

Analyzing Income Distribution Changes: Anonymous versus Panel Income Approaches

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WIDER

Main Questions

- Who gains and who is hurt when the distribution of income changes?
 - Anonymous vs panel income approaches
- How our view of inequality is altered if we focus on the inequality of average income?
 - What factors account for equalization /disequalization of longer-term incomes that occurs as a result of economic mobility

The Two Basic Concepts and Their Measures

X-sectional Changes in Inequality Anonymous Approach

- Lorenz Criteria
- Lorenz-consistent Inequality Indices
- Lorenz-inconsistent Inequality Indices

Convergent/Divergent Panel Income Changes

$$\Delta y = \gamma_y + \delta_y y_0 + u_y$$

where y can be

- Dollars
- Income shares
- Log-dollars.

Alternatively,

$$\frac{d_1 - d_0}{d_0} = \phi + \theta d_0 + u_{pch}$$

Reconciliation

In Duval, Fields, and Jakubson (2014) we show in detail how it is theoretically possible to have:

	Rising Inequality	Falling Inequality
Convergent Panel Income Changes	√	√
Divergent Panel Income Changes	√	√

Reconciling:

Rising Inequality and Convergent Income Changes

Simultaneously:

- a) Anonymous rich and poor getting farther apart
- b) Initial poor are getting closer to the initial rich.

Hence, reconciliation is only possible if *initial* rich/poor are not the same people as *anonymous* rich/poor.

Reconciling:

Rising Inequality and Convergent Income Changes (cont.)

e.g.

$$y_0 = [20, 41, 45, 49, 70]$$

becomes

$$y_1 = [100, 41, 45, 49, 10]$$

Key ingredient: Large income changes that generate **crossings** among individuals.

Reconciling: *Falling Inequality and Divergent Income Changes*

Impossibilities:

- Log divergence cannot lead to falling Log-Variance (Furceri 05, Wodon & Yitzhaki 06).
- Divergence in:
 - Shares
 - Exact proportional changes
 - Dollars/€ in Recession Yearscannot lead to Lorenz-Improvement.

Reconciling:

Falling Inequality and Divergent Income Changes (cont.)

Any other combination of:

- Falling Inequality
- Divergent income changes

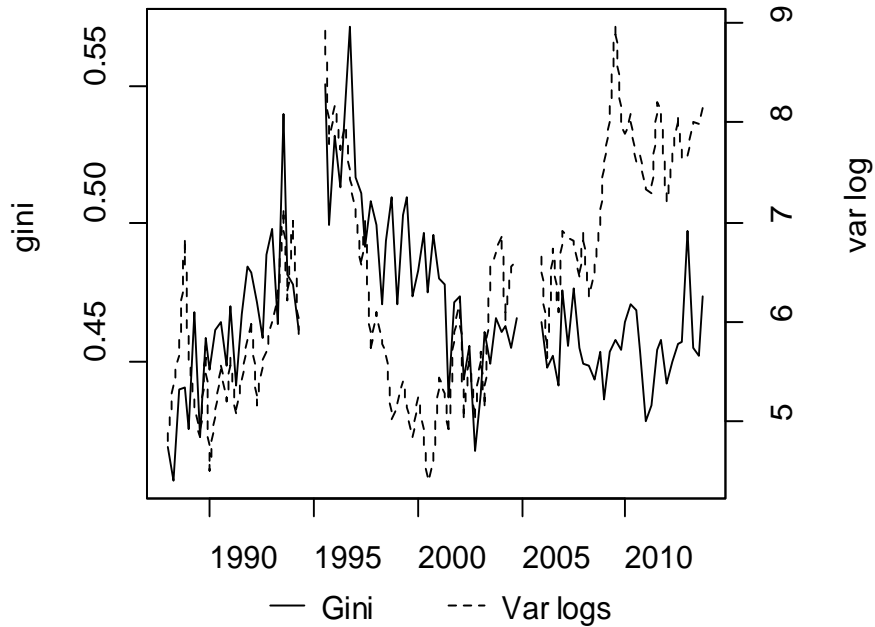
is possible, e.g.

- $[5, 20] \rightarrow [7, 23]$ (divergent dollar changes & LI)
- $[1, 1, 1, 1, 1, 1, 1, 1, 6, 9] \rightarrow [1, 1, 1, 1, 1, 1, 1, 1, 7, 8]$
(divergent log-dollar changes & LI).

