

Economic Integration, Poverty and Regional Inequality in Brazil

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Objective

- Assess potential effects of Free Trade Area of Americas upon poverty and income distribution in Brazil.
- Develop a tool for this analysis.

Methodology

- A CGE model based on the ORANIG model of Australia, with a regional “top-down” extension.
- The CGE model was linked to a micro-simulation model.
- Shocks results transmitted between them and fed back until convergence.

The CGE model

- 42 sectors;
- 52 commodities;
- 10 labor occupations (wage classes);
- 27 regions inside Brazil;
- 270 different expenditure patterns;
- Calibrated with the 1996 Brazilian Input-Output Tables and the Brazilian Agricultural Census.

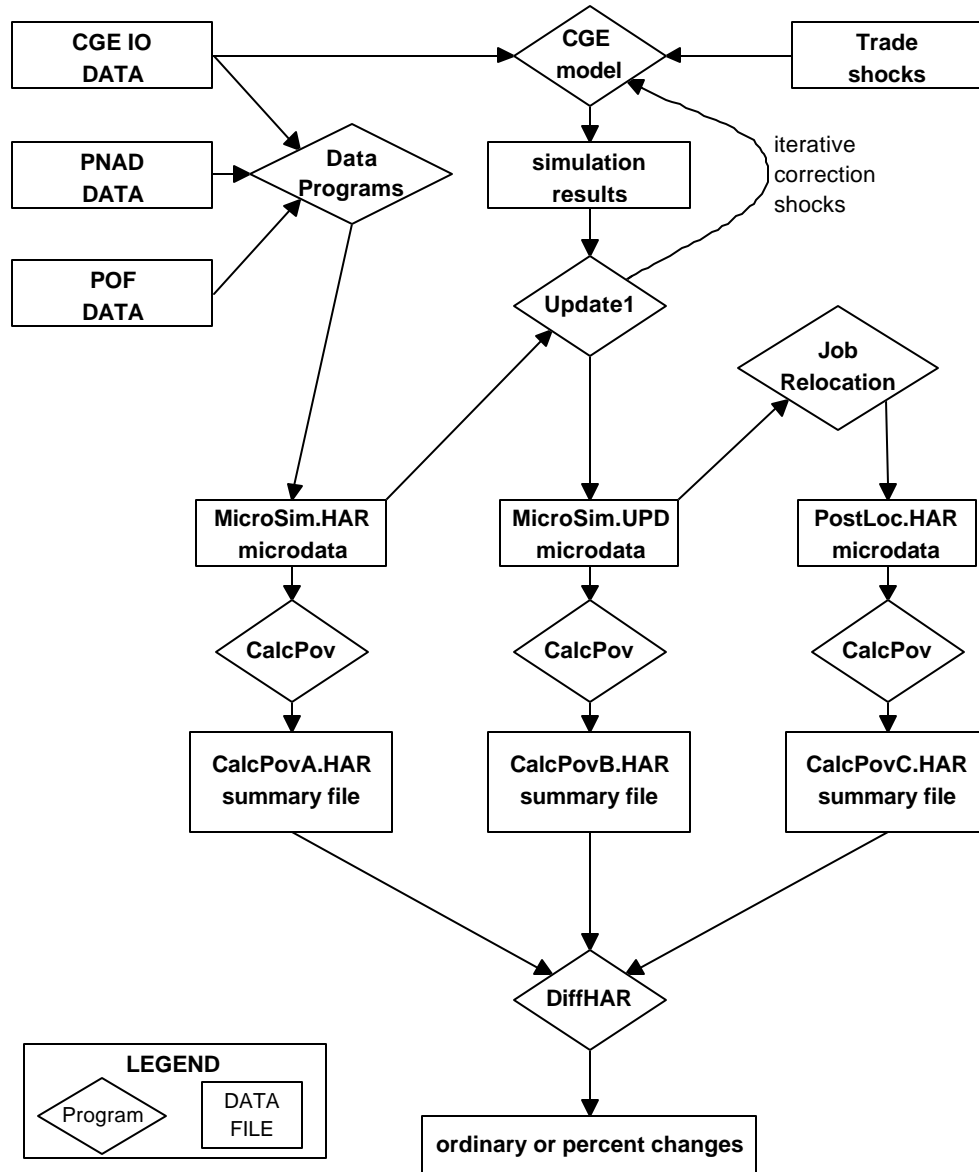
The Micro-simulation model: Data sources.

