Inequality in 3-D: Income, Consumption, and Wealth

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Overview

- Study inequality in three dimensions : income, wealth and consumption
- Share analysis and "mobility" analysis
- Use of nine waves of the triennial Federal Reserve Board's Survey of Consumer Finances (SFC), 1989 to 2013, with imputation of missing consumption using data from the quarterly Consumer Expenditure Survey (CE)

Share analysis in two dimensions

2013]	Share of		
	_	Income	Wealth	Consumption
Тор	Income	29%	51%	19%
5%	Wealth	25%	63%	20%
of	Consumption	25%	53%	22%

Share analysis in two dimensions





Stronger increase in cross-shares than in own-shares: **faster increase in inequality in two dimensions**

Share analysis in two dimensions



Share analysis in three dimensions

2013	Top 5% of	Share of		
	income	Income	Wealth	Consumption
Тор	Income	29%	51%	19%
5%	Wealth			14%
of	Consumption		42%	

2013	Top 5% of	Share of		
	wealth	Income	Wealth	Consumption
Тор	Income			
5%	Wealth	25%	63%	20%
of	Consumption	24%		

2013	Top 5% of	Share of		
	consumption	Income	Wealth	Consumption
Тор	Income			
5%	Wealth			
of	Consumption	25%	53%	22%

Share analysis in three dimensions

Figure 12: Indexed Own and 3-D Cross-Shares for the Top 5% (1989-2013)



Stronger increase in crossshares than in own-shares: faster increase in inequality in three dimensions

"Mobility" analysis in two dimensions

Figure 10: Transition Matrices Between Pairs of Resource Measures (2013)



- Matrices of percent of population in the intersection of quintiles
- Twin peaks phenomenon: picks in the diagonal, but more acute for Q1 and Q5
- More pronounced for income + consumption

"Mobility" analysis in two dimensions

Table 1: Shorrocks Index of Mobility (1989 and 2013)

	1989	2013
Consumption x Income	0.625	0.619
Consumption x Wealth	0.702	0.716
Income x Wealth	0.766	0.762
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- Summary measure of dispersion, variance from diagonal concentration in "transaction" matrices
- Consumption + income more correlated
- No clear change in pattern across time

"Mobility" analysis in three dimensions

Figure 11: Consumption and Income Transition Matrix by Wealth Quintile (2013)



- High correlation between the three resources
- Twin peaks phenomenon, particularly for Q5: 98% of households in Q5 of wealth are in Q3 to Q5 of income and consumption
- Mid quantile more evenly distributed

Source: Survey of Consumer Finances

"Mobility" analysis in three dimensions



- Gini coefficient on additions of ventile ranks in individual distributions
- Three dimensional inequality and two-dimensional follow similar patterns (dip in great recession, followed by rebound), except for income+consumption that shows a smoother pattern

Comments/ Questions

- ✓ "Mobility" analysis:
 - Terminology: not really mobility, rather dispersion...? The transition matrices do not reflect transitions in time
 - The matrices can still serve to reflect "transition" in boarder terms (no time wise):
 - to reflect how a set of households classified by percentile/quintile/ventile of an individual resource translate into percentile/quintile/ventile of another resource
 - but the matrices have to be first transformed into stochastic matrices (cells representing percentage on total sum by rows, i.e. percentages on 20%)
 - Do the matrices really say something about inequality?: we know nothing on the shares of the resources per cell

Comments/ Questions

- ✓ Share analysis:
 - Why not four-dimensional analysis? E.g. Resource on top 5% income, wealth and consumption
 - More in general, the analysis of shares on combinations of ventiles/ quintiles do not give a clear picture of inequality per resource and its dynamics (sometimes contradictory messages, lack of intuition)
 - Why not **generalising Gini coefficient** for a given resource? How?...



- For two variables, ratio of volumes, B being volume under "Lorenz surface"
- For three resources, ratio of hyper-volumes, B being hyper-volume under "Lorenz volume"