Welfare Economics and the Market for Health Care

University of Alabama

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Today's Class

- Welfare Economics
- History of Economic Thought
- Income and Health Inequality in the U.S.
- From Arrow (1963), what is different about health care?

Welfare Economics

Welfare Economics is a branch of economics that uses microeconomic techniques to evaluate fairness and well-being within society

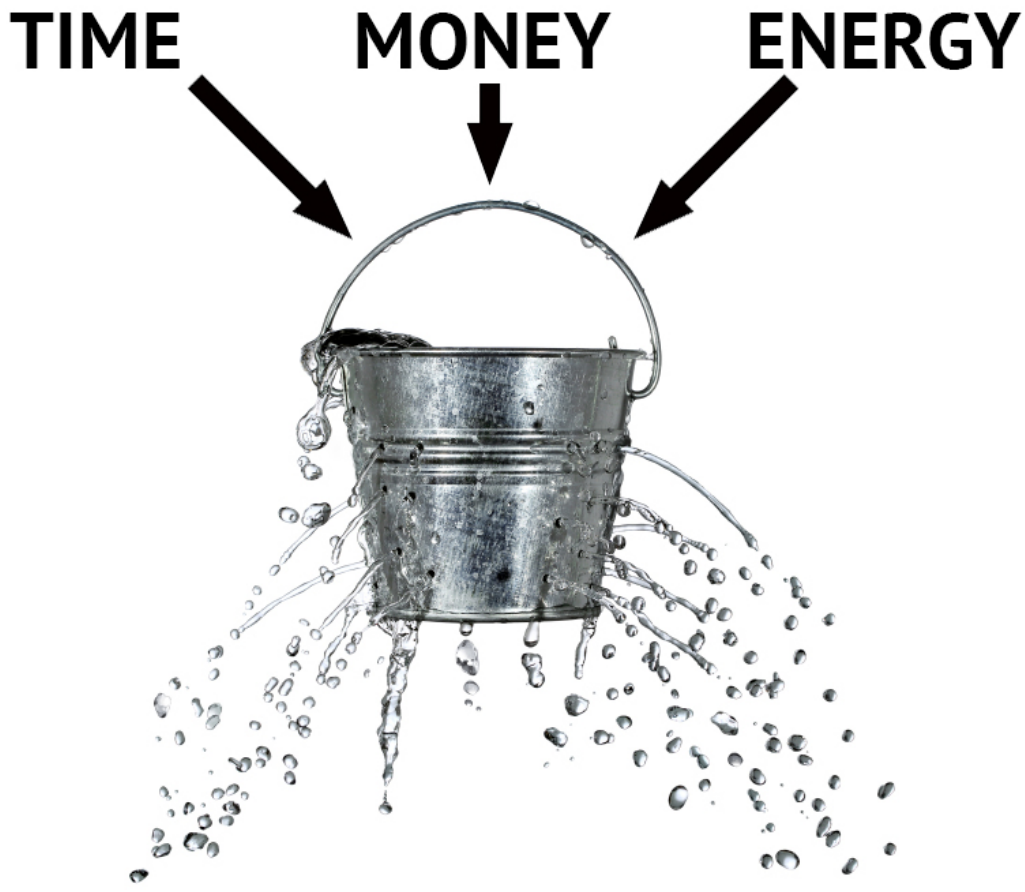
Welfare Economics studies "Normative issues" within economics

Try to relate welfare economics to our health care system within the U.S.

We want the largest pie (cheesecake) possible

Equity vs Efficiency

Arthur Okun's "Leaky Bucket"



Consider the equity-efficiency tradeoff

Pareto Efficiency

- According to Pareto, an economically efficient (optimal) outcome in society is one under which it is impossible to improve the lot of any person without hurting someone else
- The Edgeworth box, using a hypothetical two-person economy and showing exchanges between these two people, provides a context in which to make the idea of Pareto efficiency clear
- A Pareto improvement would be a redistribution of resources to achieve a Pareto efficient outcome
- A Pareto efficient outcome is not necessarily a *unique* one

What is Welfare Economics?

