Session 4
Fiscal Incidence Analysis in Practice

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This presentation is based on:


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CEQ Assessment: Objectives

- What is the impact of taxes and transfers on inequality and poverty?
- How equalizing are taxes and public spending?
- How effective is the fiscal system in reducing inequality and poverty?
- Who bears the burden of taxes and receives the benefits?
- How equitable is the use of education and health services?
- Fiscal policy and rural/urban, gender and ethnic inequalities
- Identify areas of potential policy reform to enhance the capacity of the state to reduce inequality and poverty through taxes and transfers
CEQ Assessments and Fiscal Incidence Analysis

- In order to answer the key questions regarding fiscal policy and redistribution, we need the income of individuals before and after fiscal interventions.
- Method: fiscal incidence analysis
- Fiscal incidence analysis consists of methods to allocate taxes and public spending to individuals so that one can compare pre-fiscal incomes with incomes after taxes and transfers.
Basic elements of standard fiscal incidence

- Before taxes and transfers income of unit $h$, or $I_h$

- Taxes $T_i$
  - personal income taxes; contributions to social security
  - consumption and production taxes and subsidies

- Transfers $B_i$
  - social spending: cash & near-cash transfers; in-kind transfers (education and health)
  - consumption and production (agriculture) subsidies

- “Allocators” of tax $i$ and transfer $j$ to unit $h$, or $S_{ih}, S_{jh}$ (the share of tax $i$ borne or transfer $j$ received by unit $h$) => Incidence

- To generate the after or post taxes and transfers income...
Fiscal Incidence Equation

\[ Y_h = I_h - \sum_i T_i S_{ih} + \sum_j B_j S_{jh} \]

- Income after taxes and transfers
- Taxes
  - Share of tax \( i \) paid by unit \( h \)
- Transfers
  - Share of transfer \( j \) received by unit \( h \)
Fiscal Interventions

- Taxes
  - Direct taxes: mainly PIT (miss top incomes except in tax-based analysis)
  - Contributions to pensions and social insurance systems
  - Indirect taxes on consumption: VAT, excise taxes, tariffs
Fiscal Interventions

• Transfers
  • Direct cash transfers
  • Non-cash direct transfers such as school uniforms and breakfast
  • Indirect subsidies
  • In-kind transfers such as spending on education and health
Construction of Income Concepts

MARKET INCOME

PLUS DIRECT TRANSFERS MINUS DIRECT TAXES

DISPOSABLE INCOME

MINUS NET INDIRECT TAXES

POST-FISCAL or CONSUMABLE INCOME

PLUS MONETIZED VALUE OF PUBLIC SERVICES: EDUCATION & HEALTH

FINAL INCOME
Fiscal Incidence in CEQ Assessments

- Accounting approach
  - no behavioral
  - no general equilibrium effects and
  - no intertemporal effects
  - but it incorporates assumptions to obtain economic incidence (not statutory)

- Point-in-time
- Mainly average incidence; a few cases with marginal incidence
Fiscal Incidence in CEQ Assessments

- Comprehensive standard fiscal incidence analysis of current systems: direct personal and indirect taxes (no corporate taxes); cash and in-kind transfers (public services); indirect subsidies
- Harmonized definitions and methodological approaches to facilitate cross-country comparisons
- Uses income/consumption per capita as the welfare indicator
- Allocators vary => full transparency in the method used for each category, tax shifting assumptions, tax evasion
- Secondary sources are used to a minimum
Allocation Methods

- Direct Identification in microdata
  - However, results must be checked: how realistic are they?

