

## Lecture 11

### Chapter 7 in Weimer and Vining

Distributional and other goals.

Return to the Pareto efficiency idea – that is one standard.

If a market leads us to a distribution that is not Pareto efficient, we have suffered a market failure.

But there are lots of different Pareto efficient outcomes.

How can we choose among them?

One idea is a social welfare function.

The best option is the one that is Pareto efficient and maximizes the social welfare function.

- Recall the idea of diminishing marginal utility of income.
- Recall the discussion that utility functions are ordinal rather than cardinal.

Utilitarian : add them.

- One person 'one vote' all accorded equal weight
- Greatest overall good.
- Has redistribution potential due to the diminishing marginal utility of income (transfer income from richer to lower should increase utility of lower more than decrease to richer since utility exhibits diminishing marginal returns to income)

Rawlsian: Pick the minimum.

- "Rawlsian veil of ignorance" thought experiment.
- What distribution would we agree to *ex ante* if we only found out our realization *ex post*.

Multiplicative: Multiply them.

- Puts weight on overall values
- Punishes more unequal distributions;  $2*2=4$ , average is 2.  $1*3=3$ , average is 2.  $0*4=0$ , average is 2.
- But picks up on increases;  $2*2=4$ ,  $2*3=6$ .

Table 7.1 from the book: Three different social welfare functions

	Utility person 1	Utility person 2	Utility person 3	<i>AVERAGE</i>	Utilitarian SWF	Rawlsian SWF	Multiplicative SWF / 1000
Policy A	80	80	40	<i>66.7</i>	200	40	256
Policy B	70	70	50	<i>63.3</i>	190	50	245
Policy C	100	80	30	<i>70.0</i>	210	30	240
					C is best	B is best	A is best

Utilitarian:  $\text{Utility A} + \text{Utility B} + \text{Utility C}$

Rawlsian:  $\text{Minimum}(\text{Utility A}, \text{Utility B}, \text{Utility C})$

Multiplicative:  $\text{Utility A} * \text{Utility B} * \text{Utility C}$

[Contrast]

	Utility person 1	Utility person 2	Utility person 3	<i>AVERAGE</i>	Utilitarian SWF	Rawlsian SWF	Multiplicative SWF / 1000
Policy A	70	70	70	<i>70.0</i>	210	70	343
Policy B	70	80	60	<i>70.0</i>	210	60	336
Policy C	70	90	50	<i>70.0</i>	210	50	315

Rawlsian game interlude.

Now recall that utility has no objective meaning.

It is ‘ordinal rather than cardinal’.

It orders bundles for a given individual, but cross individual comparisons are questionable.

It also does not exist as empirical reality – it is a theoretical concept used to analyze behavior.

Some other things to consider:

Principle of no envy: for a given distribution of resources, if no one would prefer to have someone else’s bundle rather than their own bundle, the distribution is equitable from a ‘no envy’ standpoint.

A social welfare function may place weight on consumption of particular goods rather than simply relying on the utility of individuals.

- If they get utility from ‘bads’ or if we think society has an interest in having them consume particular goods (food stamp example), we may have ‘societal preferences’ that outweigh the individuals’ preferences.

Since different outcomes come from different functions, this is not something we could easily decide by voting.

- We do not live behind a ‘Rawlsian veil of ignorance’ so those favored by a particular measure would likely champion that measure.

Social norms come into play.

- Note ultimatum game.
  - Division of a dollar. By economic theory, the leader should offer one cent, the follower should accept it.
  - People tend toward 40% or 50% in experiments.

Limits to knowing all the impacts on current members who would be subject to the policy.

Limits to knowing how the policy would impact people in the future.

One resolution to this is to argue we cannot resolve all these problems, so we are better off choosing institutions that will lead to policy decisions, not a social welfare function to make a particular decision.

- Act-utilitarianism. The rightness of an act is assessed by the utility it produces.
- Rule-utilitarianism. The rightness of an act is assessed by the process by which that act is decided.

Other measures we may use (here I am elaborating some on what is in the book):

Some measure of national income:

Gross domestic product is the total value for final use of output produced by an economy, both by residents and nonresidents. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

Real versus nominal values.

- Nominal price – actual selling price.
- Real price – deflated for inflation price.

Unemployment: As part of evaluating the social impact of a policy, we might want to consider the impact on unemployment.

An unemployment rate has efficiency and distribution aspects.

- Efficiency – people not employed are a resource not being used.
- However, no unemployment can signal a stagnant system as there is no movement between jobs.
  - ‘Natural rate’ of unemployment.
- Distributional issues arise with regard to who is among the unemployed and to what extent is this involuntary.

