Suppose you want to know...

Assessment of current fiscal system or parts of it:

• What is the impact of taxes and government transfers on inequality and poverty?

• Who are the net tax payers to the “fisc” (with and without imputing benefits from in-kind transfers)?

• How equitable is access to government education and/or health services? By income, gender, ethnic origin, for example.

• How progressive is taxation and spending (as a whole and by categories)?
Suppose you want to know...

Impact of hypothetical or actual reforms:

• How do inequality and poverty change when you eliminate VAT exemptions?
• Who benefits from the elimination of user fees in primary education or the expansion of noncontributory pensions?
• Who loses from the elimination of energy subsidies?
Types of Incidence Analysis

- Standard vs. Behavioral, CGEs, Intertemporal
- Partial vs. Comprehensive
- Average vs. Marginal
Welfare Indicator

- Income vs. Consumption
- Current vs. Lifetime
- Per capita vs. equivalized
Basic elements of “applied” standard incidence

Start with:

- Pre-tax/pre-transfer income/consumption of unit $h$, or $I_h$
- Taxes/transfers programs $T_i$
- “Allocators” of program $i$ to unit $h$, or $S_{ih}$
  (or the share of program $i$ borne by unit $h$)

Then, post-tax/post-transfer income of unit $h$ ($Y_h$) is:

$$Y_h = I_h - \sum_i T_i S_{ih}$$
Allocation Methods

Direct Identification in microdata
If not in microdata, then:

– (micro) Simulation: statutory vs. tax shifting or take-up assumptions
– Imputation
– Inference
– Alternate Survey
– Secondary Sources
Allocation Methods

- Tax shifting assumptions
- Tax evasion assumptions
- Take-up of cash transfers programs
- Monetizing in-kind transfers
Commitment to Equity Assessments (CEQ) for Latin America

- Comprehensive standard fiscal incidence analysis of current systems
- No behavior and no general equilibrium effects
- Harmonizes definitions and methodological approaches to facilitate cross-country comparisons
- Uses income per capita as the welfare indicator
- Allocators vary => full transparency in the method used for each category, tax shifting assumptions, etc.
- Mainly average incidence; a few cases with marginal incidence
The Commitment to Equity (CEQ) is a joint project of CIPR and the Department of Economics at Tulane University and the Inter-American Dialogue. Directed by Nura Lustig and Peter Hakim, the CEQ was designed to analyze the impact of taxation and social spending on inequality and poverty in individual countries, and provide a roadmap for governments, multilateral institutions, and non-governmental organizations in their efforts to build more equitable societies.

- Argentina: Nora Lustig and Carola Pessino
- Bolivia: George Gray Molina, Wilson Jimenez, Veronica Paz and Ernesto Yañez
- Brazil: Sean Higgins and Claudiney Pereira
- Mexico: John Scott
- Peru: Miguel Jaramillo
- Uruguay: Marisa Bucheli, Nora Lustig, Maximo Rossi and Florencia Amabile
**BENEFITS**

- **Market Income**
  - Wages and salaries, income from capital, private transfers; contributory pensions

- **Net Market Income**

- **Direct transfers**

- **Disposable Income**

- **Indirect subsidies**

- **Post-fiscal Income**

- **In-kind transfers (free government services in education and health)**

- **Final Income**

**TAXES**

- **Personal income and payroll taxes**

- **Indirect taxes**

- **Co-payments, user fees**
Contributory Pensions

• Government transfer or market income?
  – No agreement in literature for pay as you go systems

• CEQ Benchmark
  – Contributory pensions are part of market income
  – Contributions to pensions are not subtracted

• CEQ 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); NOT IN CURRENT VERSIONS
  – 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
• If survey reports after tax and cash transfers income, go backwards to construct net market and market income
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
  – Currently, government cost method is used to value these services
Scaling Up

• Household surveys understate “true” income
  – Underreporting
  – Lack of adequate questions
  – Society’s richest not captured by survey

• HOWEVER, No scaling up for poverty measures (no corrections for under-reporting)

• Scaling up for inequality and distributional measures to avoid overstating impact of in-kind transfers
Tax Shifting and Tax Evasion

Assumptions

• Burden of direct personal income taxes is borne by the recipient of income
• Burden of payroll and social security taxes falls entirely on workers
• Consumption taxes are assumed to be shifted forward to consumers
• Individuals who do not participate in the contributory social security system assumed not to pay income or payroll taxes
• Depending on the country, purchases in informal sector establishments or in rural areas assumed not to pay consumption taxes
Valuation of Public Services: Education and Health

