CEQ Linking Master Workbook
Section D and Checking Protocol

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Associate Director, CEQI

Learning Event on the
Commitment to Equity Methodology

Commitment to Equity Institute, Tulane University,
and the World Bank
Sources


Martinez, Sandra (2016), “CEQ Quality Management”, power point presentation, Learning Event on CEQ Methodology, February 2016, CEQ Institute and World Bank
Once you have…

1. Understand CEQ Methodology
2. Compiled national accounts statistics about taxes and transfers and hhd survey
3. Find the best assumptions and methodology to analyze fiscal policy
4. Write your scenarios in Stata Code and process HHD surveys
5. Filled Master Workbook Section A, B, C
6. Run ‘ado’ files to fill Master Workbook to fill Section E

• What’s next?
Two more steps to complete Master Workbook

1. Summarize results using linking procedure
2. Quality control using ‘Checking protocol’
Linking (beta version)
Section D. Summary Results

D1. Inequality and Poverty; Inequality of Opportunity; Fiscal Impoverishment and Fiscal Gains to the Poor

D2. Effectiveness Indicators: Beckerman & Immerwoll; CEQ Indicators

D3. Vertical Inequality and Reranking

D4. Incidence & Net Payers/Net Beneficiaries (Country-specific Granularity for Fiscal Interventions)

D5. Concentration Shares & Cumulative Concentration Shares (Country-specific Granularity for Fiscal Interventions)


D7. Fiscal Profiles for Core Income Concepts (Graphs): Net Payers and Net Beneficiaries

D8. Progressivity (Country-specific Granularity for Fiscal Interventions): Marginal Contributions, Derivatives of Concentration Coefficients, Kakwani Indexes, and Size of Intervention for each Tax and Transfer (or Benefit)

D9a. Coverage and Distribution of Benefits and Beneficiaries by Program Ranked by Disposable Income Group

D9b. Coverage and Distribution of Benefits and Beneficiaries by Program at Disposable Income Target

D10. Fiscal Mobility Matrices by Income Groups

D11. Education Enrollment Rates Ranked by Disposable Income

D12. Infrastructure Access Ranked by Disposable Income

D13. Lorenz Curves (Graphs)

D14. Concentration Curves (Graphs)

D15. Cumulative Distribution Functions of Income (Graphs)

D16. Comparison over Time

D17. Comparison with Other Studies
E3. Lorenz
D1. Inequality and poverty

Describe Scenario: For example, which original income was used

<table>
<thead>
<tr>
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<tbody>
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<td>0.358</td>
<td>0.381</td>
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</table>

<table>
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<tr>
<th>Inequality of Opportunity</th>
<th>$1.25 PPP</th>
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<tbody>
<tr>
<td>Headcount Index</td>
<td>44.7%</td>
</tr>
<tr>
<td>Poverty Gap</td>
<td>13.9%</td>
</tr>
<tr>
<td>Squared Poverty Gap</td>
<td>6.1%</td>
</tr>
</tbody>
</table>
D Section & Linking (Beta version)

• D Section – Summary Results (for example):
  • D1: Poverty, Inequality, and FI & FGT
  • D3: Progressivity (Kakwani & Redistributivity Effect)
  • D4: Incidence & Net Payers/Net Beneficiaries
  • D5: Concentration Shares
  • D6: Income Distribution
  • D8: Progressivity (Country-specific granularity for fiscal interventions): Marginal Contributions, Derivatives of Marginal Contributions wrt Size & Progressivity, Concentration Coefficients, Kakwani Indexes, and Size of Intervention for each Tax and Transfer (or Benefit)
Instructions for MAC

1. Enable Macros
2. Ignore links
4. Insert the name of the directory: add “/” at the end
5. Insert the name of the file (and extension)
6. Sometimes, Mac operating systems ask for additional permissions to access the files. In order to grant the access, the user have to click on the “Select…” button and then select the “Grant Access” option.
7. If the directory path and the file name and extension were captured correctly on the previous windows, a confirmation box with the label “file exist” will be displayed. If not, a window with the label “File not found” appears instead
Linking

• This Linking procedure was developed to facilitate the data extraction from the whole CEQ Analysis and compile such information on the main results tables of CEQ Master Workbooks (MWB) specifically MWB_ABCD part D. Summary Results.

