Econ 884/690

The History of Modern Microeconomics
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Lecture 7: Welfare Economics

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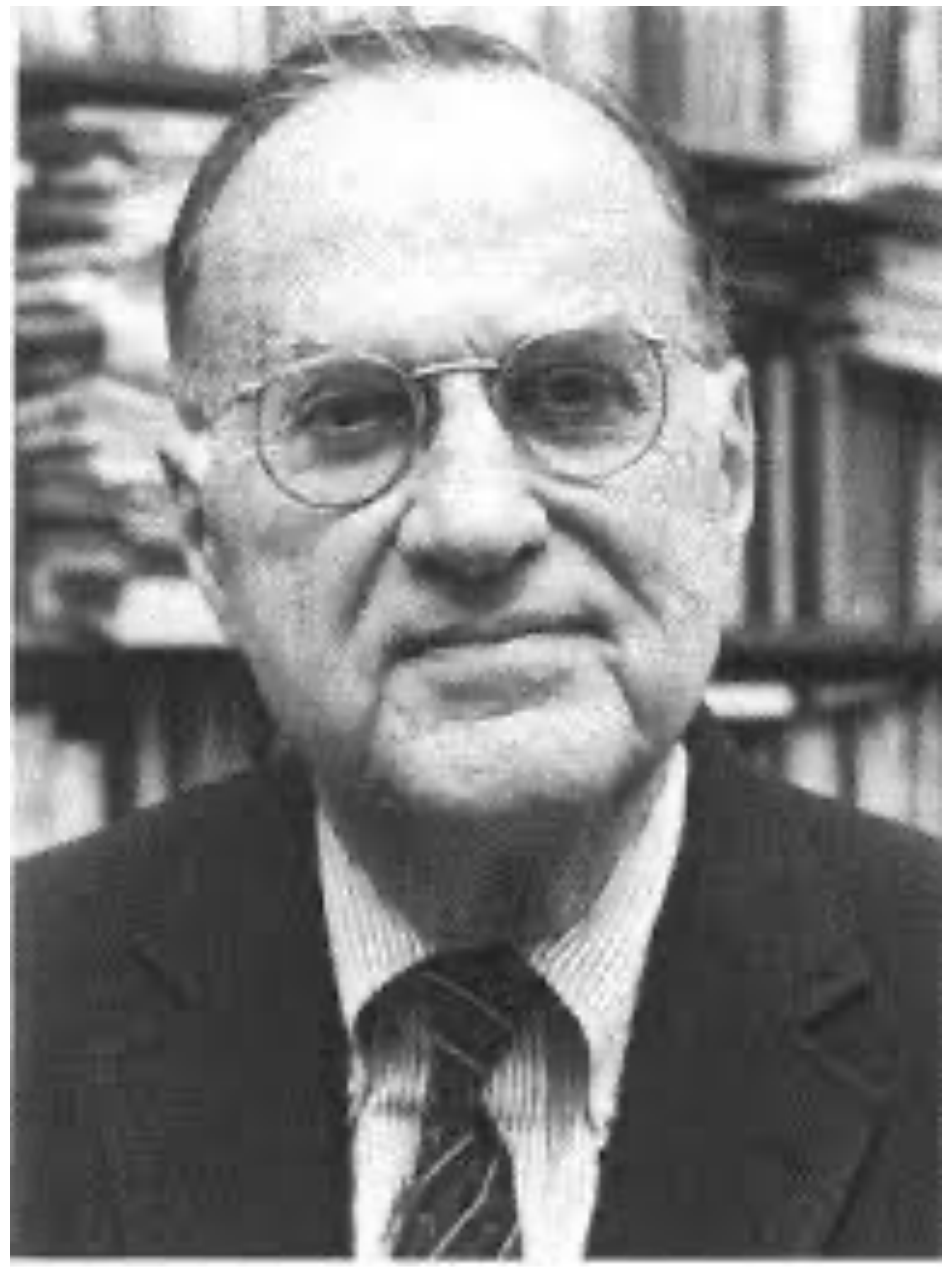
Dramatis Personae