- Ultimately, Kenneth Arrow helped define the meaning of "Welfare" in the field of economics
- "Welfare" refers to the aggregate well-being of a society
- Welfare Economics is primarily theoretical, and most work assumes some sort of a social welfare function
- The overall goal in welfare economics is to maximize social welfare and achieve a *socially optimal* allocation

Fundamental Theorems of Welfare Economics

There are two fundamental theorems:

1. Given an initial distribution of wealth, a perfectly competitive market will always result in a Pareto efficient outcome
2. Both a socially-acceptable and efficient outcome can be achieved through a redistribution of initial wealth and under a perfectly competitive market

The First Fundamental Theorem

Given an initial distribution of wealth, a perfectly competitive market will always result in a Pareto efficient outcome

- It would be impossible through any reallocation to make someone happier without making someone else less happy
- Economists call this equilibrium "Welfare-Maximizing"
- Recall that there can be many Pareto efficient outcomes
- There is no guarantee that the efficient outcome is "socially-acceptable"

The Second Fundamental Theorem

Both a socially-acceptable and efficient outcome can be achieved through a redistribution of initial wealth and under a perfectly competitive market

- What if we change the initial endowment of wealth and then allow the First Fundamental Theorem to take over?
- There may be no need for government provision of a good or service if the government merely acts as a re-distributive authority
- What is socially-acceptable? What does redistribution entail?

The Social Welfare Function

The Social Welfare function relates inputs (some individual-level measure of utility) and outputs (some aggregate-level or collective utility)

Let W represent the preferences of society as a whole:

$$W = f(U_1, U_2, ... , U_n)$$

where n represents the number of individuals in society

The Social Welfare Function

Let us consider two versions of the Social Welfare Function:

Let U_i represent the utility of individual i in society

First, the Benthamite social welfare function simply sums the utility of all members of society:

$$W = U_1 + U_2 + ... \ + U_n$$

$$\overline{U} = \frac{1}{n} \sum_{i=1}^{n} U_i$$

The Social Welfare Function

A second function, known as the Rawlsian social welfare function, shows concern for the least well-off member of society:

$$W = min(U_1, U_2, ..., U_n)$$

Do you remember the min functional form from intermediate micro?

The Social Welfare Function

Which of the two social welfare functions presented is liberal?

Benthamite:

$$W = \sum_{i=1}^{n} U_i$$

Rawlsian:

$$W = min(U_1, U_2, ..., U_n)$$

Let's Agree to Redistribute Wealth

If you were the social planner, could you redistribute resources in such a way that is "fair" and "just"?

Consider the "Veil of Ignorance"

"The principles of justice are chosen behind a veil of ignorance."

-John Rawls

The Social Welfare Function

We can construct each social welfare function within the context of either wealth or health

Suppose we study welfare by looking at income denoted by Y:

Benthamite:

$$W = \sum_{i=1}^{n} Y_i$$

Rawlsian:

$$W = min(Y_1, Y_2, ..., Y_n)$$

The Social Welfare Function

Alternatively, what about social welfare of health, or Life Expectancy denoted by LE:

Benthamite:

$$W = \sum_{i=1}^{n} LE_i$$

Rawlsian:

$$W = min(LE_1, LE_2, ..., LE_n)$$

In this example, individual consumers only value life expectancy

The Social Welfare Function

Another example, can we express a more realistic social welfare function?:

Benthamite:

$$W = \frac{1}{n}\sum_{i=1}^{n} U_i(M_i, X_i) = \overline{U}$$

Rawlsian:

$$W = min\Big(U_1(M_1, X_1), U_2(M_2, X_2), ..., U_n(M_n, X_n)\Big)$$

where M_i represents individual i's consumption of health care and X_i is a vector of individual i's composite bundle of other commodities

Other Social Welfare Functions

Nozickian

- All that matters in society is an equal distribution of opportunities
- Opportunities-based thought as opposed to Outcomes

Commodity Egalitarianism

- It doesn't matter who has what
- All that matters is maintaining a socially acceptable minimum
- Relatives don't matter, only absolutes