• The linking is divided into two versions.
  • Contributory Pensions as Deferred Income (MWB2016_ABCD_PDI) scenario
  • Contributory Pensions as Government Transfers (MWB2016_ABCD_PGT) scenario.

• Despite this division, the linking procedure works in the same way.

• Now we have a Beta version
Checking Protocol
Ensuring the investment is worth it

Achieving more Equitable Societies

Increasing effectiveness & efficiency of social and fiscal policies

Providing reliable results to be used in the social and fiscal policy decision making process

Ensuring accurate, useful, and unbiased information
Overview of CEQI Quality Management

• **Quality Assurance**
  - Avoiding mechanical errors from copying and pasting and others (e.g., ppp conversions)
    - CEQ Stata Package: `putexcel` Command to generate section E (Output Tables) of the CEQ Master Workbook
    - E to D Linking: section D (summary of results) will be automatically populated using data from section E

• Training of associates

• **Quality Control**
  - Inspection of Product: Checking Protocol & Quick and Useful Tests to Assess Accuracy and Reliability of Results obtained in a CEQ Assessment
  - Systematic testing of user-written software (Ado files)

• **Quality Improvement**
  - Methodological corrections
  - Methodological innovations
  - Software innovations to reduce production time
  - Improvements to the framework: Master Workbook
Checking protocol

• Common sense checking
• Cross checking with publicly available data from administrative or other sources (e.g., POVCAL)
• Automated checking
• Technical checking
Quick & Useful Tests – Common Sense and Cross Checking

• Are poverty rates and Gini for Disposable Income similar to figures in POVCAL and official figures?
• Gini and poverty rates should decrease from Market Income plus pensions to Final Income
• Incidence of Transfers and Taxes
Quick & Useful Tests – Common Sense and Cross Checking

• Are poverty rates and Gini for Disposable Income similar to official figures? -- Crosscheck A3, D1 & E3

• Gini and poverty rates should decrease when you move from Market Income – Look at D1 or D3

• Distribution of Transfers and Taxes -- Look at D4 or E11
Are poverty rates and Gini for Disposable Income similar to official figures?

Sheet A3: Evolution of Inequality and Poverty

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<td>Gini (MIDB-Mostly Antiguo)</td>
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</table>

Sources:
- Ministry of Development
- CÉDAR
- Instituto de la Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE)
- Instituto Nacional de Estadística y Geografía (INEGI)

Sheet D1: Reduction in Inequality and Poverty

Note: PUT THE VALUES OF THE NATIONAL POVERTY LINES IN DAILY PPP VALUES UNDER THE RESPECTIVE CONCEPT BELOW TO CONVERT MONTHLY.

Describe Scenario: For example, which original income was used

<table>
<thead>
<tr>
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<td>Normalized Fiscal Gap to the Poor per Capita</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
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<td>0.02</td>
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<tr>
<td>Squared Poverty Gap</td>
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<td>Fiscal Improvement Headcount (out of total population)</td>
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<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
<td>0.07</td>
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<tr>
<td>Fiscal Improvement Headcount (out of PPP per poor)</td>
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<td>0.08</td>
<td>0.08</td>
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<tr>
<td>Total Fiscal Improvement (PPP per poor)</td>
<td>0.09</td>
<td>0.09</td>
<td>0.09</td>
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<td>0.09</td>
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<td>Fiscal Improvement per Capita</td>
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<td>0.10</td>
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<td>Fiscal Improvement per Impoverished</td>
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<tr>
<td>Normalized Fiscal Improvement per Impoverished</td>
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<td>0.13</td>
<td>0.13</td>
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<td>0.13</td>
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<tr>
<td>Fiscal improvement as share of personal disposable income per worker</td>
<td>0.14</td>
<td>0.14</td>
<td>0.14</td>
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</table>

