

CEQ Linking Master Workbook Section D and Checking Protocol



Maynor Cabrera
Associate Director, CEQI

Learning Event on the
Commitment to Equity Methodology

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

Lustig, Nora, editor, *Commitment to Equity Handbook: Estimating the Redistributive Impact of Fiscal Policy*, Tulane University and the World Bank, in progress.

- Ratzlaff, Adam and Sandra Martínez (2016), “Master Workbook 2016 Checking Protocol”
- Carrera, Cristina (2016), “Linking. Beta version”, version July 12

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

Once you have...

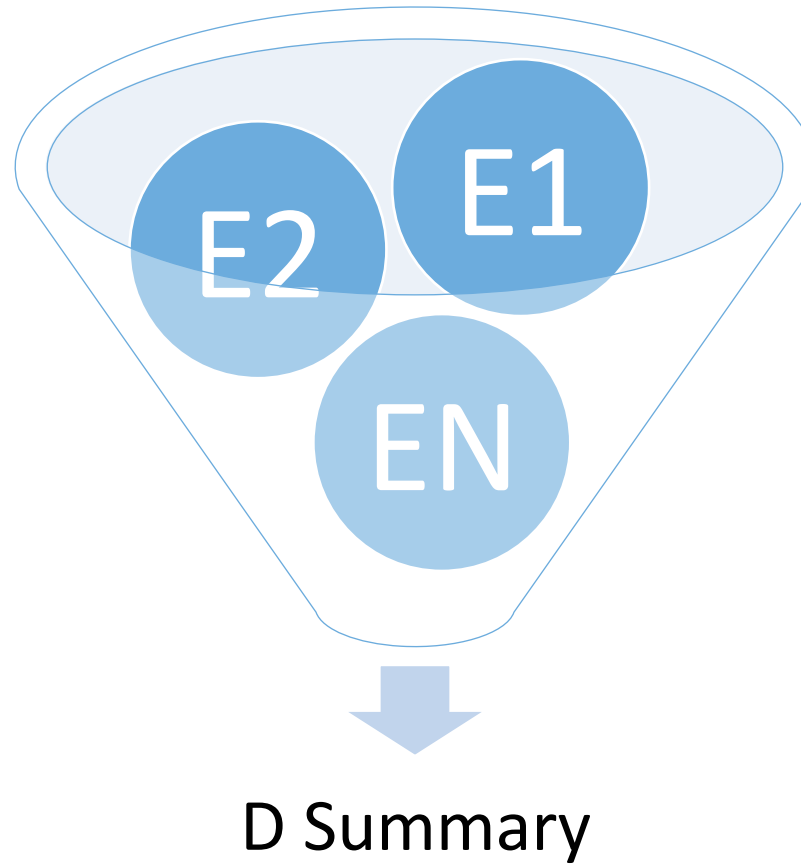
1. Understand CEQ Methodology
2. Compiled national accounts statistics about taxes and transfers and hhd survey
3. Find the best assumptions and methodology to analyze fiscal policy
4. Write your scenarios in Stata Code and process HHD survyes
5. Filled Master Workbook Section A, B, C
6. Run 'ado' files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



