Discussion of:

"Habits and Leverage"

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Outline

1. Set Up
2. Key Findings
3. Comments

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The Set Up

- Investors have heterogeneous initial wealth shares (w_i) and external habit preferences

$$u(C_{it}, X_{it}, t) = e^{-\rho t} \log\left(C_{it} - D_t \frac{b_i + a_i Y_t}{B + Y_t}\right),$$

where

$$\frac{dD_t}{D_t} = \mu_D dt + \sigma_D(Y_t) dZ_t$$

$$dY_t = k(\bar{Y} - Y_t)dt - vY_t\left[\frac{dD_t}{D_t} - \mu_D dt\right], \quad v \geq 0$$

- The state Y is a "recession indicator" $(\sigma_D'(Y_t) > 0, \lim_{Y_t \downarrow \lambda > 1} \sigma_D(Y_t) = 0)$
- Y_t^{-1} akin to a "surplus consumption ratio"
- Risk sharing motivated by heterogeneous exposure to Y (low a_i/high w_i $\rightarrow$ high risk tolerance)
- Complete markets and aggregates to the representative agent of Menzly, Santos and Veronesi (JPE2004, MSV henceforth)

$\Rightarrow$ same pricing implications independently from heterogeneity.

Outline

Key Findings

With only one state variable and no ad hoc frictions, can generate:

1. MSV pricing (more on this coming)
2. procyclical debt-to-output ratio, countercyclical debt-to-wealth ratio, stationary consumption shares (cf. heterogeneous R.A. models)
3. (some) poor agents borrow more than richer agents to increase consumption (low R.A. agents with low endowment).
4. aggregate leverage positively correlated with: valuation ratios, low future excess return, (good time = low Y_t = low R.A.), return vol (σ_D assumption), "consumption boom" (levered agents do particular well in good times)
5. deleveraging after negative shocks and "apparent" selling pressure ($\uparrow Y \rightarrow \uparrow R.A. \rightarrow \downarrow$ leverage and prices)
6. endogenous wealth dynamics and inequality (more on this coming).
7. and explain why leverage is a "priced" factor.

Baseline: I'm impressed – a new workhorse model (that satisfies Occam's razor).

Outline

Comment 1: MSV asset pricing (Ghosh, Julliard and Taylor (RFS2016))

- MSV needs much more curvature than log to be consistent with asset implied bounds for the SDF

$\Rightarrow$ aggregation result holds with power function, and pricing implications can be "easily" computed numerically. Use that for quantitative part of the paper.

- MSV captures well the B.C. properties of the SDF but misses a jump like (market crash) component needed to be consistent with the data

$\Rightarrow$ the Y process (not D) could accommodate that.

Comment 2: wealth and inequality

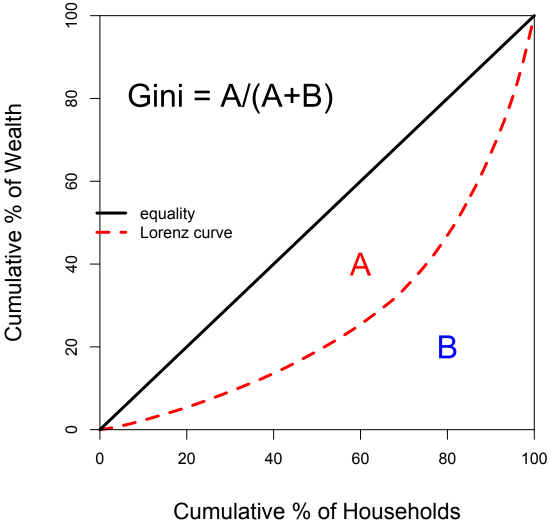
- Wealth shares are stationary and given by

$$\frac{W_i}{\int W_i di} = a_i + (w_i - a_i)\frac{(\rho + k)\bar{Y} Y_t^{-1}}{\rho + k\bar{Y} Y_t^{-1}}$$

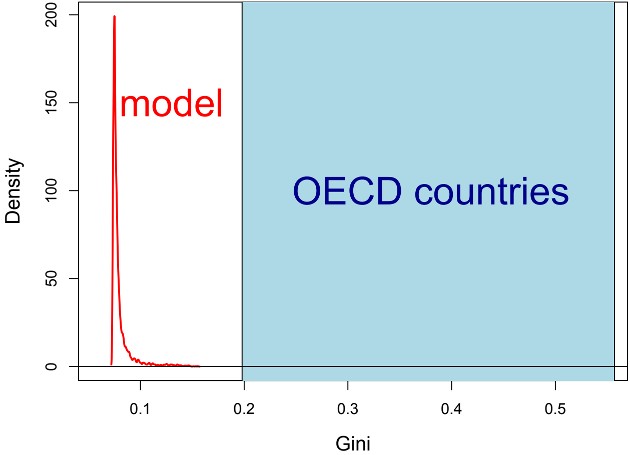
Note: agents with $(w_i - a_i) > 0$ (< 0) have positive (negative) leverage.