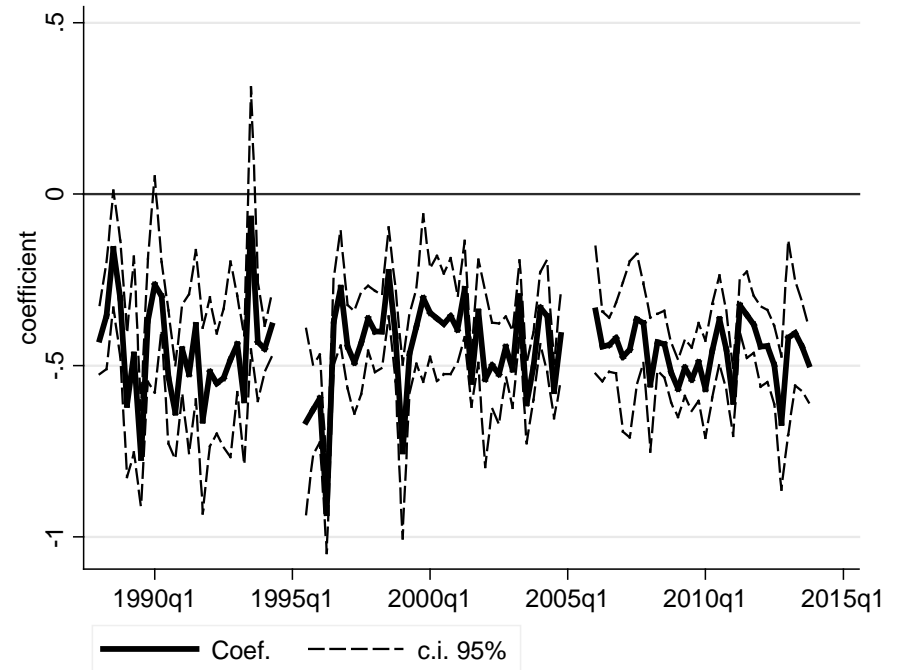
Empirical Reconciliation for Mexico

- Labor Survey in Urban Mexico 1987-2013.
- Monthly Earnings in 2010 Mx Pesos
- Labor force participants (including unemployed)
- 18 to 65 years of age
- Individuals are followed for 5 quarters
- Many short-lived rotational panels

Inequality



Convergence Coefficient δ (for regression in Mx pesos)



Final Earnings (000s)

