%		35.3%	\$19.90
	> 50.00					32%	68%	4.5%	\$94.59
% of Pop.		4.3%	10.7%	13.5%	35.8%	32.5%	3.2%	100%	\$14.15
Mean Income		\$0.86	\$1.91	\$3.25	\$6.61	\$19.34	\$88.70	\$12.17	

# Analysis over Time in Argentina

	2009/2003	2006/2003	2009/2006
<b>Gini</b>	-0.064	-0.041	-0.023
Change in Net Market Income Gini	-0.073	-0.033	-0.04
Change in Disposable Income Gini	-0.009	0.008	-0.017
Change Attributable to Redistribution	12.3%	-24.2%	42.5%
<b>Headcount index (US\$2.50 PPP/day)</b>	-0.153	-0.148	-0.005
Change in Net Market Income Poverty	-0.177	-0.135	-0.042
Change in Disposable Income Poverty	-0.024	0.013	-0.037
Change Attributable to Redistribution	13.6%	-9.6%	88.1%

# Results by Race in Brazil

<b>Race</b>	<b>Percent of Population</b>	<b>Extreme Poverty (Headcount %)</b>	<b>Average Income of Extreme Poor</b>	<b>Income Increase from Direct Transfers (%)</b>
White	48.0	8.3	\$1.49	73.4
Black	7.8	19.3	\$1.43	53.2
Mixed	43.0	22.5	\$1.44	49.0

# Outline

- What is the Commitment to Equity (CEQ) project?
- Methodology
- A sample of results
- **Application with African data**

# Data

- What kind of micro-data is available?
  - Income vs. consumption
  - Direct taxes?
  - Cash transfers?
- What kind of macro-data is available?
  - Spending (ideally disaggregated by program)
  - Revenues (disaggregated by revenue source)

# Pilot

- Begin with 3-4 countries
- Ideal country team
  - Very experienced researcher with access to national accounts data and a nuanced understanding of the taxes and transfers in the country
  - Another researcher with very good technical skills working with Stata do files and the household survey micro-data

# Our Role

- Prepare TORs for country study/local teams
- Provide Methodological Handbook, Diagnostic Questionnaire, 50-sheet Master Workbook Template for results, Stata ado files and sample do files
- Answer methodological questions throughout implementation
- Converse directly with country teams about specific issues they might be having
- Thoroughly check results for potential errors
- Synthesize results and co-author reports

**THANK YOU**