CEQ Assessments and the Fiscal Incidence Analysis Toolkit

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Consultant
### Day 2

1. Global Overview of CEQ Assessment results

2. CEQ Indicators: SDG Indicator 1b.1 and 10.4.2 plus others

3. CEQ Indicators: Concentration Curves and Coefficients; Kakwani Index

4. CEQ Indicators: Fiscal Impoverishment and Fiscal Gains to the Poor

5. CEQ Indicators: Impact and Spending Effectiveness
1. Global Overview of CEQ Assessment results

2. CEQ Indicators: SDG Indicator 1b.1 and 10.4.2 plus others
CEQ Assessment Analytical Objectives

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 Analytical Framework

MARKET OR PREFISCAL INCOME

PLUS DIRECT TRANSFERS MINUS DIRECT TAXES

DISPOSABLE INCOME

PLUS INDIRECT SUBSIDIES MINUS INDIRECT TAXES

CONSUMABLE INCOME

PLUS MONETIZED VALUE OF PUBLIC SERVICES: EDUCATION & HEALTH

FINAL INCOME

Disposable income

Consumable income

Net market income

Pre-fiscal income = aggregate of various income sources

- Direct taxes
  Income and payroll taxes

+ Direct transfers
  School canteen, WB cash transfer simulation

+ Indirect subsidies
  Electricity, Water, Fuel

+ Indirect taxes
  VAT, Customs, Excise, Fuel

+ In-kind transfers
  Education & Health, [Housing]

Co-payments / user fees
  Education & Health, [Housing]

Disposable income

Final income

The effects on poverty and inequality from the fiscal system rely on comparing pre-fiscal with the final income

Analytical Framework
CEQ Assessments: analytical constraints

1. Analyzing taxes without spending, or spending without taxes, or in-kind transfers without e.g. price subsidies, can be misleading:
   • Taxes can be unequalizing but spending so equalizing that the effect of taxes is more than compensated
   • Taxes can be regressive but when combined with transfers make the system more equalizing than without the regressive taxes
   • Transfers can be equalizing but when combined with taxes, post-fisc poverty can be higher

2. Analyzing the impact on inequality only can be misleading
   • Fiscal systems can be and often are equalizing but poverty increasing

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
CEQ Assessments: analytical needs

1. We need a set of indicators able to summarize the impacts of fiscal policy as a collective…

2. … as well as indicators able to single out the impact of subset of some policies in situ, or in context and not in isolation from the rest of the fiscal policy set.

3. We need a set of indicators that covers different facets of equity: inequality and poverty first and foremost, but also non-anonymous indicators that summarize the whole of an individual’s experience with fiscal policy.

4. We need indicators to help us evaluate the trade-offs inherent in the policy alternatives mooted to make progress on equity goals.
CEQ Indicators: Overall Impact of the Fiscal System

<table>
<thead>
<tr>
<th>Country</th>
<th>Gini coefficient</th>
<th>Post-fiscal Gini coefficient</th>
<th>Total inequality reduction (PDI)</th>
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Overall Impact of the Fiscal System

- Prefiscal income
- Final income
- Change in Gini
Overall Impact of the Fiscal System

Poverty headcount / percentage points

- Lesotho: -0.66
- Eswatini: 23.42
- Namibia: 14.92
- Botswana: 20.32
- South Africa: 23.14

Total poverty reduction (PDI) [1]  
Post-fiscal poverty headcount
Overall Impact of the Fiscal System

South Africa 2015

- Prefiscal income
- Net Market
- Disposable
- Consumable

Poverty headcount (%)

Overall Impact of the Fiscal System
SDG Indicator 10.4.2 also captures overall impact

Reduce inequality within and among countries

Target

10.4

Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality

Indicators

10.4.1
Labour share of GDP

10.4.2
Redistributive impact of fiscal policy
Redistributive impact of fiscal policy

SDG Goal 10 – “Reduce Inequality within and among countries” – recognizes that government play a primary role in leveling the economic and social playing field for all. SDG Target 10.4 – which calls on governments to “adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality” – is directly addressed within a CEQ Assessment which demonstrates (among other things) the impact fiscal policies are having on inequality. For this reason, a joint CEQ Institute, Oxfam, and World Bank consortium successfully lobbied the United Nations’ SDG committee to have CEQ’s “Redistributive Impact of Fiscal Policy” established as the official SDG Indicator 10.4.2. Below we show SDG Indicator 10.4.2 for those countries represented in the Data Center. See all Sustainable Development Goals [here](#).
SDG 10.4.2 captures overall impact
Overall impact of the fiscal system: focus on pensions
SDG 1b.1 captures concentration shares for social policies

social spending = health, education, direct transfers

Pro-poor = shares of social spending > poverty headcount ratio
SDG 1b.1 captures concentration shares for social policies