Inequality

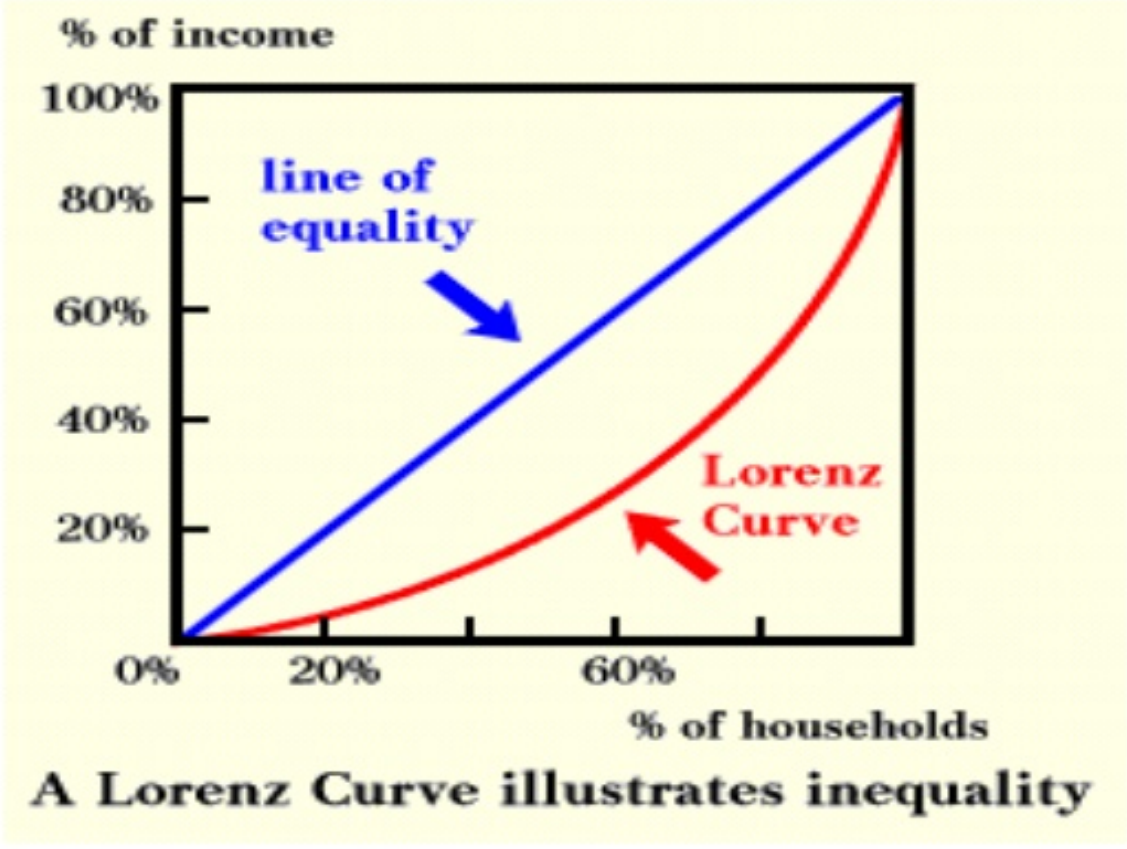
How do we measure inequality?

The Gini Coefficient is a measure of statistical dispersion intended to represent the income distribution of a nation's residents