- National Household Survey – PNAD, 2001: information for households and persons, 331,263 records. **INFO**: Wage by industry and region, personal characteristics.
- Household Expenditure Survey – POF, 1996: 16,014 households, 11 metropolitan regions (urban). **INFO**: Expenditure patterns of 10 different income classes, for the 11 regions. Mapped to 27 regions.

Records after data preparation.

- 112,055 Brazilian households;
- 263,938 adults (older than 15 years);
- 42 activities;
- 52 commodities;
- 27 regions.

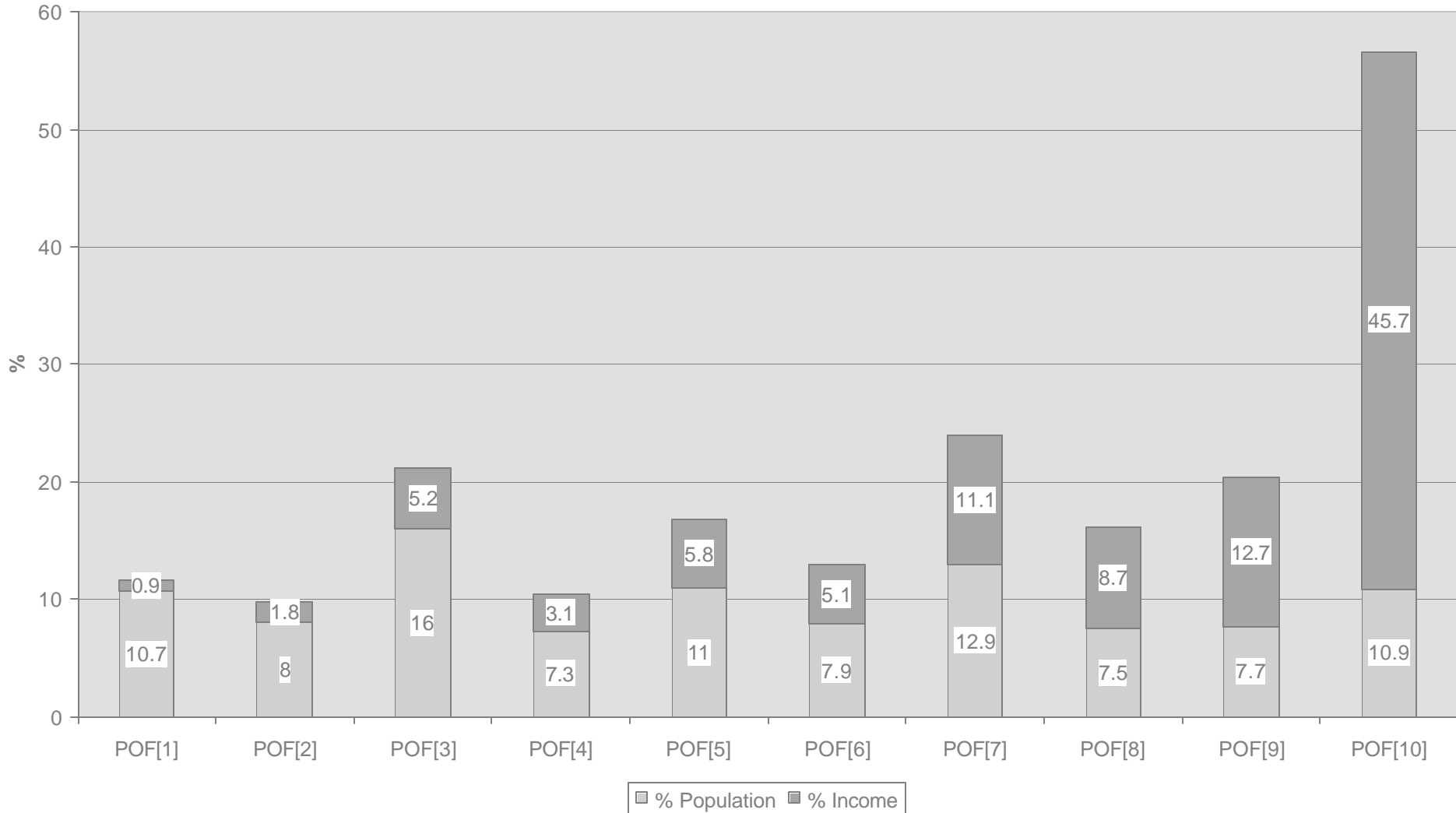
Model linking strategy



Updating the database: wages and labor demand.