Pro-poor public social spending

SDG Goal 1 – “End poverty in all its forms everywhere” – is perhaps the most ambitious SDG goal and requires cooperation and coordination within and among private, public, and international sectors. SDG Target 1b – which calls on governments to “Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions” – is directly addressed within a CEQ Assessment which demonstrates what share of social protection and poverty eradication program expenditures the poor receive as well as the impact those policies and programs are having on poverty. Save the Children and UNICEF successfully worked with the United Nations’ SDG committee to revise and update the definition and methodology of the “Pro-poor public social spending” official SDG Indicator 1.b.1. Below we show the (unofficial) SDG Indicator 1.b.1 for those countries included represented in the Data Center. See all Sustainable Development Goals here.
3. CEQ Indicators: Concentration Curves; Kakwani Index, Marginal Impacts
**Lorenz curve**

- What does it measure? – the cumulative income shares of poor, middle class, and rich individuals
- What does it tell us? – how concentrated income is in the richest individuals
- How is it produced? – by ordering individuals from poorest to richest (left to right on the x-axis) and adding up their income shares and plotting those shares on the y-axis. A Lorenz curve always starts at a number between 0 and 1% and ends at 100%
Lorenz curve

Figure 5 Concentration curves of OOP and NHI payments and Lorenz curve of household expenditure, Ghana: 2005/2006.
Gini Coefficient

- What does it measure? – inequality in an income distribution
- What does it tell us? – the magnitude of total inequality that a Lorenz curve expresses

\[
\text{Gini coefficient} = \frac{A}{A + B}
\]
Concentration curve

- What does it measure? – the cumulative benefit or tax shares of the poor, middle class, and rich
- What does it tell us? – whether benefits and taxes are distributed progressively or regressively (in both absolute and relative senses)
- How is it produced? - by ordering individuals from poorest to richest (left to right on the x-axis) and adding up their tax or benefit shares and plotting those shares on the y-axis. Fiscal incidence analysis estimates individual shares of taxes paid or benefits received.
Concentration shares

Tajikistan 2015: Decile of market income
Concentration curves represent individual concentration shares.
Concentration Coefficient

- Population ranked by income: Area under the concentration curve divided by the area under the line of equality (shaded in this figure). Note: concentration coefficients can be $> 1$.
Kakwani Index

- What does it measure? – concentrations of benefits received or taxes paid relative to income inequality

- What does it tell us? – whether benefits or taxes paid are distributed more or less equally than incomes

- Note: a progressive tax means tax shares are greater than income shares
Progressivity of transfers

- **Globally progressive transfer in absolute terms (pro-poor):** Per capita benefit declines with pre-transfer income (not necessarily everywhere)
  - Concentration curve lies above the diagonal
    - Concentration coefficient < 0
    - Kakwani index > 0

- **Transfer neutral in absolute terms:** Per capita benefit is equal for everyone.
  - Concentration curve coincides with the diagonal
    - Concentration coefficient = 0
    - Kakwani index > 0

- **Globally progressive transfer:** Benefit as a share of pre-transfer income declines with income (not necessarily everywhere)
  - Concentration curve lies above pre-transfers Lorenz curve
    - Concentration coefficient < Gini for pre-transfer income
    - Kakwani index > 0

- **Proportional transfer:** Benefit as a share of pre-transfer income is the same for everyone
  - Concentration curve coincides with the pre-transfer Lorenz curve
    - Concentration coefficient = Gini for pre-transfer income
    - Kakwani index = 0

- **Globally regressive transfer:** Benefit as a share of pre-transfer income increases with income (not necessarily everywhere)
  - Concentration curve lies below market income Lorenz curve
    - Concentration coefficient > Gini for pre-transfer income
    - Kakwani index < 0

Source: Lusting (2018)
## Progressivity of education (by level) and health (PDI)

### Total Education

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**Source:** see bibliographical reference by country at the end of this presentation.
Classification

A = Pro-poor and equalizing, per capita spending declines with income (Kakwani >>0)

B = Neutral in absolute terms and equalizing, same per capita for all (Kakwani >0)

C = Equalizing but not pro-poor, per capita spending as a share of market income declines with income (Kakwani>0)

D = Unequalizing, per capita spending as share of market income increases with income (Kakwani<0)
Marginal Contributions of Specific Interventions

• With more than one tax or transfer, only the marginal contribution of a fiscal instrument can indicate whether it reduces inequality (or poverty).

• There are real-life examples of a superficially “regressive” tax, which, when combined with a progressive transfer, makes a *positive* marginal contribution to inequality reduction overall.