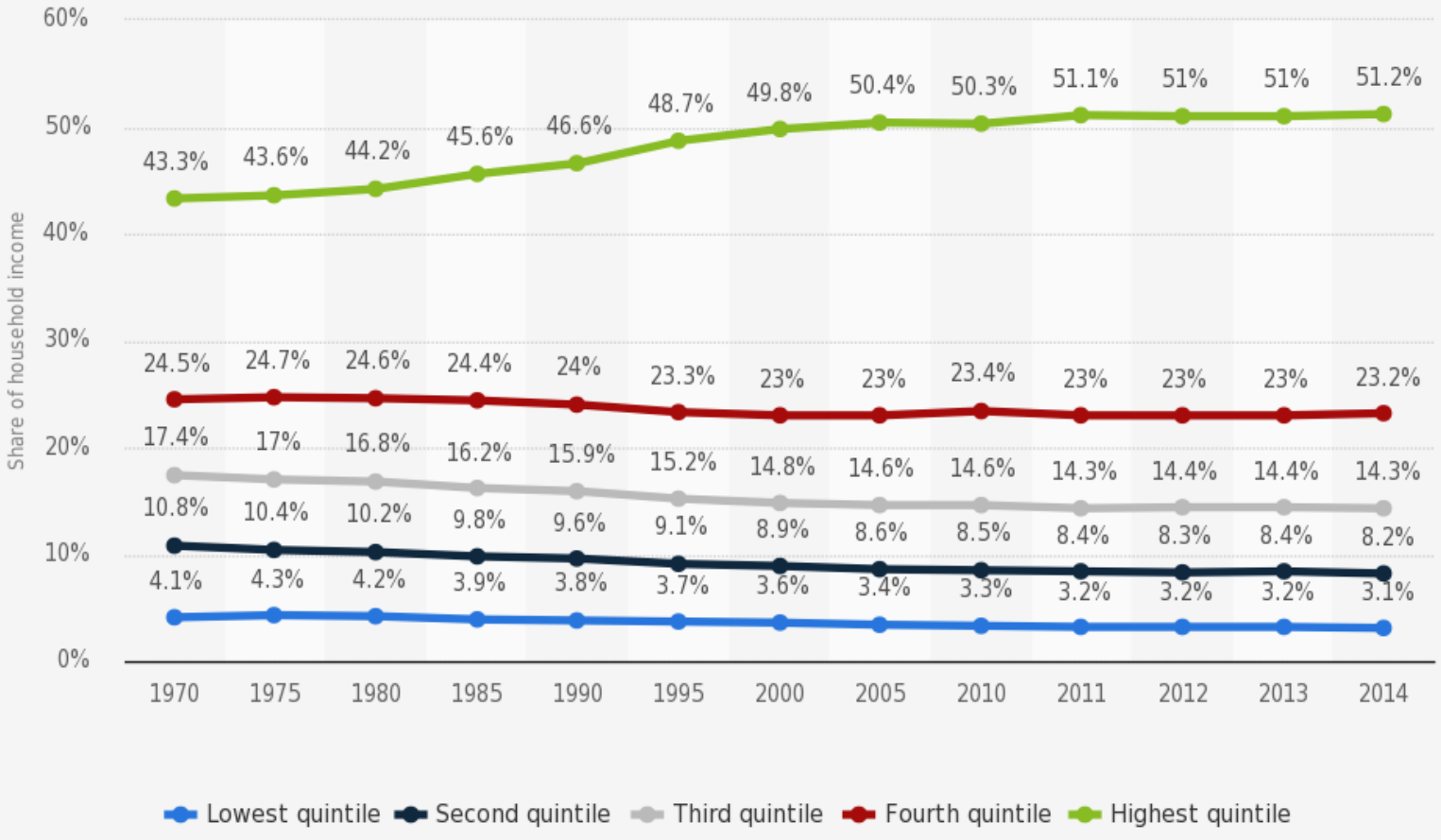
The Gini Coefficient (index) must always lie between zero (perfect equality) and one (complete inequality)

The Gini Coefficient

Lorenz curve



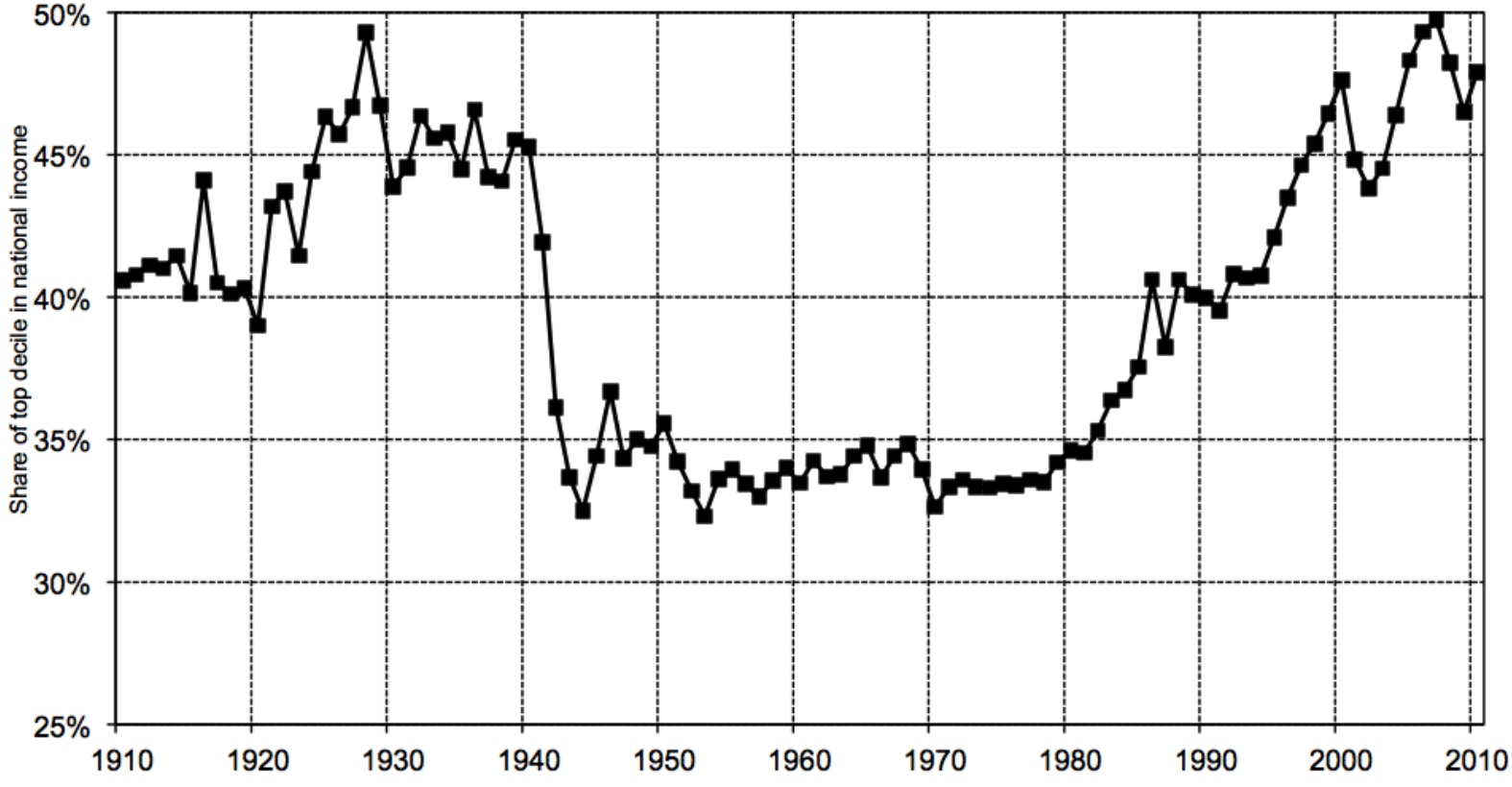
Shares of household income of quintiles in the United States from 1970 to 2014



