



Measuring and understanding behavior, welfare and poverty

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Nobel Lecture

Stockholm,

8 December 2015

Themes

- Policy for improving wellbeing
 - No lack of tools and policies, whose advocates believe they can make the world better
 - Measurement as honest scorekeeping
 - Measurement by itself is of great importance
- Individuals not averages
 - Inequality and poverty are invisible without disaggregation
 - Distribution can matter for aggregate economic activity, and certainly for wellbeing
 - Behavior and wellbeing are linked for individuals not aggregates
- If people behave in their own interests, we can infer something from their behavior about how well they are doing
 - Long been the standard operating procedure in economics
 - Revealed preference

Section One



SURVEYS OF INDIVIDUALS AND OF HOUSEHOLDS

Measuring living standards

- Surveys of household living standards document how ordinary people live
- Since 1790s, measurement for social monitoring and activism
- \$1-a-day poverty measures do the same today
- As do data on infant mortality or on stunting or wasting among children
 - Example Yarrow marches in Britain in the Depression
 - Important scorecards around the world today

Simple documentation

- Comparable measures in rich countries today:
 - Stagnant or falling real median wages over time
 - Rising income inequality
 - Mortality rates for populations
- Agricultural households can be net producers or net consumers of staple foods
 - Their position in the income distribution gives non-parametric measures of first-round benefits/costs of prices & tariffs
- Measurement can be incredibly important by itself

Analysis of household budgets

- Food share and wellbeing: after Engel
- How do children alter consumption patterns?
 - Cost of children?
- Are budgets different if kids are girls?
 - Discrimination?
- Why is per capita calorie consumption falling in India?
 - In spite of rapid growth and widespread malnourishment
- How does household size matter?
 - Economies of scale?
- India was the birthplace of probability sampling in the 30s and 40s
 - And Indian data have played an important role in this

Price responses over space

- Surveys allow us to measure how changes in income affect patterns of consumption
- Some surveys collect data on quantities as well as expenditures
 - Can use spatial variation to estimate price elasticities
 - These spatial price responses tend to be quite large
 - Long run price responses larger than short run responses? |
- Important for policy: distortions may rise over time

Open issues

- Quality of survey data, especially (but not only) in Africa
- Conflict between national accounts and surveys
 - India: growth of consumption is much larger in NAS than in household surveys
- Can't assess welfare, inequality and poverty consequences of economic growth if the data are grossly inconsistent
 - Disaster for reasoned political debate
- These problems are widespread in the world

International comparisons

- To pool data across countries, for comparing living standards or calculating global poverty or inequality
- We need to convert local values of consumption using purchasing power parity exchange rates
- One of the great intellectual achievements in measurement in the last 50 years is the International Comparison Program
 - Begun at Penn, by Kravis, Summers, and Heston, in 1968
- The ICP is active both in measurement and conceptually
 - Making comparisons between very different countries presents great challenges

Section 2



ANALYZING CONSUMPTION PATTERNS

The Cambridge Growth Model

- In the 60s and 70s, demand analysis was concerned with using aggregate data to fit quantities consumed to data on prices and incomes
- I was an RA and was charged with demand system and consumption function for the Cambridge Growth Model, headed by Richard Stone
 - Impetus for much that I did subsequently

State of play

- Stone's linear expenditure system was used in the growth model
- Simple case of additive preferences
 - Implying tight relationship between income and price effects
 - Extremely useful in the data-poor environment of the time
 - BUT we are *assuming* answers and not *measuring* them
 - We needed more general but tractable models
 - What about the representative agent?
 - Why didn't distribution matter?
 - What assumptions were needed to make this work?
 - Did they make any sense?

Duality: Gorman & McFadden

- Results on aggregation over goods and over people had been proved by Gorman in 50s and 60s
 - Used “dual” representations of preferences, utility, not as a function of quantities, but of prices and incomes
- Gorman and McFadden: duality was *THE* way to derive theoretically consistent demands that were analytically convenient and could be adapted to the data
 - Immediate and intimate connection between empirical analysis and choice theory

Deaton and Muellbauer

- John Muellbauer came back to UK from Berkeley in 1969
 - Advised by Hall, who had used McFadden's lecture notes
 - Consumer and producer theory using duality
- We realized we knew a lot of the same material that was otherwise not well-known and decided to pool what we knew
 - Eventual result of that was our text on *Economics and Consumer Behavior*

Almost there

- We tried to build an “ideal” demand system
 - Using Muellbauer’s work on aggregation and on functional form
 - Diewert’s ideas on flexible function forms to allow a general model
- Tinkered with dual representations to get a convenient, easy to estimate demand system
 - Almost got there!
 - Almost Ideal Demand System
 - Widely used today