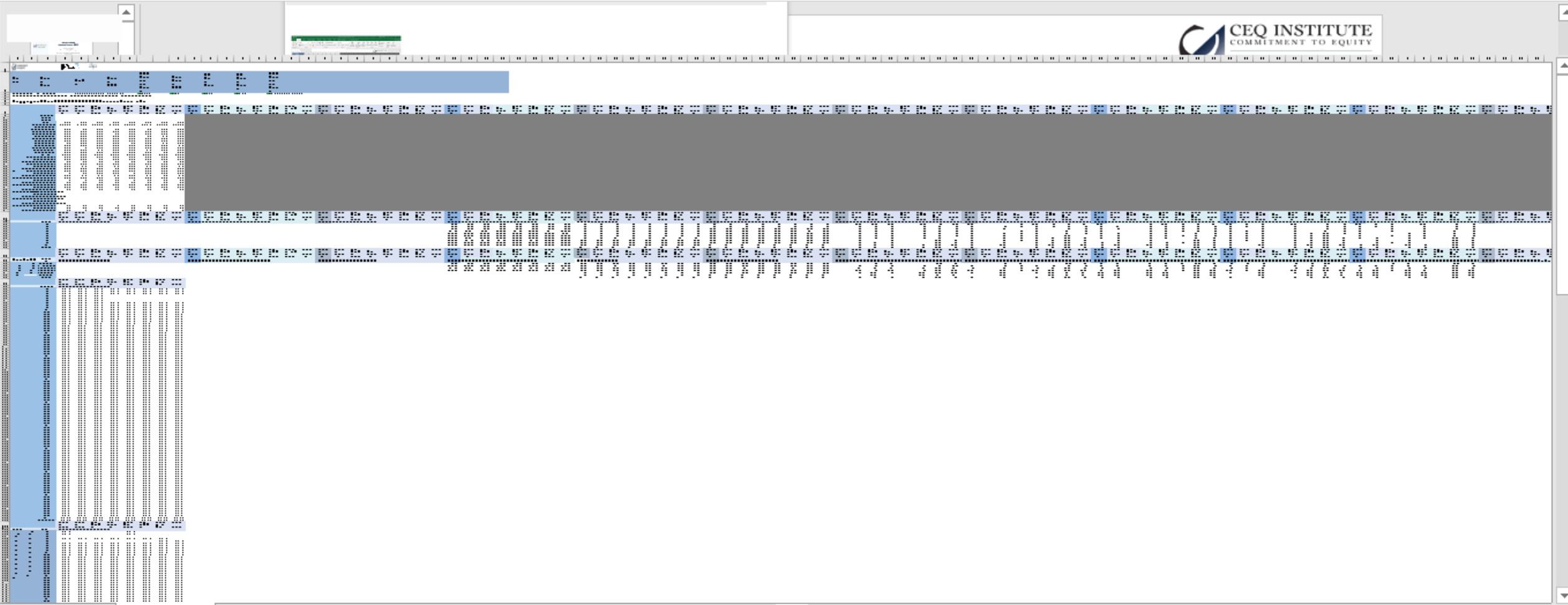
E1. Descriptive Statistics									
E2. Population for Core Income Concepts									
E2b. Population for Extended Income Concepts (Accordion; One for each core income concept)									
E3. Lorenz for Core Income Concepts									
E4. Inequality of Opportunity for Core Income Concepts									
E5. Fiscal Impoverishment for Core Income Concepts									
E6. Fiscal Gains to the Poor for Core Income Concepts									
E7. Statistical Significance for Core Income Concepts									
E8. Dominance Tests for Core Income Concepts									
E9. Poverty Reduction Effectiveness Indicators for Market and Market Income + Pensions (Beckerman-Immerwoll) (Accordion)									
E10. Concentration Values for Core Income Concepts (ranked by original income) (Accordion; One for each core income concept)									
E11. Fiscal Interventions Concentration Values (Accordion; One for each core income concept)									
E12. Lorenz for Extended Income Concepts (Accordion; One for each core income concept)									
E13. Marginal Contributions, Size & Marginal Effects (derivatives wrt size & progressivity) (Rows by END income concept)									
E14. Effectiveness (Accordion; One for each core income concept)									
E15. Covariance (Accordion)									
E16. Marginal Statistical Significance for Extended Income Concepts (Accordion; One for each core income concept)									
E17. Dominance Tests									
E18. Coverage (Accordion; One for each core income concept)									
E19. Coverage (target) (Accordion; One for each Income Concept)									
E20. Educational Enrollment									
E21. Infrastructure Access (Accordion)									
E22. Household Socio-Demographic Indicators (Accordion; One for each Income Concept)									
E23. Individual Socio-Demographic Indicators (Accordion; One for each Income Concept)									
E24. Lorenz Curves (graphs)									
E25. Concentration Curves (graphs)									
E26. Cumulative Distribution Functions (graphs)									
E27. Assumption Testing									