- First method: wage updated with total wage bill variation (workers work more hours);
- Second method: the “Quantun Method”. True job relocation, through changes in worker’s PNAD sample weights.
- Second method results reported here.
- Household income tracked from individual workers income: key linking persons to households.

Share of income classes in population and in income. Brazil, 2001.



Poverty and Income Inequality in Brazil, 2001

Income group	PrPop	PrInc	AveHouInc	UnempRate	PrWhite	AveWage	PrChild
POF[1]	10.7	0.9	0.1	32.6	35.2	0.2	46.2
POF[2]	8.0	1.8	0.4	17.3	38.3	0.3	37.2
POF[3]	16.0	5.2	0.6	10.4	42.0	0.4	35.1
POF[4]	7.3	3.1	0.8	8.8	45.1	0.4	32.5
POF[5]	11.0	5.8	1.0	7.5	49.2	0.5	28.7
POF[6]	7.9	5.1	1.2	7.4	53.4	0.6	26.4
POF[7]	12.9	11.1	1.7	6.8	60.3	0.8	24.5
POF[8]	7.5	8.7	2.3	6.1	66.3	0.9	21.5
POF[9]	7.7	12.7	3.1	5.9	71.2	1.4	20.5
POF[10]	10.9	45.7	7.9	4.2	81.6	3.2	17.7
Total	100.0	100.0	---	---	---	---	---

POF Group Contributions to FGT Poverty Indices

POF group	% of all families	share below poverty line	average poverty gap	contributions to FGT0	contributions to FGT1	contributions to FGT2
POF[1] poorest	10.7	0.9617	0.7334	0.1122	0.0856	0.0715
POF[2]	8.0	0.7657	0.3047	0.0716	0.0285	0.0135
POF[3]	16.0	0.5355	0.1496	0.0877	0.0245	0.0092
POF[4]	7.3	0.2837	0.0539	0.0202	0.0038	0.0011
POF[5]	11.0	0.1143	0.0189	0.0122	0.0020	0.0005
POF[6]	7.9	0.0390	0.0054	0.0029	0.0004	0.0001
POF[7]	12.9	0.0082	0.0009	0.0010	0.0001	0.0000
POF[8]	7.5	0.0008	0.0001	0.0001	0.0000	0.0000
POF[9]	7.7	0.0000	0.0000	0.0000	0.0000	0.0000
POF[10] richest	10.9	0.0000	0.0000	0.0000	0.0000	0.0000
	sum=100	FGT0= ave=0.3079	FGT1= ave=0.1449	FGT0= sum=0.3079	FGT1= sum=0.1449	FGT2= sum=0.0960



Simulation.

- Shocks generated in a previous run of the GTAP model with 7 regions (world) and 43 commodities.
- Shock: Brazilian export quantities;
- Shock: Brazilian CIF import prices.
- Shock: Brazilian import tariffs.
- Scenario: full tariff elimination in FTAA area.
- Upper limit to the process.

