

(i) **Contributed paper submission**

(ii) title of paper: **Spaghetti Unravelled: A Model-Based Description of Differences in Income-Age Trajectories**

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(vi) **Short abstract:**

Knowledge of how income varies with age on average, and the extent to which individual trajectories differ from an average profile, is relevant to many aspects of social policymaking. A modelling framework is developed for describing income-age trajectories that is useful for summarizing not only the average profile for a group of individuals with similar characteristics, but also how individual trajectories differ from the group average. Using data from waves 1-17 of the British Household Panel Survey, the model is estimated separately for twelve groups of individuals differentiated in terms of educational qualifications, birth cohort and sex. The results indicate significant differences in the shapes of average trajectories across groups, and substantial variations in trajectories across individuals within groups.

**Extended Abstract**

Knowledge of how income varies with age on average, and the extent to which individual trajectories differ from an average profile, is relevant to many aspects of social policymaking. Most descriptions of the income-age relationship are based on comparisons of income across age groups in a particular year and are based on cross-sectional data. In contrast, this paper has taken a longitudinal approach, deriving trajectory estimates using 17 waves of data from the British Household Panel Survey. I propose a framework that provides summary descriptions of not only the way in which incomes among groups of similar individuals change with age on average, but also the way in which trajectories for individuals diverge from the average trajectory of their group. The model is applied to three measures of 'income': the hourly wage, total individual income from all sources, and equivalized net household income.

The paper's main points are as follows:

- Individuals' income-age trajectories collectively look like cooked spaghetti – they are a complex mix of wiggly lines;
- We can, however, use a statistical model to summarize the key features of these trajectories and to highlight differences across groups on average and within groups of individuals with similar characteristics;
- Across twelve social groups defined in terms of combinations of sex, birth cohort, and educational qualifications, there are some clear differences in average income-age trajectories, regardless of which income measure is used;
- Other things equal, the average income-age profile for men lies above that for women; the one for individuals born in or after 1955 is above that for those born before 1955; and the that for individuals with educational qualifications to A-level or higher is above that for individuals with some qualifications which, in turn, is above the profile for individuals with no educational qualifications. There is a distinct dip in income growth for women on average over the age range when many have children.
- Nonetheless, within each social group, there are substantial differences across individuals in the shapes of income-age trajectories, where differences can be usefully summarised in terms of:
  1. Individual-specific differences in incomes at the start of the working life;

2. Individual-specific differences in income growth rates; and
  3. A close association between initial incomes and income growth rates – those with a lower initial income experience greater income growth on average so there is a tendency for trajectories to cross;
  4. Transitory variations – income-age trajectories also differ because of substantial individual-specific income changes from one year to the next, representing the effects on income of genuine transitory variation, measurement error, or lifecycle events such as having children, or family formation or dissolution.
- Over the working life, income inequality first declines and then rises, but the nature of the U-shape differs substantially between birth cohorts.

Note: the research is based on a 70 page report for the UK National Equalities Panel. The paper for the IARIW conference would be a substantially rewritten version of the paper in a form more suitable for the IARIW audience. I also aim to extend the analysis in several directions when revising the paper.