Source:

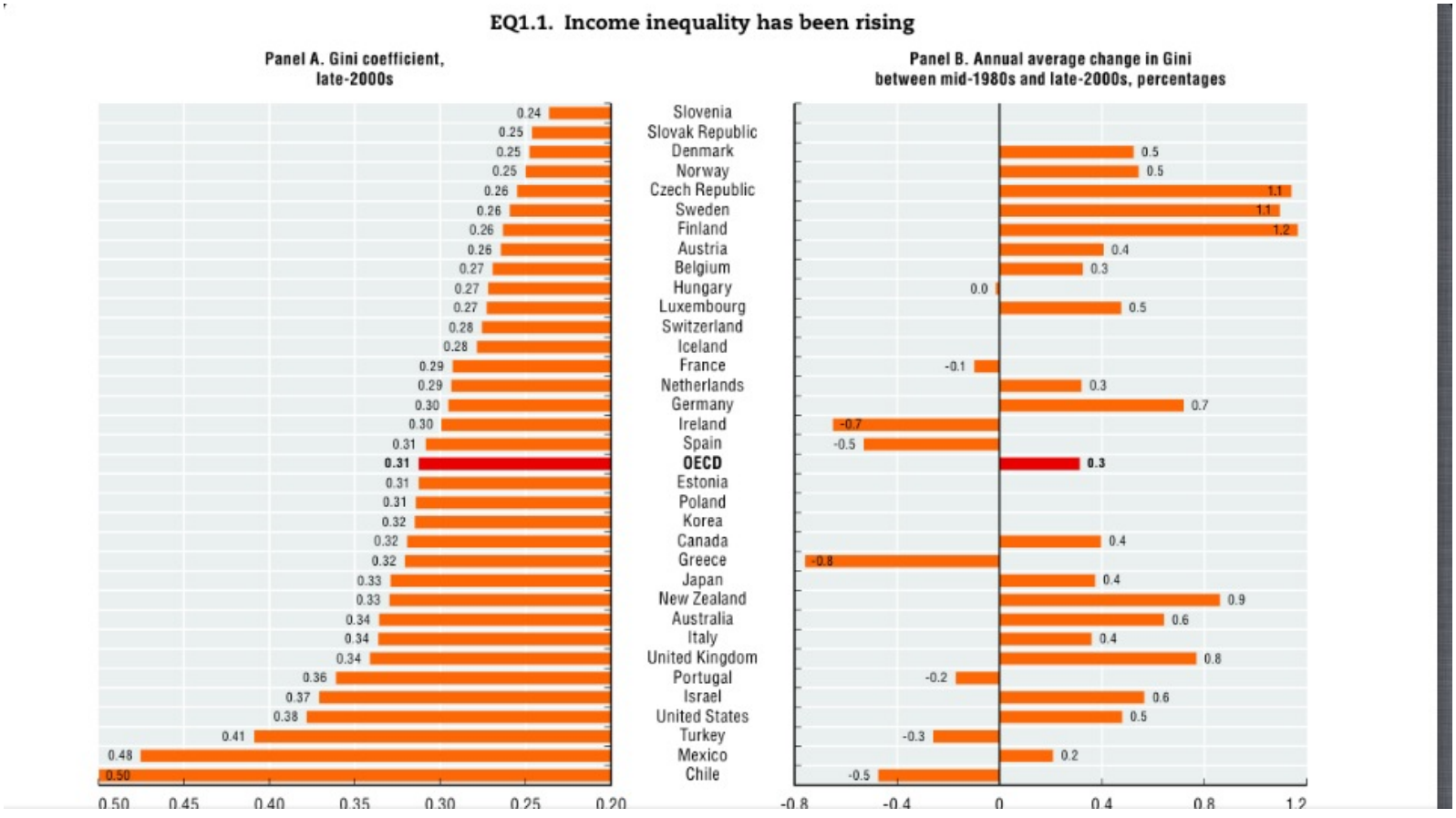
Additional Information:
United States; 1970 to 2014