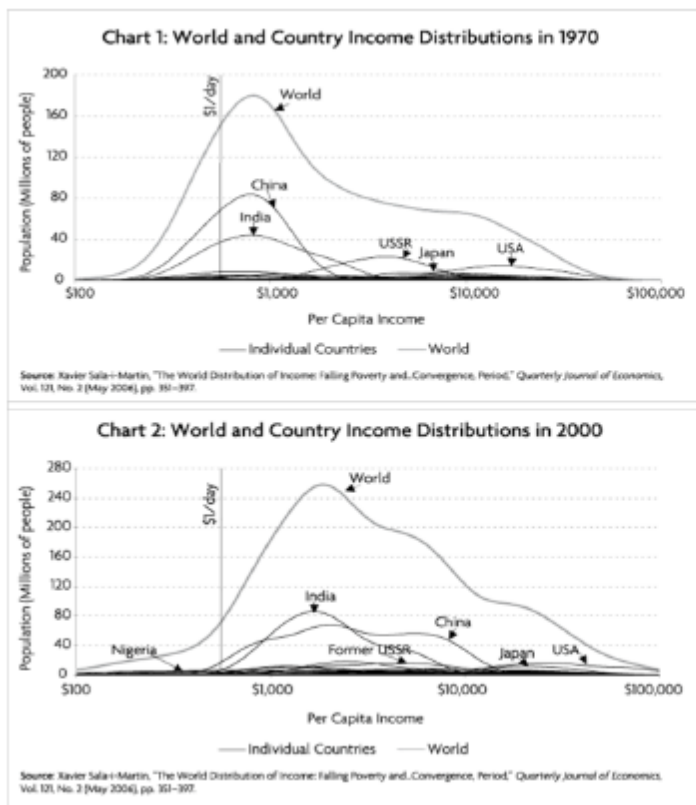
Inflation: As part of evaluating the social impact of a policy, we might want to consider the impact on inflation.

The rate at which prices rise in an economy.

Balance of Payments is noted as a set of measures we may consider at the national level. It measures a country's relative standing in the international flow of goods, services, capital, and currency.

Government debt, government deficit is also noted. It also reflects some of the issues of the balance of payments, but with a sense of how current consumption is impacting future consumption.

Minimum consumption bundle: \$1 per person per day as estimate of what it takes to buy basic needs.



Also can be used to measure progress over time in income. Sala-i-Martin illustrates how the world distribution of income has changed over time.

The vertical line is a poverty line of \$1 per person per day.

The x-axis is in log terms.

The y-axis is millions of people with a given income level (note scale changes).

Report these figures are from is here:

[http://www.heritage.org/research/features/index/capters/html/index2007\\_chap1.cfm](http://www.heritage.org/research/features/index/capters/html/index2007_chap1.cfm)

Paper is here:

<http://www.mitpressjournals.org/doi/pdf/10.1162/qjec.2006.121.2.351>

Headcount: the size of the population below the poverty line.

Headcount index: the share of the population below a poverty line.

Poverty gap: the amount of money it would take to bring all those below the poverty line up to the poverty line.

What are we comparing?

Income, consumption, expenditure, assets,...

How are we valuing them?

See table 7.2 in the book.



Table 7.2 *Impact of Different Definitions of Income on Measures of Poverty and Income Distribution (United States, 2007)*

Measures	(1) Money Income Excluding Capital Gains but Including Government Cash Transfers (Official Measure)	(2)  Column (1) less Government Transfers	(3)  Column (2) plus Capital Gains and Health Insurance Supplements to Wage and Salary Income	(4)  Column (3) plus Government Transfers and Noncash Benefits less Taxes	(5)  Column (4) plus Imputed Return on Equity in Own Home
Median Household Income	\$50,233	\$45,722	\$49,240	\$49,122	\$50,514
Mean Household Income	\$67,609	\$62,452	\$68,550	\$62,248	\$63,978
Upper Limit of Lowest Quintile of Household Income	\$20,752	\$11,723	\$12,221	\$23,758	\$24,733
Gini Ratio Based on Households	0.443	0.496	0.492	0.403	0.399
Percentage of Persons in Poverty	12.5	20.1	19.3	9.5	9.1
Percentage of Persons in Families in Poverty	10.8	17.1	16.3	7.6	7.4
Percentage of Persons under 18 Years in Poverty	18.0	20.4	19.3	12.0	11.9
Percentage of Persons over 64 Years in Poverty	9.7	47.3	46.3	7.9	6.3
Percentage of Persons in Female- Headed Households (with Related Children under 19 and No Husband Present) in Poverty	38.3	44.0	42.1	26.6	26.2

Source: U.S. Bureau of the Census, *Alternative Measures of Income and Poverty*, Tables 1 and 2, <<http://pubdb.census.gov/hurc/032003info/altinc.htm>> accessed February 19, 2009.

Then we get into the issue that the distribution about the mean may matter. Measuring inequality.

The Lorenz curve.

- Order our population from lowest on the far left to highest on the far right of the graph.
- Add up the total amount of the resource.
- Add up as you move from poorest to wealthiest the cumulative share of the total held by the share of the population.