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)									
D6. Income Distribution (for Core Income Concepts): By Decil and Income Group									
D7. Fiscal Profiles for Core Income Concepts (Graphs): Net Payers and Net Beneficiaries									
D8. Progressivity (Country-specific Granularity for Fiscal Interventions): Marginal Contributions, Size & Marginal Effects									
D9a. Coverage and Distribution of Benefits and Beneficiaries by Program Ranked by Income Group									
D9b. Coverage and Distribution of Benefits and Beneficiaries by Program at Disposal									
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									
	<i>Country Name</i>	Market Income	Market Income + Contributory Pensions	Net Market Income	Gross Income	Taxable Income	Disposable Income	Consumable Income	Final Income
	Gini	0.379	0.382	0.358	0.381	0.379	0.357	0.342	0.329
	Theil Index	0.312	0.317	0.263	0.316	0.312	0.261	0.240	0.223
	90/10	4.456	4.630	4.392	4.618	4.456	4.372	4.113	3.819
	Inequality of Opportunity								
\$1.25 PPP	Headcount Index	44.7%	43.7%	44.1%	43.2%	44.7%	43.6%	51.5%	
	Poverty Gap	13.9%	12.9%	13.0%	12.7%	13.9%	12.8%	16.1%	
	Squared Poverty Gap	6.1%	5.2%	5.2%	5.1%	6.1%	5.1%	6.8%	

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
3. Click on 'Link Files' button located at the top of the sheets D1.Ineq and Pov, D3.Progressivity, D4.Incidence, D6.Income Dist. and D8. Marginal Contributions
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 has 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