Figure I.1. Income inequality in the United States, 1910-2010



The top decile share in U.S. national income dropped from 45-50% in the 1910s-1920s to less than 35% in the 1950s (this is the fall documented by Kuznets); it then rose from less than 35% in the 1970s to 45-50% in the 2000s-2010s. Sources and series: see piketty.pse.ens.fr/capital21c.

EQ1.1. Income inequality has been rising



Can we measure health care inequality?

- What percentage of health care utilization is consumed by the poor vs the rich?
- This, in some sense, may be considered a measure of health care inequality

van Doorslaer, Koolman, and Jones (2004) developed what is called a Concentration Index

$$C_M = \frac{2}{\bar{y}} * Cov(y_i, R_i)$$

where y_i is the health care utilization of income group i, $\bar{y}$ is the mean health care use in the population, and R_i is the cumulative fraction of the population in fractional income group i.

Can we measure health care inequality?

$$C_M = \frac{2}{\bar{y}} * Cov(y_i, R_i)$$

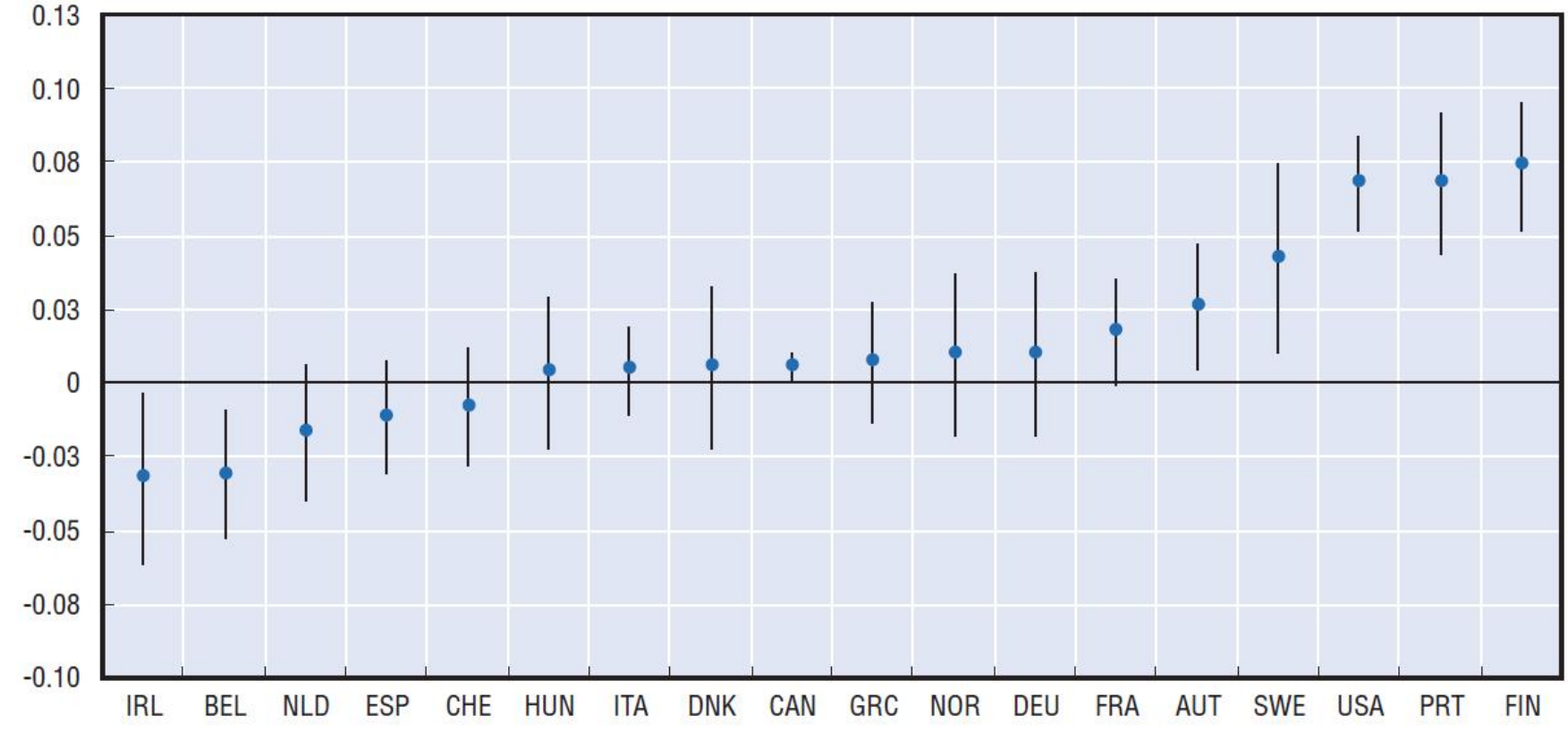
- If predominance of health care favors the rich, the covariance will be positive
- If predominance of health care favors the poor, the covariance will be negative