Thinking About Welfare at Mid-Century

- A proliferation of books and literature:
  - Lerner, *The Economics of Control: Principles of Welfare Economics* (1944).
  - Reder, *Studies in the Theory of Welfare Economics* (1947).
  - Myint, *Theories of Welfare Economics* (1948).
  - Little, *A Critique of Welfare Economics* (1950).
  - Baumol, *Welfare Economics and the Theory of the State* (1952).
  - Arrow & Scitovsky, *Readings in Welfare Economics* (1969).

The Utilitarian Background

- From ‘wealth’ to ‘welfare’:
  - ‘Welfare’ = measure of aggregate well-being in the economy.
- Utilitarianism—‘the greatest good for the greatest number.’
  - $U = \sum u_i$
  - Increasingly important as we move through the 19th century.
  - The measurement problem.
- “*There is no wealth but life. Life, including all its powers of love, of joy, and of admiration. That country is richest which nourishes the greatest numbers of noble and happy human beings.*” (Ruskin)

Cambridge: Marshall and A. C. Pigou

- Cambridge approach grounded in utilitarianism—Sidgwick, Marshall, Pigou.
  - $W = u_1 + u_2 + \ldots$
  - Marshall and Pigou:
    - Policy science requires responses to measurement problem.
- Marshall, *Principles* (1890/1920)
  - Consumers' surplus
    - Originally Jules Dupuit (1844)
  - Limited as a tool for thinking about aggregate welfare.

Cambridge: Marshall and A. C. Pigou

- Pigou, *The Economics of Welfare* (1920)
  - ‘Social’ welfare vs ‘economic’ welfare
  - Examines the *causes* of economic welfare and changes therein.
  - Measurement: The “*national dividend*”—essentially, the value of output
    - A reasonable proxy for ‘economic’ welfare.
    - Maximize the dividend subject to not causing an unfavorable change to the distribution of income.
  - Tax policy and the diminishing marginal utility of income (Pigou/Dalton).

Pareto and “Maximum Ophelimity”

- Pareto, *Manual of Political Economy* (1906).
  - “*Maximum ophelimity*” (economic welfare)
  - Judgements of welfare changes and optima w/o adding/comparing utilities.
    - Ordinal.
  - An infinity of ‘optimal’ positions.
    - Gives no guidance about what is ‘optimal = best’ without comparing utilities across individuals (e.g., trading off different people’s satisfactions).
    - Only provides guidance about ‘improvements’ from a given position.

The Robbins Critique

- *Essay on the Nature and Significance of Economics Science* (1932)
  - ❖ The problems of ethics and value judgements in economic science.
  - ❖ The non-comparability of utilities (against, e.g., Cambridge approach).
- Implication was that nothing other than the Pareto criterion was possible within ‘economic science.’

The 'New' Welfare Economics I: Britain

- Teasing out complications of, and building on, Pareto (1906).
  - Grounded in a general equilibrium perspective.
- Welfare criteria (Hicks, "Foundations of Welfare Economics," *EJ* 1939)
  - $MRS^i_{xy} = MRS^j_{xy}$ (efficiency in consumption/exchange)
  - $MRTS^x_{LK} = MRTS^y_{LK}$ (efficiency in production)
  - $MRS_{xy} = MRT_{xy}$ (overall efficiency)

  ($MRS = MU_x/MU_y$; $MRTS = MP_L/MP_K$; $MRT = MP_{Ly}/MP_{Lx} = MP_{Ky}/MP_{Kx}$)
- Welfare theorems (next time).

The ‘New’ Welfare Economics: Britain

- A new welfare criterion: Kaldor (*EJ*, 1939) and Hicks (*ReStuds*, 1941)
- Grounded in the Pareto criterion.
- Ignore income distribution and look at gains in aggregate output/income.
    - Improvement => Winners *could* compensate losers and still be better off.
        - “*… in such cases it is* possible *to make everybody better off than before, or at any rate to make some people better off without making anybody worse off.*” (Kaldor)
        - But no requirement that compensation actually be paid.