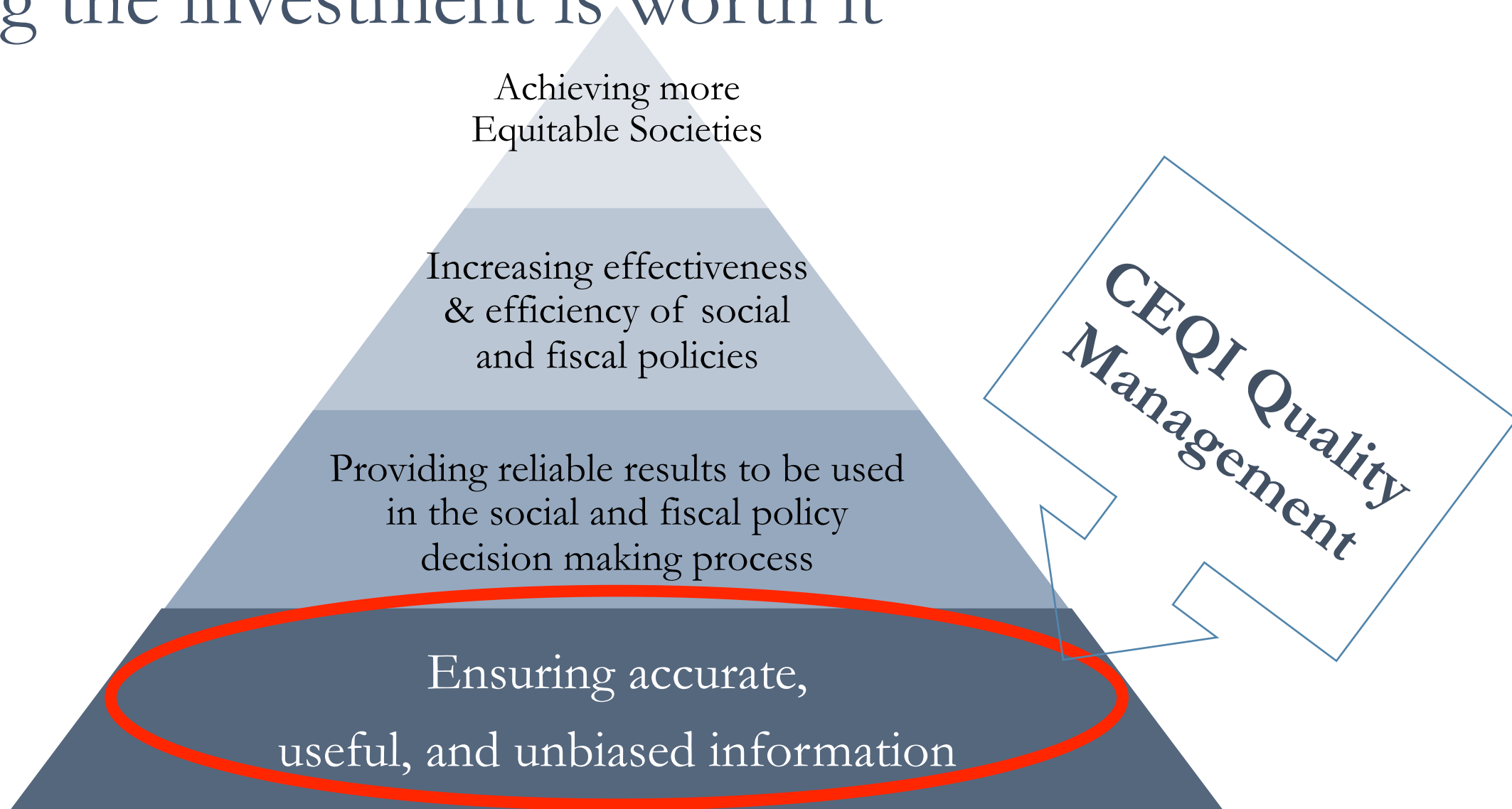
Linking

- 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



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

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Sheet A3: Evolution of Inequality and Poverty														
Instructions: To be completed by the country poverty economist using data from the most recent available work, or from secondary sources such as the World Bank's PovcalNet. Remember to include complete r (if you use webpage-based info. Remember to put date of the website info)														
ADD ROWS FOR THE VALUES OF THE NATIONAL POVERTY LINES IN DAILY PPP VALUES. TO CONVERT MONTHLY LINES TO DAILY MULTIPLY THE MONTHLY VALUES BY 12 A URBAN LINES, PLEASE REPORT BOTH. IF THERE ARE MULTIPLE LINES AND YOU WANT TO CONVERT THEM INTO ONE, TAKE THE WEIGHTED AVERAGES WITH THE POPULA INSTRUCTIONS ON HOW TO CONVERT POVERTY LINES IN LOCAL CURRENCY INTO PPP, PLEASE SEE HANDBOOK. IT IS VERY IMPORTANT TO READ THE INSTRUCTIONS AS T														
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
INEQUALITY														
Gini (MDS Metodología Nueva)				nd			0.50			0.50		0.49		0.49
Gini (MDS Metodología Antigua)				nd			0.53			0.54		0.54		0.53
Gini- CEDLAC				0.55			0.52			0.52		0.51		0.50
Theil				70.3			59.1			61.3		55.2		56.6
10/10 (MDS)							20.1			19.8		17.7		17.1
90/10 (CEDLAC)				9.5			8.7			8.2		8.3		7.9
POVERTY														
Headcount \$1.25 PPP (from WB POVCAL)				1.73%			1.07%			1.28%		0.83%		nd
Headcount \$2.5 PPP (from WB POVCAL)				5.9%			4.0%			3.2%		2.34%		2%
Headcount \$4 PPP (from WB POVCAL)				20.6%			15.61%			11.54%		9.89%		5%
<i>Own calculations (just fill in for year of survey)</i>														
Headcount \$1.25 PPP (from WB POVCAL)														0.29%
Headcount \$2.5 PPP (from WB POVCAL)														1.36%
Headcount \$4 PPP (from WB POVCAL)														5.3%