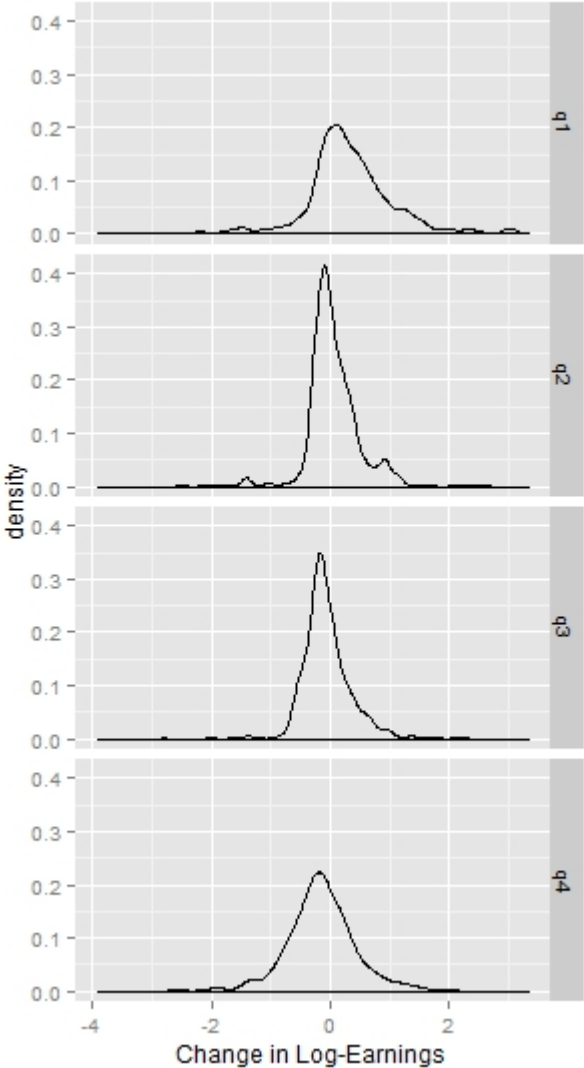
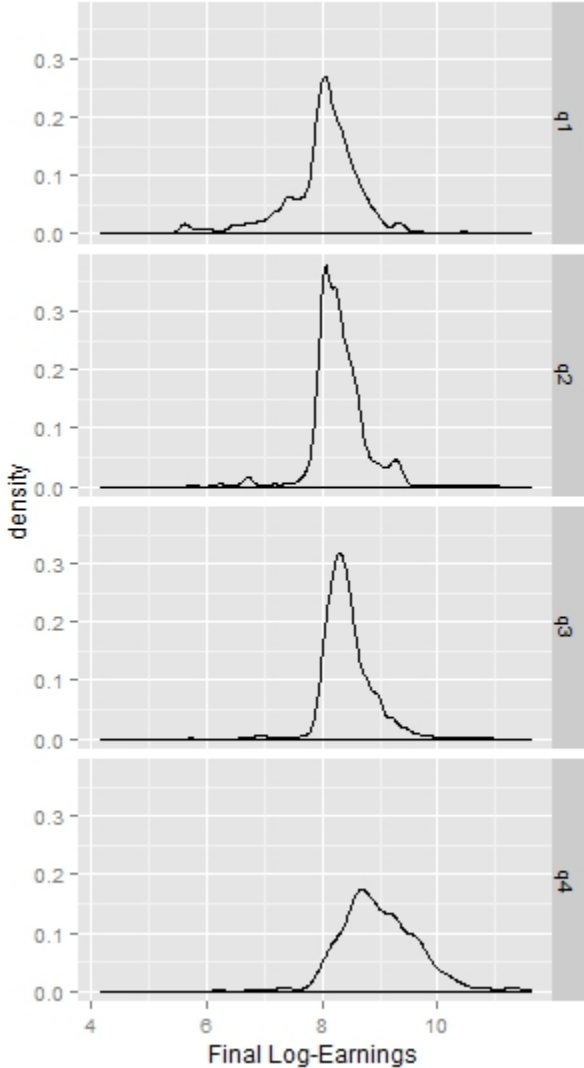
Initial Earnings (000s)

	[0,1)	[1,2)	[2,3)	[3,4)	[4,5)	[5,6)	[6,7)	[7,8)	[8,)	Total
[0,1)	3.7	0.9	1.1	1.8	0.8	0.7	0.2	0.0	0.3	9.7
[1,2)	0.9	1.3	0.9	0.8	0.5	0.2	0.0	0.0	0.2	4.7
[2,3)	0.6	0.8	1.5	2.6	1.1	0.5	0.2	0.3	0.3	7.9
[3,4)	1.1	0.4	4.2	10.5	4.5	3.0	1.1	0.6	1.3	26.9
[4,5)	0.3	0.2	0.7	8.0	5.1	1.7	0.9	0.4	1.6	18.9
[5,6)	0.2	0.0	0.4	2.4	2.2	1.4	0.9	0.8	1.3	9.6
[6,7)	0.2	0.1	0.1	1.1	0.7	1.2	0.8	0.5	1.2	5.9
[7,8)	0.1	0.0	0.1	0.6	0.4	1.0	0.4	0.6	1.5	4.7
[8,)	0.2	0.1	0.1	0.5	0.6	0.9	1.1	0.9	7.3	11.7
Total	7.4	3.8	9.1	28.4	15.9	10.6	5.7	4.0	15.1	100

The cells are % of the sample population.

The data corresponds to the panel ENEU q3-1987 to q3-1988.

Densities of Final Log-Earnings and Log-Earnings Changes by Quartile Group of Initial Earnings. Employed Workers Only



How Does Mobility affect Inequality of Average Income

Compare inequality of *initial* income, $I(y_0)$ vs inequality of *average* income $I(y_a)$,

