Discussion of "Preferences and the Dynamic Representative Consumer"

by

Christos Koulovatianos

Dirk Krueger

University of Frankfurt, CEPR, CFS and NBER

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Motivation

- There is a lot of heterogeneity among households in the economy.

- Under what conditions can we do macroeconomics and asset pricing as if this heterogeneity did not exist?

- This paper: heterogeneity in preferences.

- Note: the paper assumes absence of uncertainty (or perfect insurance against this uncertainty).

Basic Setup

- types $i \in \mathcal{I}$, with measure $\mu(i)$.

- Initial asset holdings a_0^i, labor productivity $\theta^i(t)$, $t \geq 0$.

- Preferences: Time discount factor $\rho^i(t)$ and felicity function $u^i(., t)$.

- Budget constraint

$$\dot{a}^i(t) = r(t)a^i(t) + \theta^i(t)w(t) - c^i(t)$$

Main Question

- For which individual preference profiles (ρ^i, u^i) does there exist a representative consumer with preferences $\rho^{RC}(t)$ and $v^{RC}(., t)$ such that, when faced with prices $(w(t), r(t))$ and with aggregate wealth $a_0 = \int a_0^i d\mu$, the representative consumer would choose consumption allocations

$$c^{RC}(t) = \int c^i(t) d\mu$$

The Theoretical Results

Table 1: Summary of Results

Model	$\rho^i = \rho, u^i$ time-invar.	ρ^i, u^i time-invar.	$\rho^i = \rho, u^i$ time-var.
Sufficiency	$e^{\kappa_i}\frac{\left(\alpha c+\beta^i\right)^{1-\frac{1}{\alpha}}}{\alpha\left(1-\frac{1}{\alpha}\right)} + \kappa$ $-\frac{e^{\kappa_i}}{\beta^i}e^{-\frac{c}{\beta^i}} + \kappa$	$-\frac{e^{\kappa_i}}{\beta^i}e^{-\frac{c}{\beta^i}} + \kappa$	$e^{\kappa_i}\frac{\left(\alpha c+\beta^i(t)\right)^{1-\frac{1}{\alpha}}}{\alpha\left(1-\frac{1}{\alpha}\right)} + \kappa$ $-\frac{e^{\kappa_i}}{\beta^i}e^{-\frac{c}{\beta^i G(t)}} + \kappa$
Necessity	same as above	same as above	same as above

Implications of Results for Quasi-Aggregation

- Take $i = 1, 2$ (two groups), with relative sizes p_i and cross-sectional distribution over assets Φ_i within the group. Decision rules

$$a'(a, i, z) = \alpha_{iz} + \beta_{iz} a$$

- Despite heterogeneity in the population, under what conditions can the aggregate law of motion be written as

$$\begin{aligned} K' &= B_z + C_z K \text{ where} \\ K &= \sum_i p_i \int a d\Phi_i(a) \\ K' &= \sum_i p_i \int a'(a, i, z) d\Phi_i(a) \end{aligned}$$

When Quasi-Aggregation in Macroeconomics?

- Case 1: $\beta_{iz} = \beta_z$ for all i. This is the case the paper focuses on.

- Case 2: $\beta_{1z} \neq \beta_{2z}$, but $p_1 \approx 0$ or $\int a d\Phi_1(a) \approx 0$

- Case 3: $\beta_{1z} \neq \beta_{2z}$, and $p_i \gg 0$ and $\int a d\Phi_i(a) \gg 0$ but

$$\frac{\int a d\Phi_i(a)}{K} \approx \theta_i, \text{ constant over time}$$

What does one need for Quasi-Aggregation to fail?

- Groups with different MPC's out of current wealth, and
- These different groups all hold significant share of aggregate wealth, and
- Time variation (due to aggregate shocks, say) in the distribution of wealth across these different groups.
- Examples: OLG models with big aggregate shocks that affect wages and returns to capital differentially (Krueger and Kubler, 2004).

Conclusions

- Sufficient conditions are shown elsewhere. But important to know that these are the only cases that allow a representative consumer (i.e. to have necessary conditions).

- What do these results imply if the strong conditions of the theorems do not apply? Do they help to understand quasi-aggregation? Maybe not.

- Are these conditions likely to apply? Maybe not (Cochrane, 1991, Nelson 1994, Attanasio and Davis, 1996, Dynarski and Gruber, 1997, Krueger and Perri, 2005).