18
Are poverty rates and Gini for Disposable Income similar to official figures?

### Sheet A3: Evolution of Inequality and Poverty

| Year | Inequality | Poverty | Income
<table>
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<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1.54%</td>
<td>2.12%</td>
<td>3.14%</td>
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<tr>
<td>2001</td>
<td>1.60%</td>
<td>2.13%</td>
<td>3.16%</td>
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<tr>
<td>2002</td>
<td>1.68%</td>
<td>2.17%</td>
<td>3.18%</td>
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<tr>
<td>2003</td>
<td>1.76%</td>
<td>2.22%</td>
<td>3.20%</td>
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<tr>
<td>2004</td>
<td>1.84%</td>
<td>2.28%</td>
<td>3.22%</td>
</tr>
<tr>
<td>2005</td>
<td>1.92%</td>
<td>2.34%</td>
<td>3.24%</td>
</tr>
<tr>
<td>2006</td>
<td>2.00%</td>
<td>2.40%</td>
<td>3.26%</td>
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<tr>
<td>2007</td>
<td>2.08%</td>
<td>2.46%</td>
<td>3.28%</td>
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<tr>
<td>2008</td>
<td>2.16%</td>
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<td>2009</td>
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<td>2010</td>
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<td>2011</td>
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<tr>
<td>2012</td>
<td>2.48%</td>
<td>2.76%</td>
<td>3.38%</td>
</tr>
<tr>
<td>2013</td>
<td>2.56%</td>
<td>2.82%</td>
<td>3.40%</td>
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### Sheet E3: Disaggregated Results: LORENZ CURVES By Centile and Income Bin

<table>
<thead>
<tr>
<th>Country</th>
<th>Survey Year</th>
<th>Author/s</th>
<th>Date of MB</th>
<th>PPP Conversion Factor (Base Year 2005)</th>
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<tr>
<td>Chile</td>
<td>2013</td>
<td>Sandra Martinez - Eduardo Ortiz</td>
<td>12 Dec 2015</td>
<td>$2.36</td>
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</tbody>
</table>

Results produced by version 3.0 of ecolab on 12 Dec 2015 at 08:59:00.
Quick & useful Tests – Common Sense and Cross Checking

• Are poverty rates and Gini for Disposable Income similar to official figures?
• Gini and poverty rates should decrease when you move from Market Income – Look at D1 or D3
• Distribution of Transfers and Taxes – Look at D4 or E11
Gini and poverty rates should decrease from Market Income plus Pensions to Final Income

Sheet D1

<table>
<thead>
<tr>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
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<tr>
<td>2013</td>
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**Sheet D1 - Reduction in Inequality and Poverty**

*Note: PUT THE VALUES OF THE NATIONAL POVERTY LINES IN DAILY PPP VALUES UNDER THE RESPECTIVE CONCEPT BELOW. TO CONVERT MONTHLY LINES*

Describe Scenario: For example, which original income was used

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>National Extreme PL</td>
<td>Headcount Index</td>
<td>8.6%</td>
<td>6.9%</td>
<td>7.1%</td>
<td>3.8%</td>
<td>15.9%</td>
<td>3.9%</td>
<td>5.0%</td>
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<tr>
<td>Poverty Gap</td>
<td>3.0%</td>
<td>2.3%</td>
<td>2.4%</td>
<td>1.0%</td>
<td>7.5%</td>
<td>1.0%</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>Squared Poverty Gap</td>
<td>1.6%</td>
<td>1.2%</td>
<td>1.2%</td>
<td>0.5%</td>
<td>4.8%</td>
<td>0.5%</td>
<td>0.6%</td>
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<tr>
<td>Fiscal Impoverishment: Headcount (out of total population)</td>
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<td>Fiscal Impoverishment: Headcount (out of post-fisc poor)</td>
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<tr>
<td>Total Fiscal Impoverishment (PPP per day)</td>
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<tr>
<td>Fiscal Impoverishment per Capita</td>
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Quick & Useful Tests – Common Sense and Cross Checking

• Are poverty rates and Gini for Disposable Income similar to official figures? -- Crosscheck A3, D1 & E3

• Gini and poverty rates should decrease when you move from Market Income

• Distribution of Transfers and Taxes – Look at D4 or E11
In a country with high levels of informality and relative high personal exemption from income tax