The 'New' Welfare Economics: Britain

- Satisfies Robbins: "*... there is no interpersonal comparison of satisfaction involved in judging any policy designed to increase the sum of total wealth just because any such policy could be carried out in such a way as to secure unanimous consent.*" (Kaldor)
    - Politicians, not economists, are to decide whether the compensation should be made (consistent with Robbins 1932).
    - "*a perfectly objective test*" (Hicks)— Because compensation is hypothetical, Hicks claims that no value judgments are in play.
        - Hicks proposed approving all policies that satisfy this criterion.
- Became known as the 'K–H efficiency criterion' or the 'compensation principle.'
- Laid the groundwork for the application of cost-benefit analysis.

The 'New' Welfare Economics: Britain

- Controversy over excluding distributional considerations from a welfare criterion.
  - Sneaking interpersonal comparisons in through the back door.
  - Preference reversal problems—'Scitovsky Paradox' (*ReStuds*, 1941):
    - If a change from *A* to *B* passes the K-H test but compensation is not actually paid, the distribution of income changes.
    - Under this new income distribution, it may be that a change from *B* back to *A* would also pass the K-H test.
    - Thus *B* P *A* and *A* P *B* => contradiction.
      - As a practical matter, could lead to cycling.

The ‘New’ Welfare Economics: American

- Bergson, “A Reformulation of Certain Aspects of Welfare Economics” (*QJE* 1938)
  - Introduced the notion of a ‘social welfare function’ (SWF).
  - Paper written while a graduate student at Harvard.
  - Samuelson’s closest friend as a graduate student at Harvard.
- Samuelson, *Foundations* (1947) expands upon and refines Bergson.
- Treats welfare as an ethical concept.
  - Each set of ethical values can be the basis for a particular SWF.
    - Makes deductions about welfare from any ‘given’ ethical standard.
    - Starts from individualism—that individual preferences count.

The 'New' Welfare Economics: American

- Given an "*economic welfare function*," we can order all possible states of the world from best to worst.

Bergson: $W = W$ (consumption of all goods by each individual,
labor inputs into the production of each good by each individual,
non-labor inputs to production)

Samuelson: $W = W(z_1, z_2, \ldots)$ where z_i's represent "all possible variables."

- Allows that other, 'non-economic' factors may affect the overall welfare of the community.
- Ethics comes in through, e.g., the weights assigned to the different variables.

The 'New' Welfare Economics: American

- More general than 'Cambridge' welfare fcn: $W = u_1 + u_2 + \ldots$
  - Does away with cardinal utility (including income-based measures of it)
  - Orders social states based on individuals' indifference curves.
- Demonstration of the conditions that must be satisfied for maximum social welfare.
  - Optimum satisfies marginal conditions for production and exchange, *plus* an ideal distribution of welfare among agents.

Arrow’s ‘Impossibility’ Theorem

- *Social Choice and Individual Values* (1951)
  - The product of his nth attempt at a PhD thesis (and expansion of 1950 article).
- The impossibility theorem developed out of a lunch conversation with logician Olaf Helmer while at RAND (on leave from Cowles) in the summer of 1948.
  - How can we decide what is the ‘right’ SWF? What does ‘social preference’ even mean?
- The process of making social choices:
  - “*… we ask if it is formally possible to construct a procedure for passing from a set of known individual tastes to a pattern of social decision-making, the procedure in question being require to satisfy certain natural conditions.*”
  - That is, can economists actually make statements about whether one social state is ‘better’ than another?

Arrow's 'Impossibility' Theorem

- Argued that a "social welfare function" should satisfy several reasonable properties (amended in later writings):
  - The social preference ordering should be derived from the preference orderings of the individuals in society, whatever those may be.
  - If one or more individuals change their orderings of *a* and *b*, in favor of *a*, society's ordering does not change in favor of *b* as a result.
  - Independence of irrelevant alternatives: The societal ranking of *a* and *b* depends only on the individual rankings *a* and *b* and not on some alternative state *c*.
  - The social ordering should not not be imposed from outside of the system.
  - Non-dictatorship: Rules out society preferring *a* to *b* whenever a given individual member of society prefers *a* to *b*.