• Valuation of public spending on education and health followed is the so-called ‘government cost’ approach.
• Uses per beneficiary input costs obtained from administrative data as the measure of marginal benefits.
• This approach—also known as ‘classic’ or ‘nonbehavioral 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 full cost?
Results

• Wide variation among countries in terms of:
  – Policy choices (or outcomes of political processes?)
  – Impact of those choices on:
    • Income redistribution and poverty reduction
    • Progressivity of taxes and spending
    • Winners and losers; who bears the burden/benefits of taxes/transfers
    • Inequality of opportunity
Budget Size and Composition
Primary and Social Spending as % of GDP

- Brazil: 41% Primary, 16% Social
- Argentina: 41% Primary, 21% Social
- Bolivia: 33% Primary, 15% Social
- Uruguay: 28% Primary, 13% Social
- Mexico: 24% Primary, 10% Social
- Peru: 19% Primary, 7% Social
Gini Before and After Taxes, Transfers, Subsidies and Free Government Services
Gini Before and After Direct Taxes

![Graph showing Gini coefficients for different income levels and countries: Bolivia, Brazil, Mexico, Peru, and Uruguay. Each line represents a country, with Gini coefficients decreasing from Market Income to Final Income.](image-url)
Direct and Indirect Taxes as % of GDP

Country | Direct Personal Income Taxes | VAT and Other Indirect Taxes
---|---|---
Bolivia | 0% | 11%
Brazil | 2% | 8%
Mexico | 2% | 4%
Peru | 1% | 8%
Uruguay | 5% | 12%
Headcount: Before and After Cash Transfers

![Graph showing headcount changes in different countries due to cash transfers.](image-url)
Coverage of Direct Cash Transfers

<table>
<thead>
<tr>
<th>Country</th>
<th>Poor&lt;2.5</th>
<th>2.5&lt;=Poor&lt;4</th>
<th>Non poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>0.877</td>
<td>0.678</td>
<td>0.832</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.933</td>
<td>0.292</td>
<td>0.731</td>
</tr>
<tr>
<td>Peru</td>
<td>0.577</td>
<td>0.419</td>
<td>0.155</td>
</tr>
</tbody>
</table>
Distribution of Direct Cash Transfers (Percent going to poor and nonpoor)

- **Bolivia**: 0.62
  - 0.252 Poor<2.5
  - 0.128 2.5<=Poor<4
- **Brazil**: 0.735
  - 0.168 Poor<2.5
  - 0.097 2.5<=Poor<4
- **Peru**: 0.469
  - 0.291 Poor<2.5
  - 0.24 2.5<=Poor<4
Headcount Ratio Before and After Indirect Taxes

[Graph showing the comparison of headcount ratios between Net Market Income, Disposable Income, and Post Fiscal periods for countries such as Bolivia, Brazil, Mexico, Peru, and Uruguay.]
Gini Before and After Government Services Valued at Cost
REDISTRIBUTION
Tracking the Gini coefficient from Market to Final Income
Defining Progressive/Regressive Taxes and Transfers
## Progressivity

### Kakwani Index for Taxes: Red= regressive

<table>
<thead>
<tr>
<th>Country</th>
<th>Direct Taxes</th>
<th>Indirect Taxes</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Bolivia</td>
<td>ne</td>
<td>-0.20</td>
<td>-0.20</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.27</td>
<td>-0.03</td>
<td>0.04</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.25</td>
<td>0.02</td>
<td>0.12</td>
</tr>
<tr>
<td>Peru</td>
<td>0.43</td>
<td>0.05</td>
<td>0.11</td>
</tr>
<tr>
<td>Uruguay</td>
<td>0.25</td>
<td>-0.05</td>
<td>0.07</td>
</tr>
</tbody>
</table>
# Progressivity