$\Rightarrow$ easy to compute inequality and cross-sectional wealth dynamics.

Reminder: the Gini measure of wealth inequality



The Gini coefficient distribution in the model

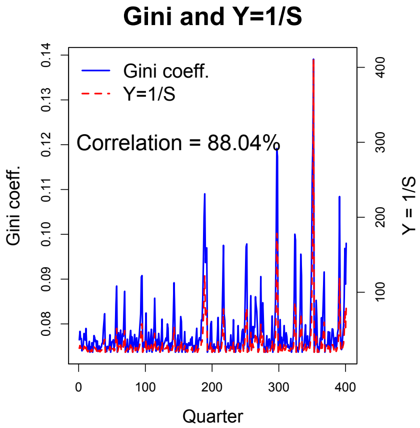


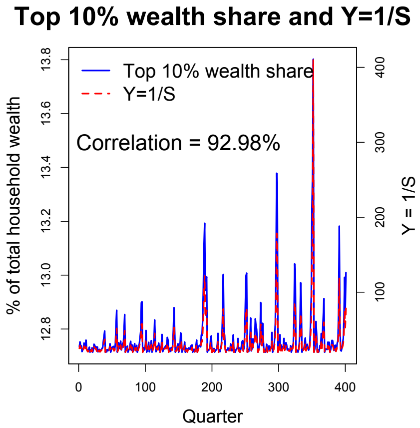
$\Rightarrow$ way too little wealth inequality generated by the model.

- could be fixed by either increasing the dispersion of:
  - a_i: ... but many agents would have very high R.A.
  - w_i: ... but inequality would become (even more) a B.C. variable

(more on this shortly)

Inequality and Business Cycle in the model

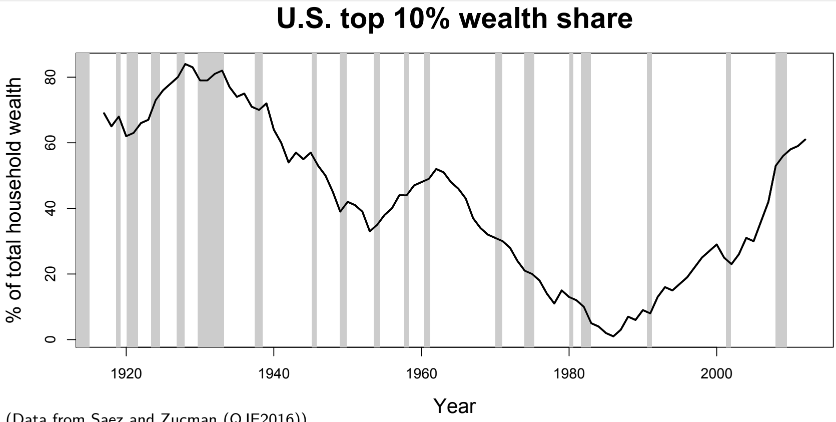




- Inequality is a B.C. variable in the model (but in the data... next slide)
- The latent Y is almost perfectly correlated with the top wealth share

$\Rightarrow$ inequality is basically a "priced factor" since the s.p. density is log linear in Y

Inequality and Business Cycle in the data



(Data from Saez and Zucman (QJE2016))

- (wrong level and) inequality is *not* really a B.C. variable in the data...
- ... and its first difference (or detrended component) has basically zero correlation with the B.C.

$\Rightarrow$ to match low frequency dynamic make $\bar{Y}$ (slowly) time varying.

Note: similar problem for consumption inequality (but fewer data to compare).

Comment 3: heterogeneity in micro data

? a model with rich heterogeneity that does *not* target the heterogeneity in the data...

- Both latent state and R.A. heterogeneity can be recovered combining aggregate data and household consumption panel data (e.g. PSID, Constantinides-Ghosh (JF2017)):

$$C_{i,t} = \left[\frac{b_i + a_i Y_t}{B + Y_t} + \phi_i\right] D_t$$

Also: over-identified if combined with household wealth data.

Note: only care about distributions (not point estimates, i.e. much easier).

$\Rightarrow$ better quantitative implications targeting wealth and consumption distribution moments.

Note: quantities matter for understanding the relevance of the *frictionless* channel proposed.

... but might need frictions (à la Gomes and Michaelides (JF2005)) to match micro data ... but more realistic than the restrictions of most of the competing models.

Summary

- A brilliant new benchmark framework – I'll be teaching it to my students!
- Needs more (follow up) work to:
  - convince us of the *quantitative* relevance of the mechanism;
  - become (more) consistent with pricing, wealth and micro data.