Section 3



INTERTEMPORAL CHOICE

Understanding saving

- Two papers by Modigliani and Brumberg from 50s
- Revealed to me how to do economics
 - Very clear theoretical structure
 - Gave a way of thinking about an issue of great importance
 - Theory reconciled a mess of inchoate evidence, from time-series, cross-sections, and (later) cross-country
 - Provided clear new predictions that could be tested
 - Aggregation was a tool, not a nuisance
 - In LCH each individual saves nothing over their life
 - Economies save according to their rates of population and aggregate income growth
 - Always wanted to work in that sort of way
- In much later work with Chris Paxson, we showed—to my distress—that life-cycle saving aggregation is *not* why there are growth effects in saving rates in the international cross-section data

Major Innovation in 70s

- Life-cycle theory of labor supply and commodity demands simultaneously
 - Heckman's Princeton PhD thesis, 1971
 - Becker and Ghez, Heckman and later MaCurdy
- Intertemporally additive preferences give labor supply and demands that depend on each period's prices with the lifetime budget constraint represented by the lifetime marginal utility of wealth
 - With uncertainty, MU wealth evolves as a martingale difference
 - Frisch demand functions, after Frisch's use of additive preferences
- I developed a method of tracking birth cohorts through successive independent household surveys
 - Panel data of cohort-level statistics that are explicitly aggregated, so we can work with means, medians, means of logs, standard deviations, etc.
 - Provided an ideal method for investigating joint labor supply and consumption, as well as life-cycle inequality
 - Originally in Browning, Deaton, and Irish, and in much subsequent work

Findings

- In BDI, we were somewhat skeptical that the model explained much
 - Wages are hump shaped over the life-cycle
 - Consumption should be much flatter
 - It isn't: it is hump shaped too
 - We found that business cycle and life cycle could not be reconciled
- Later work has been more positive at some cost of simplicity
- Or the LCH may not be true
 - Income and consumption are closely tied because people are myopic, or liquidity-constrained, or very cautious

Buffer stock saving

- Some people cannot borrow
 - Perhaps particularly in developing countries, with poor credit markets, or very high interest rates
- Earlier work on the mathematically identical problem of commodity prices and storage (with Guy Laroque)
- Theory yields highly intuitive descriptions of behavior, much more so than people seeing deep into the future
 - People do not live hand to mouth, and though they rarely hit the constraint, they behave very differently because of it
 - They spend depending on cash in hand, sum of income and liquid assets
 - But they do save and dissave to smooth and protect themselves against the lean years
- Become one of the basic models for thinking about saving and consumption

A Permanent Income Paradox

- Bob Hall reworked Friedman's permanent income theory of consumption, with rational expectations
- Opened up a torrent of research
- In simple cases, it was possible to derive an explicit formula for the change in consumption that should come with an innovation in earnings
 - Conditional on a stochastic process for earnings
- I showed that a popular and plausible stochastic process, which fitted the data
 - Implied that the PIH implied that consumption should be LESS SMOOTH than income
 - Which made nonsense of the hypothesis and its *raison d'être*
- Two things that were widely thought to be true were actually mutually contradictory
 - One resolution is not to work with a representative agent

Dynamics of consumption inequality

- Random walk consumption has another startling implication
 - If you take a bunch of random walkers, with no coordination between them
 - They will get further and further apart over time
 - Consumption inequality should increase over the lifetime
 - Wealth inequality increases but much more rapidly
 - Unless there is some offset, for example from an insurance arrangement that ties people together
- We can then use the spread of consumption over time to assess the degree to which society provides insurance
 - Through a wide range of personal and social mechanisms
- Chris Paxson and I found that, in several countries, consumption inequality does indeed increase like this
 - Popper's curse: of such confirmation: there are always other stories
- These ideas are central today in macro/micro for thinking about insurance and inequality

Section 4



DISCOVERIES

Thoughts with legs

- I realized that unanticipated inflation can cause involuntary saving
 - Because inflation is perceived as a relative price increases for each good
 - People (including me) laughed at the prediction, but it was true
 - And, as usual, there are many other explanations
- I realized that it was possible to create panel data from a time-series of cross-sections
 - More of a tool than a discovery
 - But it helped investigate a wide range of substantive questions
- I realized that popular accounts of the permanent income hypothesis were self-contradictory
 - Other cases of contradictions between theory and evidence in food consumption
- I realized that the PIH and other behaviors that accumulate imperfectly correlated stochastic processes must generate rising inequality over time
 - Unless offset by other forces