Example: The cumulative percentage of income held by a given share of the population.

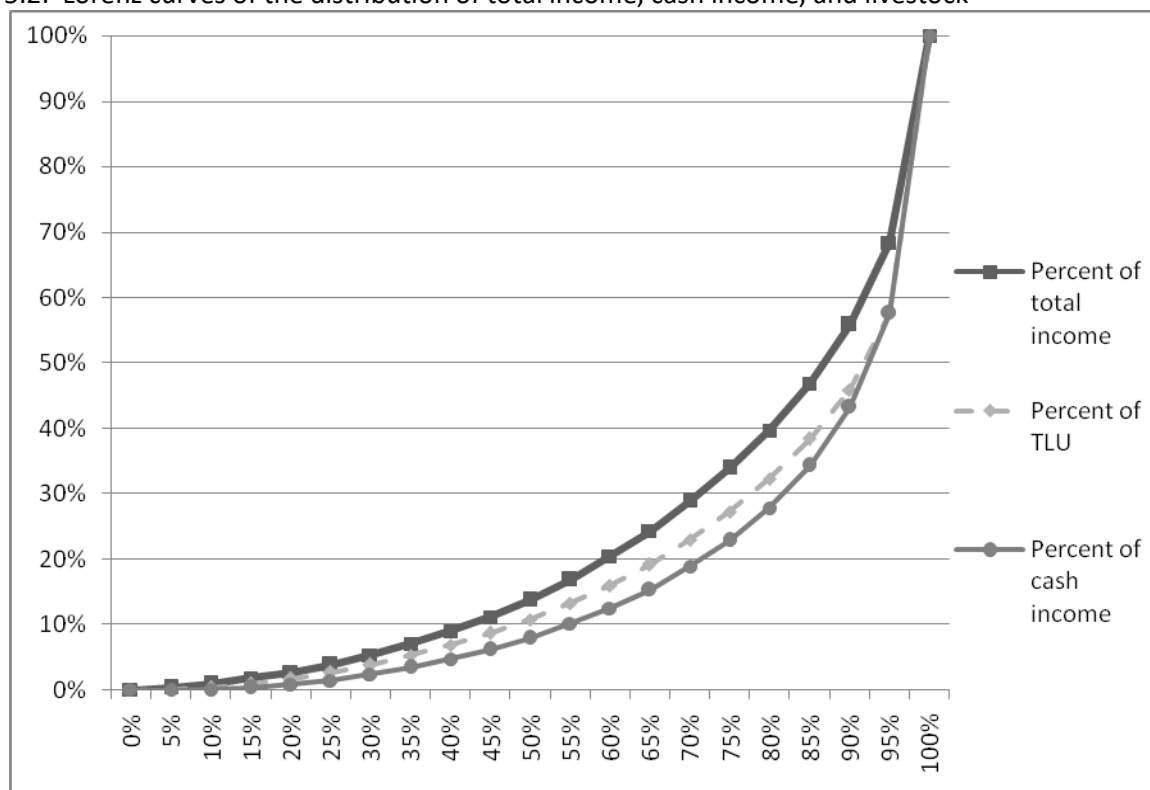
- Share of the population is on the x-axis
- Share of the resource is on the y-axis.

If income was exactly equal, 1% would have 1%, 10% would have 10%.....

This is a 45 degree line on a graph with a Lorenz curve.

The more the Lorenz curve moves to the South East corner (away from the 45 degree line), the higher the inequality in the distribution of income.

## 5.2: Lorenz curves of the distribution of total income, cash income, and livestock



We can use this information to compute a Gini Coefficient, the measure of concentration of income.

Perfect equality has a concentration ratio of 0, while perfect inequality has a ratio of 1. What is the total area under the perfect equality line? (remember the trusty old triangle?) 0.5.

Some examples: Denmark (23), Bulgaria (29), UK (36), Uganda (43), Brazil (58), Namibia (71). CIA estimates, various years.

<http://hdr.undp.org/en/content/income-gini-coefficient>

US census estimates:

1970	39
1980	40
1990	43
2000	46
2005	47

Highly unequal distributions fall in the range 0.5 / 50 or greater.

Relatively equal is 0.2 to 0.35 / 20 to 35.

Interpreting:

Is the inequality in income reflecting something that is best addressed by redistribution through something like progressive taxation and income support programs or are there underlying issues that merit policy attention?

- Education
- Assets
- Geography

‘Silent Losers’ issue.

One aspect is that the ‘squeaky wheel gets the oil’. Attention is potentially given to the loudest (or wealthiest, or most connected,...) rather than the full spectrum.

Another issue is that the impact and the policy may not be connected in the individual’s understanding. Minimum wage / living wage, increases wage for those who hold these jobs but also generates unemployment / reduction in the number of these jobs.

Another issue is that the voices of the future are not accounted for.