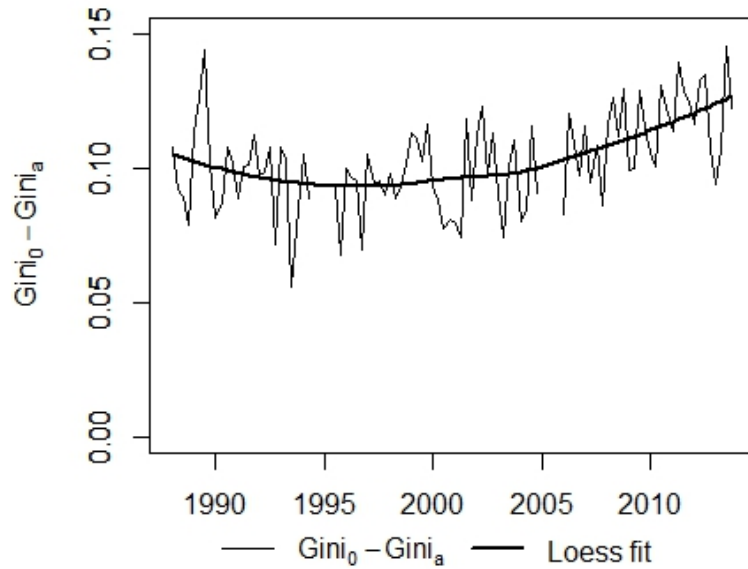
$$EqM = I(y_0) - I(y_a)$$

Use Fields 03/ Yun 06 decomposition to:

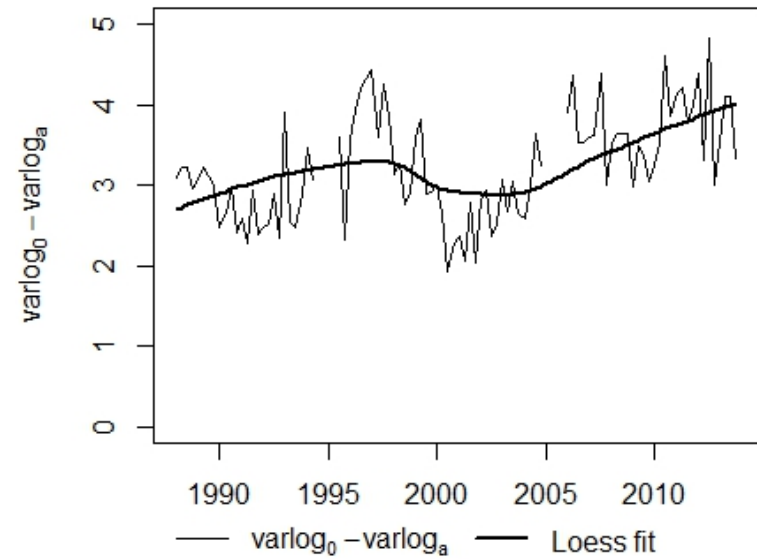
- Examine what observable factors account for this equalization
- Decompose contribution of changing:
 - Observable characteristics
 - Coefficients

Equalizing Mobility Gap

Gini



Variance of Log-Earnings



Accounting for Equalization of Average Earnings due to Mobility

	Non-recession		Recession	
$V(\ln y_0) - V(\ln y_a)$	2.16	(100)	1.73	(100)
	Chars	Coeff	Chars	Coeff
Gender	0.002	0.003	0.005	-0.001
	(0.1)	(0.2)	(0.3)	-(0.1)
Age	0.005	0.014	0.004	0.014
	(0.3)	(0.7)	(0.2)	(0.8)
Education	-0.001	0.008	-0.001	0.016
	-(0.1)	(0.4)	-(0.1)	(0.9)
Unemployment	1.503	0.002	1.164	0.020
	(69.7)	(0.1)	(67.2)	(1.1)
Informality	-0.005	-0.051	0.008	-0.061
	-(0.2)	-(2.4)	(0.4)	-(3.5)
Occupation	0.024	-0.018	0.024	-0.027
	(1.1)	-(0.8)	(1.4)	-(1.5)
Industry	-0.027	-0.005	-0.019	-0.009
	-(1.3)	-(0.2)	-(1.1)	-(0.5)
City dummies	1.88E-05	0.003	-2.91E-05	0.002
	(0.001)	(0.1)	-(0.002)	(0.1)
Period dummies	0.002	0.001	0.002	-0.003
	(0.1)	(0.03)	(0.1)	-(0.2)
Residuals	0.696		0.596	
	(32.3)		(34.4)	

$\ln y_0$ denotes initial log-earnings, $\ln y_a$ denotes average log earnings.

Percentage Shares of $V(\ln y_0) - V(\ln y_a)$ are reported in parentheses.

Char and Coeff are, respectively, characteristics and coefficients effects.

Conclusions

- Anonymous vs Panel approaches lead to very different answers for gauging income changes
- Both are meaningful, albeit different.
- Intuitive way to account for the factors that equalize average earnings (relative to initial)
 - Significant role of job transitions in equalizing and disequalizing average relative to initial earnings.