Complex Causal Mechanisms, Epistemology, and Poverty by Wendy Olsen

Global Poverty Research Group, Univ. of Manchester, and Development Studies Association (London) December 2004

wendy.olsen@manchester.ac.uk
Content of the Paper

- Complex Causality
  - Open systems
    - Path dependence
    - Permeability
    - Organic transformation
  - Contingent Causality
  - Probability
- Interpretation of Data, Aiming to Understand Causal Mechanisms
  - Context, mechanisms, outcomes (Pawson)
- Empirical Part I
  - All-India Labour Force Participation
    - Regression
  - Rural Women 20-35
    - Cluster Analysis
    - Correspondence Analysis
- Empirical Part II
  - Scale Triangulation
- III: International Data
--there was a previous related paper:

Towards a Critical Epistemology of Analytical Statistics

Paper currently available, by Wendy Olsen and Jamie Morgan, British Sociological Association, March 2004 (York). It argues for ficts rather than facts; against black-box interpretations of regression; and for cautiously interpreted logistic regression.
Analytical statistics

- ...is a process of analysis which creates survey data, links it to other forms of data, transforms the data, and analyses the results, finally interpreting the data
- ...involves both qualitative and quantitative data
- ...is in danger of presenting as fact that which is only a representation of reality
Variables

- Are not causes
- Need to be supplemented by qualitative research and by cautious interpretation
- Do not map onto real causal mechanisms easily
  - N to N mapping due to complexity
    - Uniqueness not well handled by large-scale studies
  - Absent variables cause bias in observed patterns
  - Interaction is real
Regression Analysis

- If causal combinations A B C and D E F are not independent, and both affect outcome Y,
- And some variables are missing from either set, then the estimates of the ‘effects’ [associations of] A, B, C, E, F, on/with Y are going to be biased.
- The effect upward/downward is hard to know.
Interactions of Variables

- If C overlaps with D or is causal to D E F then you have further confusion of the apparent ‘effect’ of D on Y

- If a contextual factor (such as ‘state’, proxying for a regulatory regime) is important, then the effect of A on Y is going to be altered state-wise

- These differences may be qualitative or quantitative – they cannot be assumed merely to be quantums ($\beta'$)
The advocates of small-N use historical comparative method or Qualitative Comparative Analysis (QCA).

- But for arguments for using survey data, see also:


- 81,500 households
- 345,000 working-age people (16-65)
  - 56,500 rural women aged 20-35
- 184 clustered sampling strata
- For each person, details of their entire household including children
- For each person, activities on 7-day half-day recall, up to 4 activities per period
Findings

- Strong support for methodological pluralism
- Weak support for the use of regression to ‘tease out’ causes
- Path-dependence of the impact of IRDP and ‘state’ (regulatory regimes) imply weakness to the cross-sectional analysis
- Poverty is associated with specific patterns of labour-force participation

LFP
- Distinguish extra-domestic work from domestic work
- Women more likely to be doing domestic work (‘inactive’) with a U curve with education
- Poorest women likely to be doing casual labour and to record themselves as ‘workers’ or ‘extra-domestic’ ie unpaid workers
Possible Further Research

- Can the debate between social class analysis and the economics of labour-markets be resolved using regression models?
  - Mukherjee, White, and Wuyts suggest trying various sub-models to seek more stable coefficients – suggesting these have a stronger theory.
  - Mathur, JDS 1994

- When looking at women’s labour-force participation, is there a U-curve of housewifisation or is being ‘inactive’ a privilege of the well-off?
- Poverty is clearly associated with more paid (and unpaid) work
Two Methods Other Than Regression

- Cluster Analysis (A case-based analysis which allows the causal trajectories to be categorised)
  - Weakness: the analysis of change over time
  - Strength: does not claim or pretend to expose causes directly

- Correspondence Analysis (A factor-analytic solution that uses ordinal variables and is thus case-based)
  - SPSS versions:
    - HOMALS
    - PRINCALS
    - Cancor
  - See Clausen book
  - See Greenacre (MCA)

- SPAD Software for MCA
  - See www.decisia.fr
Does Own-Account Work

OWNACCT

Not Extra-Domestic Worker

Not Literate

Has Paid Work

Factor 1

Factor 2

Does Extra-Domestic Work

EDLEVEL

Primary

Middle School

Secondary School

Literate

No

Higher

EDLEVEL

No Paid Work

HAVEJOB

Has Paid Work

Primary

Literate

No

Higher

No Paid Work

Not Extra-Domestic Worker

Not Literate

Has Paid Work

OWNACCT

Factor 1
Empirical Part II: Scale Triangulation of Indian NSS 1994 with Local A.P. Village Data 1995*

- Local survey with 8 fieldwork months
- Interviews and survey are in ESRC Data Archive
- ODI / DFID funded the work
- 120 randomly sampled households
- Recall data about farm output, paid labouring, debts, investments, wells, persons
The local survey shows that land, other assets, marriage events, investment pathways, and tenancy all affect the use of bank loans.

Bank loans appear to be substitutes for informal sector loans.

The national data can be used to explore the same topics. The local data are of better quality.

Path analysis can help to adduce pathways of causality.
Empirical Part III: International Data 2004

- An ESRC funded project
- 203 countries, for which data on gender, democracy, economic development, human development, and labour market activity are gathered
  - From UNDP, WDI, ILO, UNESCO, Freedom House, International Parliamentary Union
Women’s Progress

Figures Averaged by Region

- Percent of Parliament Female vs. Years Since Women’s Suffrage
Causality in International Studies?

- A. Statistical inference is not a valid discourse in this particular type of situation.
- B. Substantive trajectories are each unique, but fall into combinations (these are configurations).
- C. When gender-related indicators rise together, it implies that similar processes have affected various countries. It does not necessarily reveal the processes.
- There are limits to the observation of countries using the survey method.
Conclusions

- Causality is complex and involves real mechanisms.
- Variables act as proxies for various mechanisms in an N to N relation.
- Poverty can be an outcome in a causal analysis.
- It can also be queried as a possible contributing factor.
- In India, it appears that poverty influences labour force participation.