- If information not directly available in microdata, then:
  - Simulation
  - Imputation
  - Inference
  - Prediction
  - Alternate Survey
  - Secondary Sources
Tax Shifting Assumptions

• Economic burden of direct personal income taxes is borne by the recipient of income
• Burden of payroll and social security taxes is assumed to fall entirely on workers
• Consumption taxes are assumed to be shifted forward to consumers.
• These assumptions are strong because they imply that labor supply is perfectly inelastic and that consumers have perfectly inelastic demand
• In practice, they provide a reasonable approximation (with important exceptions such as when examining effect of VAT reforms), and they are commonly used
Tax Evasion Assumptions: Case Specific

- Income taxes and contributions to SS:
  - Individuals who do not participate in the contributory social security system are assumed not to pay them

- Consumption taxes
  - Place of purchase: informal markets are assumed not to charge them
  - Some country teams assumed small towns in rural areas do not to pay them
Monetizing in-kind transfers

- Incidence of public spending on education and health followed so-called “benefit or expenditure incidence” or the “government cost” approach.
- In essence, we use per beneficiary input costs obtained from administrative data as the measure of average benefits.
- This approach amounts to asking the following question:
  - How much would the income of a household have to be increased if it had to pay for the free or subsidized public service at the full cost to the government?
Indicators

- Inequality and poverty:
  - Gini, Theil, Kuznetz ratios, ineq of opportunity
  - Headcount, poverty gap, squared poverty gap (international and national poverty lines)
  - Impoverishment and fiscal mobility
  - Inequality of Opportunity

- Effectiveness and Efficiency
  - Change in inequality or poverty divided by corresponding budget share or total spent
  - Poverty-reduction efficiency indicators
  - Tax productivity indicators
Indicators

- Progressivity
  - Incidence by quantile or income group
  - Concentration Shares
  - Concentration Curves
  - Concentration Coefficients, Kakwani, and Reynolds-Smolensky Index
- Vertical Equity and Reranking Effects
Indicators

- Measuring Contribution to Redistribution and Poverty-reduction
  - Classifying interventions by whether they are equalizing or unequalizing
  - Classifying interventions by whether they are equalizing or unequalizing
  - Ranking interventions by their marginal contribution to changes in inequality
  - Ranking interventions by their marginal contribution to changes in poverty
Indicators

- Coverage of social programs by quantile and income group
- Average per capita transfer received by the poor
- Share of benefits going to the nonpoor
- Average per capita transfer received by the nonpoor
- Gross and net enrollment indicators by income group
Scenarios and Robustness Checks

- Benchmark scenario
- Sensitivity to:
  - Changing the original income by which hh are ranked: e.g., market income plus contributory pensions and disposable income
  - Using consumption vs. income
  - Per capita vs. equivalized income or consumption
  - Different assumptions on scaling-down or up
  - Different assumptions on take-up of transfers and tax shifting and evasion
  - Alternative valuations of in-kind services
  - Other sensitivity scenarios: country-specific
**Robustness Check**

Example from South Africa: Income vs. Consumption-based Analysis

South Africa Gini estimates

<table>
<thead>
<tr>
<th></th>
<th>Income based scenario</th>
<th>Consumption based scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market income</td>
<td>0.771</td>
<td>0.723</td>
</tr>
<tr>
<td>Disposable income</td>
<td>0.704</td>
<td>0.634</td>
</tr>
<tr>
<td>Post-fiscal income</td>
<td>0.700</td>
<td>0.628</td>
</tr>
<tr>
<td>Final income</td>
<td>0.601</td>
<td>0.514</td>
</tr>
</tbody>
</table>
Fiscal Incidence Analysis Data Requirements

- Ideally a nationwide Income-Expenditure household survey as recent as possible; however, methodological adaptations exist for consumption-only and income-only surveys (for the latter, CEQ uses matching techniques to a survey with consumption data)
- Fiscal budget data for same year as survey by spending and revenue lines
- Macroeconomic and poverty data for context and checking
- Detailed information on individual direct and indirect taxes, cash transfers, pension system/s, public education and healthcare systems, and indirect subsidies
Fiscal Incidence Analysis

Recommended Team Structure

- Econometrician/poverty analyst: works with HH survey and macro data to generate CEQ Assessment
- Institutional expert (in country): provides detailed information on tax and transfer system as well as macro and fiscal data
- RA to support preparation of MWB
- Team size: from 2 (1 senior and 1 RA) to 10 (World Bank projects)
Fiscal Incidence Analysis
Software

- Stata: ideally, Stata 13 (includes command to send results directly to MWB); previous Stata versions will need to do it manually

- Compilation of information: Excel for Master Workbook
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Thank you!