<table>
<thead>
<tr>
<th>Deciles</th>
<th>Market Income - INCLUDES CONTRIBUTORY PENSIONS</th>
<th>Direct Taxes</th>
<th>Contributions EXCLUDING CONTRIBUTIONS TO PENSIONS</th>
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<tbody>
<tr>
<td>1</td>
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<td>0.0%</td>
<td>-8.0%</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>5.0%</td>
<td>-5.0%</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>3.0%</td>
<td>-3.7%</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>5.0%</td>
<td>-4.2%</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>6.0%</td>
<td>-3.1%</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>3.0%</td>
<td>-3.0%</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>3.0%</td>
<td>-2.8%</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>6.6%</td>
<td>-2.5%</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>7.0%</td>
<td>-2.3%</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>8.0%</td>
<td>-1.4%</td>
</tr>
<tr>
<td>Total Population</td>
<td></td>
<td>-1.3%</td>
<td>-2.4%</td>
</tr>
</tbody>
</table>
Pay special attention to A5, C1 & D4

A5. Government Spending and Taxation from Public Accounts and in Incidence Analysis

C1. Construction of Income Concepts

D4. Incidence by Decile & Income Group
Checking protocol: Section A

Information has to be complete, using most reliable official sources that are available, provide the highest disaggregation that is possible for the year of the survey (or the analysis).

For example A5. General Government Revenues & Spending

**Completeness:** complete information, sources for each data has to be provided

**Coherence:** Population, per cápita GNI, PPP conversion factor and GDP in local currency matches the information of sheet A4 for the same year of the survey.

**Appropriateness:** Check that the information from National Accounts is the **budget executed** and not the budget approved
Checking protocol: Section B

B1. General Survey Information

Completeness: Make sure that the information is complete

Coherence: All the information has to be consistent with the information given in A5 and C1

Appropriateness: D36 gives information about the imputed rent. If the country author estimated this you should be able to see how he/she estimated in C1. Please check the appropriateness of the estimation.

B2. Survey Questions and Variable Names

Completeness: Make sure that the information is complete, only Notes column may be blank. All other cells must be answered. Authors may add/delete rows.

• Check that “adds” are where they belong. Correct categorization of income is necessary for accurate calculations later on.

• For deleted rows, compare back to original. What rows were deleted? Why? Should they be included or is it acceptable to have them deleted?

Appropriateness: Includes should be definitional, giving a comprehensive, understanding of what the term means.
Checking protocol: Section C

• **C1. Construction of Income Concepts**

• **Note that this sheet is extremely important and serves as a guide for the rest of the analysis.**

• **Completeness**
  
  • Make sure that the information is complete.
  
  • Check that the information of A5 is included and disaggregated here.
  
  • Check all Taxes – specific list (not just type indirect taxes for example)
  
  • Other direct transfers – describe EXACTLY
    
    • Check that we have a comprehensive list, not a list of examples.
    
    • NOT “programs like…” or “programs such as…”
  
  • Specifics! - $ per year, %, $ per student, etc.
    
    • E.g. for in-kind education, check for SPECIFIC values imputed by level
  
  • Check that identification method is explained
  
  • Check all sources are included
Checking protocol: Section C

- **C1. Construction of Income Concepts**

- **Coherence**
  - Verify that values in Column G match those for the same program in Column F of Sheet A5.
  - Using formulas construct each income and see if it matches the blue rows

- **Appropriateness**
  - Check the same terminology that is found in the CEQ Handbook on pages 10-12 were used in column D.
  - You will find descriptions of the following methods:
    - Direct Identification Method;
    - Imputation Method;
    - Inference Method;
    - Simulation Method;
    - Alternate Survey;
    - Secondary Sources Method
  - Check what was scaling down and check the rationale.
Checking protocol: Section C

• **C1. Construction of Income Concepts**

• **Appropriateness**
  
  • Ratios: If the analysis is done using income the ratio should be constructed with respect to disposable income. If the analysis is done using consumption the ratios should be constructed with respect to private consumption.
  
  • Ratios vs absolute amounts.
    
    • If Qty of beneficiaries (survey) is similar to Qty in administrative accounts,
      
      • we expect absolute amount of survey and administrative accounts to be similar.
    
    • If Qty of beneficiaries (survey) is very different from Qty of beneficiaries (administrative accounts)
      
      • we expect absolute amount of survey and administrative accounts to be different.
    
    • If there was scaling down then ratios should be almost, if not, the same.
    
    • If there was not scaling down and the ratios are similar check if the estimation was properly done.
Checking protocol: Section C

• **C2. Key Assumptions**
  
• **Completeness**
  • Check that all questions are answered fully and accurately.