Using C_M, van Doorslaer, Koolman, and Jones (2004) constructed the Health Inequality Index:

$$HI = C_M - C_N$$

where C_N is some estimated measure for health *need*

Figure 3.1. **HI indices for number of doctor visit, by country**



Source: Van Doorslaer *et al.* for OECD.

How do we measure poverty?

We use a measure called the Federal Poverty Line

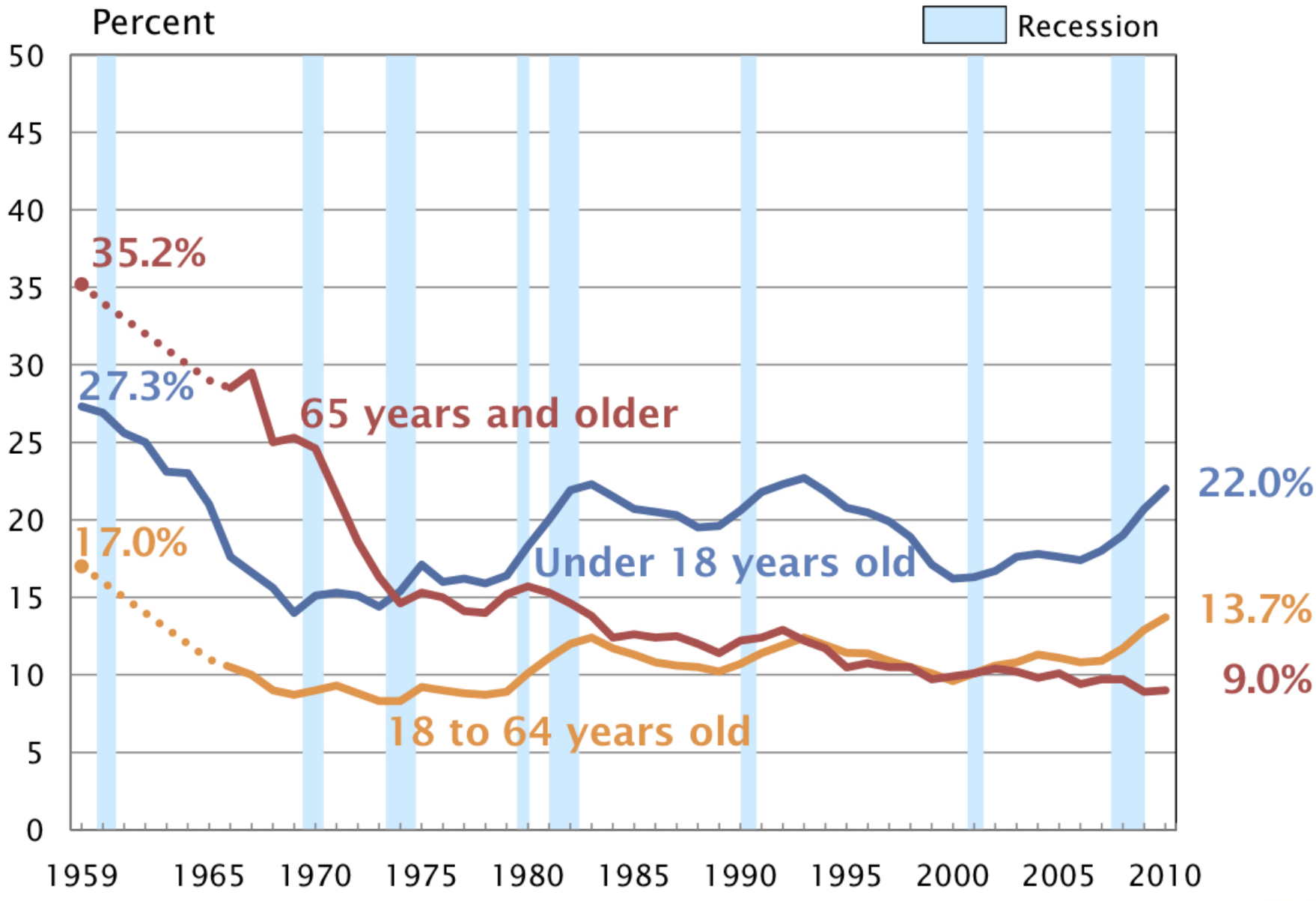
Take the estimated cost of a minimally nutritious diet and multiply it by three:

$$FPL = 3 * \widehat{Diet_{min}}$$

2016 Federal Poverty Guidelines

Persons in Household	100% FPG	138% FPG	200% FPG	275% FPG
1	$11,880	$16,394	$23,760	$32,670
2	$16,020	$22,108	$32,040	$44,055
3	$20,160	$27,821	$40,320	$55,440
4	$24,300	$33,534	$48,600	$66,825
5	$28,440	$39,247	$56,880	$78,210
6	$32,580	$44,960	$65,160	$89,595
7	$36,730	$50,687	$73,460	$101,008
8	$40,890	$56,428	$81,780	$112,448

Poverty Rates by Age: 1959 to 2010



What should we do?

It is clear that we have established that inequality is a problem

So let's get out Okun's bucket and redistribute wealth

There are two potential sources of leakage:

1. How do the rich respond when they get taxed at higher rates?
2. What is the potential response of the poor upon receipt of assistance?

Despite the leakage, should we still redistribute assets?

Kenneth Arrow

- Winner of Nobel Prize in Economics in 1972
- Most notable contributions are in the area of Social Choice or welfare economics
- Creator of "Arrow's Impossibility Theorem"
- Author of first work in health economics in 1963
- "Uncertainty and the Welfare Economics of Medical Care"

What does Arrow (1963) tell us about health care?

Recall the two Fundamental Theorems of Welfare:

1. **Given an initial distribution of wealth, a perfectly competitive market will always result in a Pareto efficient outcome**
2. **Both a socially-acceptable and efficient outcome can be achieved through a redistribution of initial wealth and under a perfectly competitive market**

In order for these welfare theorems to hold, we must have a perfectly competitive market
Arrow (1963) explains why the market for health care is a little bit different

Is Health Care Perfectly Competitive?

Assumptions of Perfect Competition:

1. Many firms
2. Identical products
3. Zero barriers to entry

Is Health Care Perfectly Competitive?

- Are there "many" health care firms?
- Do these firms sell "identical" products?
- Are there any barriers to entry?
- Are there non profit-maximizing incentives in health care?
- Is there existence of uncertainty?
- Are there any information asymmetries?
- Are there externalities associated with health care?

According to Arrow (1963)

that the failure of the market to insure against uncertainties has created many social institutions in which the usual assumptions of the market are to some extent contradicted.

Arrow (1963) pg. 967

But it is contended here that the special structural characteristics of the medical-care market are largely attempts to overcome the lack of optimality due to the nonmarketability of the bearing of suitable risks and the imperfect marketability of information.

Arrow (1963) pg. 947

Next Class

The Production of Health (FGS chapters 5 and 6)

Grossman (1972)