

## [Nonlinear household earnings dynamics, self-insurance, and welfare](#)

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Shocks to labour earnings are a crucial source of individual risk and their stochastic properties determine how saving and consumption adjust to buffer their impact on current and future consumption. Appropriately capturing earnings risk is therefore important to understand consumption and wealth inequality, the welfare implications of income fluctuations, and the potential role for social insurance.

With few notable exceptions, most quantitative macroeconomic models adopt earnings processes that imply that persistence and other second and higher conditional moments are independent of age and earnings histories, and that shocks are normally distributed. The linear, “canonical” permanent/transitory process is a popular example. A growing body of empirical work, though, provides evidence that earnings dynamics are much richer, displaying substantial non-normality, age-dependence, and nonlinearity. This holds for individual-pre-tax and household-post-tax earnings and across administrative and survey data.

We analyse the effects of these richer earnings dynamics on consumption, wealth, and welfare, both in the cross-section and over the life cycle. We employ the econometric framework recently proposed by Arellano, Blundell and Bonhomme (2017) that allows to separately identify the distributions of the persistent and transitory components of earnings while allowing for non-normality of shocks, nonlinearity and, in general, a rich dependence of the distributions on age and previous earnings. Using data on post-tax, household earnings from the Panel Study of Income Dynamics we estimate two different earnings processes: a richer earnings process along the lines of Arellano et al. (2017) and a linear, “canonical” earnings process with a persistent and transitory component and normal innovations.

We compare the implications of these two processes in a standard life-cycle model. We find that allowing for the richer earnings dynamics implies a substantially better fit of the evolution of cross-sectional consumption inequality over the life cycle and of the individual-level degree of consumption insurance against persistent earnings shocks. Richer earnings dynamics also imply lower welfare costs of earnings risk, but, as the canonical earnings process, do not generate enough concentration at the upper tail of the wealth distribution.