• In other words, the fiscal system is more inequality reducing with the tax than without it.
Marginal Contributions

• (a) The Gini coefficient (or poverty headcount, etc) on incomes including the entire fiscal system

minus

• (b) The Gini coefficient (or poverty headcount, etc) on incomes including the entire fiscal system except the instrument in question
Marginal Contributions to Redistributive Effect

-5.00  0.00  5.00  10.00  15.00  20.00


Percentage points

[w.r.t. Market Income + Pensions]

- In-kind Transfers
- Direct Transfers
- Direct Taxes
- Indirect Taxes
- Indirect Subsidies
Marginal contribution to Redistributive Effect
Scenario: Contributory pensions as deferred income
Measures the relative size of a tax/transfer by comparing to pre-tax/transfer income

Deciles of per capita disposable income (R, thousands, annual)

Share of disposable income

- Old age grant
- Child support grant
- Foster care grant
- Disability grants
- Care dependency grant
- Near cash housing transfer

Incidence
Incidence

Percent of market income

Tajikistan 2015: Decile of market income

Elec (dir.)  Elec (ind.)
4. CEQ Indicators: Fiscal Impoverishment and Fiscal Gains to the Poor
Net cash recipients / beneficiaries

- Incidence across all programs demonstrates which individuals are:
  - net *cash* recipients, or
  - net cash payers
  - net total recipients.
Net cash recipients / beneficiaries

Share of market income, percent

Market income decile

Direct transfers
Indirect taxes
In-kind transfer
Total net benefit

Direct taxes (broad)
Indirect subsidies
Co-payment
Direct transfers net of direct taxes
Fiscal impoverishment

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

Poverty Headcounts and Poverty Gap estimations are anonymous and do not capture information regarding a household’s pre-fiscal or post-fiscal status

Fiscal Impoverishment and Fiscal Gains to the Poor include information on individual’s prefiscal and postfiscal poverty statuses.

Source: Higgins and Lustig (2016)
Fiscal impoverishment

Fiscal impoverishment versus Poverty Impacts

Proportion of population


Fiscal Gains  Fiscal Impoverishment

Poverty headcount / percentage points

Lesotho  Eswatini  Namibia  Botswana  South Africa

Total poverty reduction (PDI) [1]  Post-fiscal poverty headcoun
5. CEQ Indicators: Impact and Spending Effectiveness
How to Measure Effectiveness?

- Programs/Interventions have different coverage levels

- Comparing the poverty gap impact of a program covering the extreme poor and a program covering the extreme and moderate poor by a traditional "poverty gap reduction per dollar spent" metric will give an unreasonable ranking of program impacts:
  - The program for the extreme poor spends 100% of its budget on reducing the largest poverty gaps (by definition)
  - The program for the extreme and moderate poor spends some portion of its budget reducing the smallest poverty gaps; it cannot be as effective (per dollar spent) on reducing poverty gaps

- What about programs with different target groups altogether, for example the disabled versus unemployed youth in urban areas?
How to Measure Effectiveness?

Instead, compare each program to its “best” elf:

• How big could this program’s impact be if the program (or the program’s budget) was distributed *optimally* to reduce the poverty gap (or inequality, or poverty severity)?

Two ways to think about it:

• Ask how large a program’s impact could be (under an optimal allocation) for the same budget

• Ask how small a program’s budget could be to achieve the same impact (under an optimal allocation)
How to Measure Effectiveness?

Comparing a program to its optimal self preserves internal validity:

→ We can legitimately ask which of the individual interventions in this fiscal system comes closest to its optimum impact?

Comparing a program to its optimal self preserves external validity:

→ We can legitimately compare programs in two different fiscal settings because our measure of effectiveness always refers to the underlying empirical income distribution and the optimal program in each effectiveness indicator is the internally-valid optimum.
Impact Effectiveness algorithm

- Refers to Inequality Reduction or Poverty gap (or squared Poverty gap) reduction

- Impact Effectiveness $score = \frac{\text{actual reduction}}{\text{maximum achievable reduction}}$

  when expenditure or revenues are kept constant

- Maximum achievable reduction is engineered by:
  - Bringing the poorest person to the level of the second poorest person or the richest person to the level of the second richest
  - Bringing the two poorest (richest) people to the level of the third poorest (richest) person, and so on and so forth

... until matching the current, actual amount of expenditure or revenues
Impact Effectiveness algorithm

- Note: for Poverty indicators and taxes:
  
- Poverty Impact Effectiveness score $= -\left(\frac{\text{actual increase}}{\text{maximum achievable increase}}\right)$

  when expenditure or revenues are kept constant

- Maximum achievable increase is engineered by redistributing the tax liabilities in the worst possible way

  $\rightarrow$ the closer the Poverty Impact Effectiveness score is to zero, the better is the tax at protecting poor and vulnerable households.
Spending Effectiveness algorithm

- Defined only for taxes or transfers with positive marginal impacts

- Spending Effectiveness $score = \frac{\text{minimum required expenditure}}{\text{actual expenditure}}$

  when current impacts are kept constant

- Minimum required expenditure/revenues:
  - Bringing the poorest person to the level of the second poorest person or the richest person to the level of the second richest
  - Bringing the two poorest (richest) people to the level of the third poorest (richest) person, and so on and so forth

  ... until matching the current, actual impact of the expenditure or tax.
End Day 2 – Thank you!