• **Coherence**
  • Check that Cells C3 and C4 match information provided on the cover page.
  • Check all the information is consistent with C1.
Checking protocol: Section D

• **D1. Inequality and Poverty; Inequality of Opportunity; Fiscal Impoverishment and Fiscal Gains to the Poor; Statistical Significance**

• Completeness
  • Check cell B1 is filled in.
  • Make sure that the information is complete.
  • For each indicator, all income concepts need to be filled in.
  • Market income and net market income results should not be identical (look at multiple decimals, not just the three shown automatically) if direct taxes are nonzero.

• Coherence
  • Poverty and inequality results
    • Compare to those presented in sheet “A3. Evol Ineq Pov” for the closest year. Use disposable income to compare and check that there are not large differences in the rates being presented.
  • Poverty headcounts, FI and FGTP should increase along with the poverty line.
  • Poverty gap should be lower than poverty headcount, and squared poverty gap should be lower than poverty gap.
Checking protocol: Section D

- **D4. Incidence by Decile and Socioeconomic Groups & Net Payers/Net Beneficiaries (Accordion)**
- Completeness: Make sure that the information is complete.
- Coherence
  - Compare the totals with the corresponding concepts in sheet C1 column E, Verify why if they differ.
  - Numbers need to add up, for each column check that the total is the sum of the 10 decile values
  - Check if the sum of the components of each Income Definition add up to the Income Definition. For example, the components of the Income Definition “Market Income plus pensions” are: Market Income and Contributory pensions. Then the following should be true
    - Market income plus pensions = Market Income + Contributory pensions
  - Incomes and taxes should increase along with the decile and Income Group.
  - Monetary and Near Cash Transfers should decrease along with the decile and Income Group
- Appropriateness: Amounts should be annually.
Checking protocol: Section E

- **E3. Lorenz for Core Income Concepts** *(One for each core Income Concept)*
- Completeness: Make sure that the information is complete
- Coherence
  - Cross Check results to those in E12s
    - Note that the specific cells will vary as sheet E12 is completed using accordion files
    - Note that you will need to compare for the same sheet (e.g., Market Income (E11m) with Market Income (E10m))
  - Spot check results of PPP conversion using PPP conversion factor from Cell Q3
Checking protocol: Section E

- **E3. Lorenz for Core Income Concepts (One for each core Income Concept)**
  - Automated Checks: Use Checking toolbox:

<table>
<thead>
<tr>
<th>Rule</th>
<th>Cells</th>
<th>Happens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty Gap must be less than or equal to the poverty headcount</td>
<td>D28:K49</td>
<td>Highlight Yellow</td>
</tr>
<tr>
<td>Squared Poverty Gap must be less than or equal to the poverty gap</td>
<td>D29:K50</td>
<td>Highlight Yellow</td>
</tr>
<tr>
<td>Greater poverty lines must yield greater poverty headcounts, gaps and severity</td>
<td>D27:K50</td>
<td>Highlight Red</td>
</tr>
<tr>
<td>Lorenz Totals (LCU and PPP) for Centiles and socio-economic groups must sum to their respective groups</td>
<td>D53:S63 and D66:S72</td>
<td>Highlight Orange</td>
</tr>
<tr>
<td>Values of Lorenz Totals (LCU and PPP) for Centiles and Deciles must increase as Centile and Decile</td>
<td>D54:S63 and D76:S174</td>
<td>Highlight Red</td>
</tr>
<tr>
<td>Lorenz per capita (LCU and PPP) should increase in each decile and centile</td>
<td>T54:AI62 and T76:AI174</td>
<td>Highlight Yellow</td>
</tr>
<tr>
<td>Lorenz Per capita (LCU) should increase in each socio-economic group or bin</td>
<td>T67:AA71 and T179:AA539</td>
<td>Highlight Yellow</td>
</tr>
<tr>
<td>Lorenz per capita (PPP) should be within socio-economic group or bin</td>
<td>AB66:AI71 and AB178:AI539</td>
<td>Highlight Red</td>
</tr>
<tr>
<td>Lorenz Shares must be equal to Total Lorenz for decile divided by total total Lorenz (plus or minus .01%)</td>
<td>Columns AJ to AQ</td>
<td>Highlight Red</td>
</tr>
</tbody>
</table>
Thank you!