Sheet E3

	A	B	C	D	E	F	G	H	I	J	K
											
1											
	Country	Survey Year	Author/s			Date of MWB		PPP Conversion Factor (From Base Year LCU to Base Year PPP)		Base Year of PPP	
2	Chile	2013	Sandra Martínez - Eduardo Ortiz			12 Dec 2015		387.36		2005	
3	Results produced by version 3.0 of ceqlorenz on 12 Dec 2015 at 08:59:00										
4											
5											
6	Disaggregated Results: LORENZ CURVES By Centile and Income Bin										
7											
			Market Income + Contributory								
8			Market Income	Pensions	Net Market Income	Gross Income	Taxable Income	Disposable Income	Consumable Income	Final Income	
9	Mean		2958910.47	3074837.25	2914009.55	3169447.18	2507454.12	3008619.47	2659699.95	2927988.68	
10	Median		1747672.00	1848582.00	1776668.00	1946733.00	1497402.00	1865164.00	1652182.00	1944103.75	
11	Standard Deviation		5033253.73	5042770.89	4321207.04	5017336.49	4505744.67	4293431.60	3788890.19	3755566.30	
12	Gini		0.540473471	0.52351852	0.517030179	0.498876931	0.566440116	0.491260691	0.489913124	0.43798251	
13	Absolute Gini		1599212.614	1609734.249	1506630.88	1581164.081	1420322.602	1478016.483	1303021.911	1282407.81	
14	S-Gini v=1		0	0	0	0	0	0	0	0	
15	S-Gini v=1.25		0.260523549	0.247308109	0.242471804	0.232905491	0.263052341	0.22756783	0.227218048	0.20401581	
16	S-Gini v=1.5		0.403503296	0.383198146	0.377899244	0.359683528	0.409258291	0.35345059	0.352815007	0.31675101	
17	S-Gini v=2.5		0.641852709	0.609908509	0.605523976	0.567366976	0.658951496	0.561020585	0.559626303	0.50339651	
18	S-Gini v=3		0.696476278	0.661918003	0.65779276	0.613956117	0.717484371	0.607551766	0.605909098	0.54578541	
19	S-Gini v=3.5		0.735639921	0.699283712	0.695345595	0.647122713	0.759689462	0.640647423	0.63880337	0.5762161	
20	S-Gini v=4		0.765531665	0.727900134	0.724117669	0.672352723	0.791948879	0.66581468	0.66380167	0.59956861	
21	S-Gini v=5		0.808870175	0.769692771	0.766186519	0.708970185	0.838505558	0.702352889	0.700067021	0.63388061	
22	S-Gini v=6		0.839282381	0.799420597	0.796171354	0.734915287	0.870655003	0.728277715	0.725776205	0.6585811	
	Table of Contents	E1. Descriptive Statistics	E2. Population	E3. Lorenz	E5. Fisc. Impoverishment	E6. Fisc. Gains to the Poor	E10.m Concentration	E10.m+p Conc.	+		

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

B	C	D	E	F	G	H	I	J	K
2013									
	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				- DTax'	+DTr	- Non Tax Incm	-DTx, +DTr	
			Market Income	Market Income + Contributory Pensions	Net Market Income	Gross Income	Taxable Income	Disposable Income	Consumable Income
	Country Name								
National Extreme PL	Headcount Index	8.6%	6.9%	7.1%	3.8%	15.9%	3.9%	5.0%	
	Poverty Gap	3.0%	2.3%	2.4%	1.0%	7.5%	1.0%	1.3%	
	Squared Poverty Gap	1.6%	1.2%	1.2%	0.5%	4.8%	0.5%	0.6%	
	Fiscal Impoverishment Headcount (out of total population)								
	Fiscal Impoverishment Headcount (out of post-fisc poor)								
	Total Fiscal Impoverishment (PPP per day)							21	
	Fiscal Impoverishment per Capita								

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

		Market Income - INCLUDES CONTRIBUTORY PENSIONS	Direct Taxes	Contributions EXCLUDING CONTRIBUTIONS TO PENSIONS
Deciles	1		0.0%	-8.0%
	2		5.0%	-5.0%
	3		3.0%	-3.7%
	4		5.0%	-4.2%
	5		6.0%	-3.1%
	6		3.0%	-3.0%
	7		3.0%	-2.8%
	8		6.6%	-2.5%
	9		7.0%	-2.3%
	10		8.0%	-1.4%
Total Population			-1.3%	-2.4%

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
 - $\text{Market income plus pensions} = \text{Market Income} + \text{Contributory pensions}$
 - 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 (ie. 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:

Rule	Cells	Happens
Poverty Gap must be less than or equal to the poverty headcount	D28:K49	Highlight Yellow
Squared Poverty Gap must be less than or equal to the poverty gap	D29:K50	Highlight Yellow
Greater poverty lines must yield greater poverty headcounts, gaps and severity	D27:K50	Highlight Red
Lorenz Totals (LCU and PPP) for Centiles and socio-economic groups must sum to their respective groups	D53:S63 and D66:S72	Highlight Orange
Values of Lorenz Totals (LCU and PPP) for Centiles and Deciles must increase as Centile and Decile	D54:S63 and D76:S174	Highlight Red
Lorenz per capita (LCU and PPP) should increase in each decile and centile	T54:AI62 and T76:AI174	Highlight Yellow
Lorenz Per capita (LCU) should increase in each socio-economic group or bin	T67:AA71and T179:AA539	Highlight Yellow
Lorenz per capita (PPP) should be within socio-economic group or bin	AB66:AI71 and AB178:AI539	Highlight Red
Lorenz Shares must be equal to Total Lorenz for decile divided by total total Lorenz (plus or minus .01%)	Columns AJ to AQ	Highlight Red



Thank you!