## Concentration Coefficients for Transfers

Green = progressive in abs terms

<table>
<thead>
<tr>
<th>Country</th>
<th>Direct Transfers</th>
<th>Education</th>
<th>Health</th>
<th>Social Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>-0.31</td>
<td>-0.20</td>
<td>-0.23</td>
<td>-0.15</td>
</tr>
<tr>
<td>Bolivia</td>
<td>-0.08</td>
<td>-0.02</td>
<td>-0.04</td>
<td>-0.04</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.03</td>
<td>-0.16</td>
<td>-0.12</td>
<td>-0.08</td>
</tr>
<tr>
<td>Mexico</td>
<td>-0.30</td>
<td>-0.09</td>
<td>0.04</td>
<td>-0.06</td>
</tr>
<tr>
<td>Peru</td>
<td>-0.48</td>
<td>-0.17</td>
<td>0.18</td>
<td>-0.02</td>
</tr>
<tr>
<td>Uruguay</td>
<td>-0.47</td>
<td>-0.11</td>
<td>-0.10</td>
<td>-0.16</td>
</tr>
</tbody>
</table>
Fiscal Incidence Indicators: Winners and Losers

Who bears the burden of taxes and receives the benefits from cash transfers?

• Fiscal incidence by decile and socio-economic groups

• Fiscal Mobility and Degree of Impoverishment
Incidence of Taxes and Cash Transfers

Net Change in Income after Direct and Indirect Taxes and Transfers by Decile
Fiscal Incidence of Income, Taxes and Transfers, by Socioeconomic Groups

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BOLIVIA (2009)</strong></td>
<td></td>
<td></td>
<td><strong>MEXICO (2008)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor (&lt;$4)</td>
<td>29.1%</td>
<td>4.0%</td>
<td>Poor (&lt;$4)</td>
<td>23.8%</td>
<td>12.3%</td>
</tr>
<tr>
<td>Vulnerable ($4-$10)</td>
<td>38.8%</td>
<td>-1.5%</td>
<td>Vulnerable ($4-$10)</td>
<td>38.0%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Middle Class ($10-$50)</td>
<td>30.8%</td>
<td>-1.9%</td>
<td>Middle Class ($10-$50)</td>
<td>35.3%</td>
<td>-8.3%</td>
</tr>
<tr>
<td>Rich (&gt;=$50)</td>
<td>1.3%</td>
<td>-1.2%</td>
<td>Rich (&gt;=$50)</td>
<td>2.9%</td>
<td>-9.8%</td>
</tr>
<tr>
<td>Total population</td>
<td>100.0%</td>
<td>-1.4%</td>
<td>Total population</td>
<td>100.0%</td>
<td>-6.1%</td>
</tr>
</tbody>
</table>

| **BRAZIL (2009)**    |                                 |                    | **PERU (2009)**      |                                 |                    |
| Poor (<$4)           | 26.7%                           | 15.1%              | Poor (<$4)           | 28.6%                           | 3.4%               |
| Vulnerable ($4-$10)  | 33.5%                           | -7.1%              | Vulnerable ($4-$10)  | 37.5%                           | -2.5%              |
| Middle Class ($10-$50) | 35.3%                          | -14.0%             | Middle Class ($10-$50) | 32.0%                          | -9.9%              |
| Rich (>=$50)         | 4.5%                            | -20.7%             | Rich (>=$50)         | 2.0%                            | -17.8%             |
| Total population     | 100.0%                          | -13.7%             | Total population     | 100.0%                          | -8.5%              |
### Impoverishment

#### Fiscal Mobility Matrix for Brazil

<table>
<thead>
<tr>
<th>Before taxes and transfers groups</th>
<th>After taxes and transfers groups</th>
<th>% of Pop.</th>
<th>Mean Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1.25</td>
<td>&lt; 1.25</td>
<td>69%</td>
<td>5.7%</td>
</tr>
<tr>
<td>1.25–2.50</td>
<td>1.25–2.50</td>
<td>21%</td>
<td>9.6%</td>
</tr>
<tr>
<td>2.50–4.00</td>
<td>2.50–4.00</td>
<td>6%</td>
<td>11.3%</td>
</tr>
<tr>
<td>4.00–10.00</td>
<td>4.00–10.00</td>
<td>3%</td>
<td>33.6%</td>
</tr>
<tr>
<td>10.00–50.00</td>
<td>10.00–50.00</td>
<td>15%</td>
<td>35.3%</td>
</tr>
<tr>
<td>&gt; 50.00</td>
<td>&gt; 50.00</td>
<td>32%</td>
<td>4.5%</td>
</tr>
<tr>
<td>% of Pop. Mean Income</td>
<td></td>
<td>4.3%</td>
<td>10.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13.5%</td>
<td>$1.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35.8%</td>
<td>$3.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32.5%</td>
<td>$6.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.2%</td>
<td>$19.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100%</td>
<td>14.15</td>
</tr>
</tbody>
</table>


THANK YOU