Discussion of "Benchmarks in Aggregate Household Portfolios" by Pascal St-Amour

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Setting

Focus

- Portfolio problem $\max_{C_t, \mathbf{v_t}} E_0 \int_0^\infty e^{-\rho t} U(C_t, X_t^i) dt$
- Habit-formation utility $U_t^i = \frac{C_t - X_t^i}{1-\gamma}$
- Consumption risk-aversion $RR_{c,t} = \frac{\gamma}{1 - X_t^i / C}$

Two possibilities to obtain reference consumption level X

a) Wealth Determined Reference (=forward-looking)

$$X_t^W = \eta_0 + \eta_w W_t$$

b) Habit Determined Reference (=backward-looking)

$$X_t^H = e^{-at} X_0^H + b \int_0^t e^{a(s-t)} C_s ds$$

Model

Representative agent solves portfolio problem

- No trades
- Investment universe:
  (a) riskless asset, bonds, stocks (b) + real estate – mortgage
- No labour income, no "non-traded asset" (cf. Constantinides 1990)
- Fixed investment set (size, $r, \underline{\mu}, \underline{\sigma}$) exogenously supplied
- Later (sect 4.3): *time variation in the investment set* $= r, \underline{\mu}(t), \underline{\sigma}$

Data: aggregate household holdings (from FED)

Aims

- Horse race (CRRA, HARA) and (WDR, HDR)
- Horse race WDR, HDR
- Extract the habit parameters out of portfolio quantities
- "... focusing on quantities ... provides another perspective that complements existing results".

Results

Basic setup (Financial wealth only, fixed investment set)

- All estimated parameters have expected sign and are significant.
- Relative risk aversion $RR_{c,t} = \frac{\gamma}{1-X_t^i/C}$ matches standard literature results that had been obtained with returns data
- HDR $>$ WDR $>$ (HARA, CRRA)

Basic setup + real estate wealth

- Still correct signs and significant parameters
- γ becomes very high (≈ 28)
- Habit-formation models clearly beat CRRA and HARA
- Model selection still quite clear

Time-varying investment set, financial wealth only

- γ becomes negative

Time-varying investment set, with real estate: Not covered.

Cool stuff and quibbles

Cool stuff

- Transformation for brownian motions (Corollary 2)
- Proof of proposition 1 using isomorphism with Merton problem.

Quibbles

- Notation, e.g. page 12 $y^W, \mu^W, \ldots$
- Data on household holdings, but market returns – is this a problem? (Validate?)
- Selling point could be clearer: Is this a paper (1) in favor of habit formation in general, (2) to estimate the preference parameters or (3) to showcase a new method, namely using quantities. Discussion (section 5.2), suggests only (1).

How much do we learn?

Time-varying and counter-cyclical risk aversion (at the optimum)

- Pro-cyclical movements in risky asset shares (see Fig. 1)
- "When the investment set is fixed, such movements can only be ascribed to changing attitudes toward risk."

Portfolio weights (quantities) or relative prices?

- See Figures 1/2

Figure 1

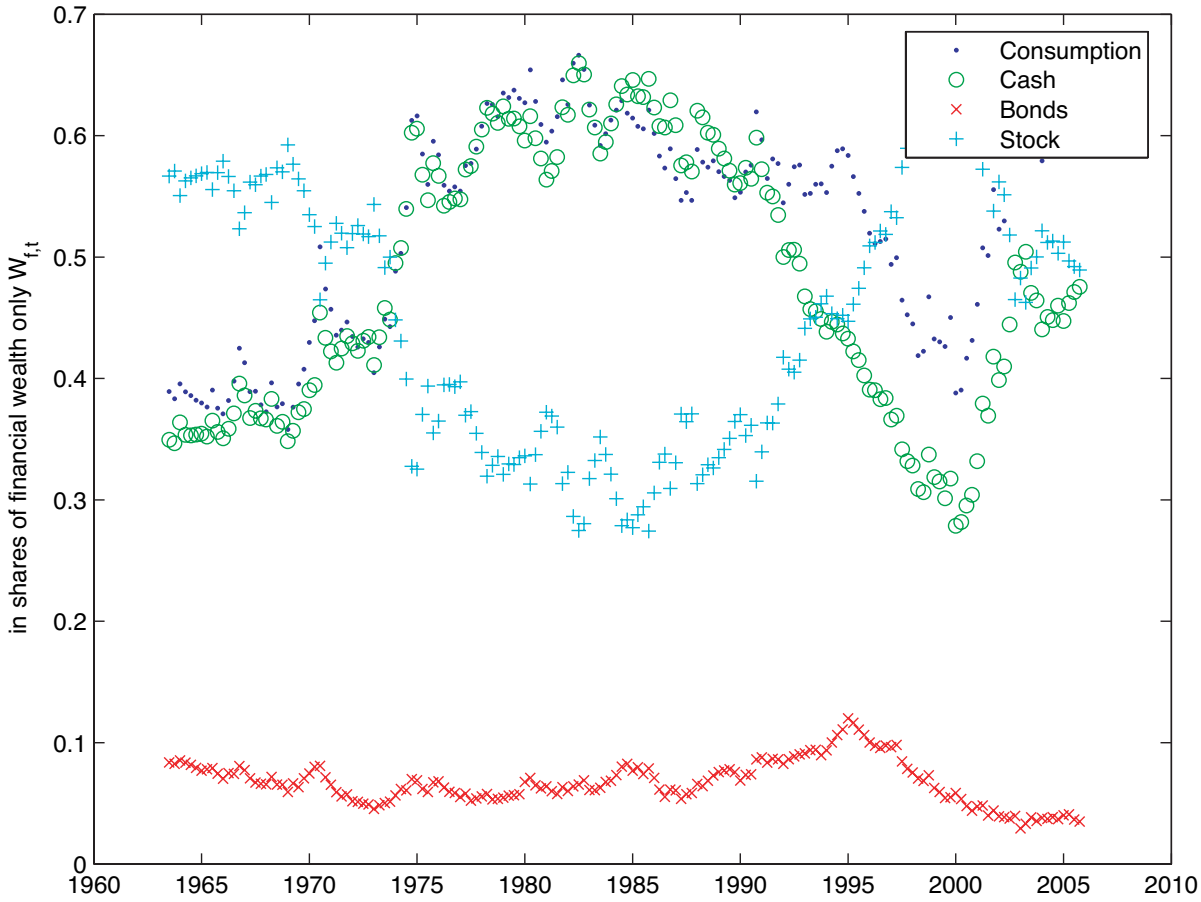

Figure 1: Consumption and Asset Shares of Financial Wealth Only

Questions

Inclusion of asset supply
How will results change if the supply changed as a function of market developments (e.g. Dotcom IPOs, construction)?
Benefits from modeling a 2^{nd} agent that provides investment opportunities/credit?

Inclusion of (equivalent) rent yield
Would this reconcile the differences between "baseline" and "baseline + real estate wealth"? Maybe approximate constant yield for owner-occupied housing.

Inclusion of market participation
Portfolio shares of stocks and real estate are underestimated for those participating in these markets. How would this change the results?
How much of the results are an aggregation phenomenon?

Inclusion of labour income / human capital
Would this increase risk aversion even further?