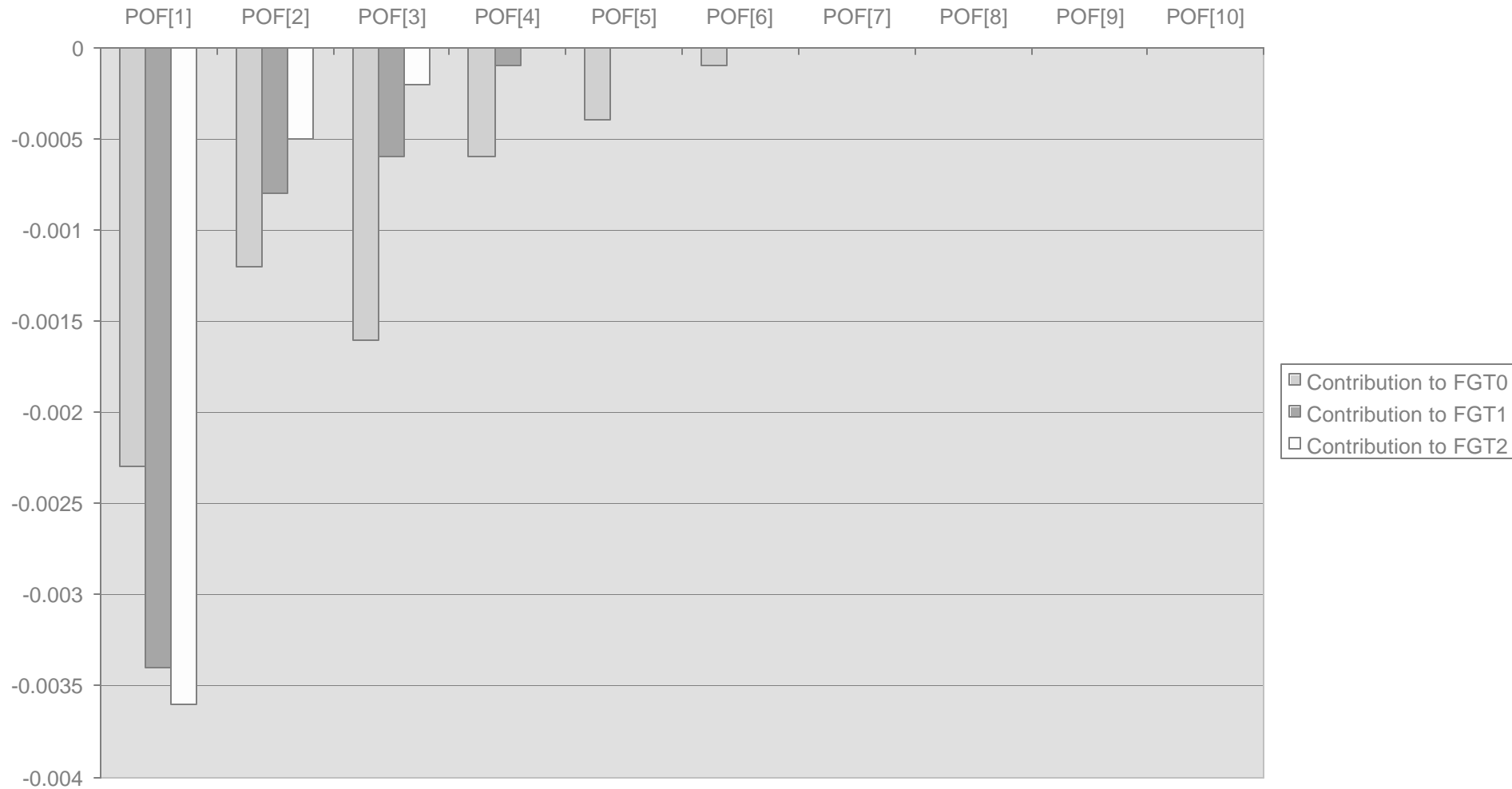
Model Closure: short run flavour.

- Real wage fixed, employment adjusts at sectoral level.
- Share of each occupation in each industry is also fixed (fixed wage relativities).
- Sectoral capital stocks fixed, rates of return adjusts.
- Trade balance fixed; ratio I/C and I/G fixed.
- Numeraire: CPI.