Arrow's 'Impossibility' Theorem

- Arrow (1950, 1951) shows that, if there exist three or more possible social states and the set of individuals is finite, no SWF can satisfy these properties.
  - ❖ Arrow's interpretation: He had proved the impossibility of a social welfare function of the Bergson-Samuelson type.
  - ❖ The profession's interpretation: Arrow had proved the impossibility of a social welfare function of the Bergson-Samuelson type.
- But had he?

What is Impossible? The Debate

- Samuelson, Bergson, Little, and others argued that he had not.
- Arrow continued to insist that he had.
  - Correspondence related to this history is found in archives here at Duke.
- Social *welfare* fcn vs social *choice* fcn (or constitution)—welfare econ vs politics.
  - The key issue is that Bergson and Samuelson had not assumed that their SWF was one derived via a collective choice process.
  - Samuelson (1947, 221) calls it an expression of ethical values that can be attributed to "*a benevolent despot, or a complete egoist, or 'all men of good will,' … God, etc.*"
    - The distinction between claiming that a society has a particular SWF and analyzing the implications of ethical judgments imposed from outside of society.

What is Impossible? Debating to Death

- Debate persisted through 1950s,1960s, and into the 1970s (Igersheim 2019).
  - Bergson left the field in the 1960s and became a Sovietologist.
  - Samuelson continued to defend the validity of the SWF.
  - Arrow continued to defend the impossibility of one through 1960s.
    - Then silence until an early 1980s (mild) concession.
- Nobels for (almost) everyone.
- More impossibility theorems—showing, for example, that a SWF cannot be derived without cardinality assumptions (Kemp and Ng 1976).
- "*the death of welfare economics*" in mid-1970s (Fleurbaey & Mongin 2005).

The Aftermath

- The ‘birth’ of social choice analysis.
  - “*Some years ago the editors of Econometrica, Journal of Economic Theory, and Review of Economic Studies inserted notes in their respective journals discouraging submissions in social choice theory, since they were apparently being deluged by papers in this area.*” (Sen *JEL*, 1985)
  - Social choice theory as the “*unwanted*” child of the B-S SWF (Arrow 1983).
  - Led to the establishment of the journal *Social Choice and Welfare* in 1984 and an associated professional society in 1991.
    - Focused on questions about collective decision processes, efforts to measure and assess welfare, …
    - Arrow looms large here, as does Amartya Sen (more in a bit).

The Aftermath: Groping for Measures

- “Happiness” (Easterlin 1974)
  - Does income affect happiness?
    - Opinion surveys, within- and cross-country.
    - Attempts to get at overall satisfaction rather than just that derived from consumer goods.
  - Easterlin paradox:
    - People with more income w/in a given country are likely to be happier.
    - In cross-country comparisons, happiness does not vary greatly with per-capital income.

The Aftermath: Groping for Measures

- Equity theory (Tinbergen 1953, etc.)
  - ‘No envy’: Situation where no individual would prefer someone else’s market basket.
  - Normative goal = ‘no envy’ + Pareto crtieria
  - Problem: People with identical preferences must be on the same indifference curve, but will not be if productivity/skills differ across persons.

The Aftermath: Groping for Measures

- Sen, *Collective Choice and Social Welfare* (1970).
  - Sen then at the University of Delhi … Eventually another Nobel.
  - Involved in the SWF/Impossibility debate.
  - "Nonwelfarism" (Sen)
    - "Welfarist" criteria rely only on subjective utilities.
    - Nonwelfarist criteria: Include non-utility-based ends—rights, capabilities, 'the environment,' freedom to choose lifestyle, …
- For all of this, K-H remains the operative policy criterion in economics.