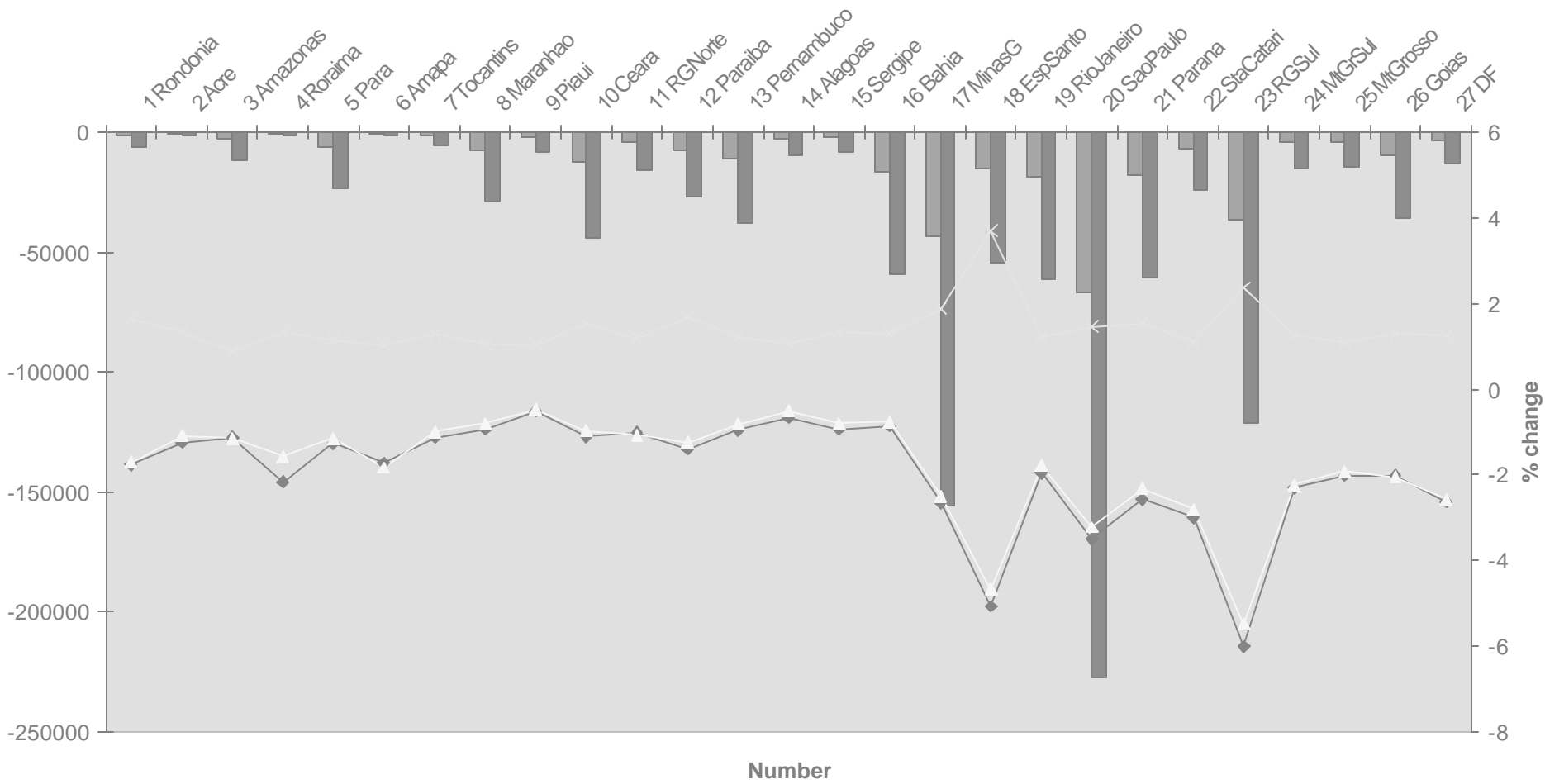
Average Household Income and GINI Index Change

Household income group	Average income variation	Unemployment rate (% points change)
POF[1]	21	-4.6
POF[2]	3.3	-2.3
POF[3]	2	-1.4
POF[4]	1.6	-1.2
POF[5]	1.3	-1
POF[6]	1.1	-1
POF[7]	1.2	-0.9
POF[8]	0.8	-0.8
POF[9]	1.1	-0.9
POF[10]	0.8	-0.7
GINI INDEX	-0.32	---

Decomposition of the Foster-Greer-Thorbeck index according to household income class contributions.



Number and % change of regional households/persons who leave poverty



Number of poor househ.
 Number of poor persons
 % households
 % persons
 % change employment (heads)

Final remarks

- Big shock, moderate impact over poverty.
- Brazilian economy not very trade oriented.
- Tracking household income from persons income: possible cushioning of household income changes due to policies. Most households have persons employed in different industries.