DISCUSSION OF:

"Understanding the Equity-Premium and Correlation Puzzles"

by ALBUQUERQUE, EICHENBAUM, AND REBELO

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Outline

Closely Related Literature and Key Ingredients

Asset Pricing Puzzles:

- The standard time and state separable power utility model with a CRRA cannot:
  1. match the average level of returns
     ⇒ Equity Premium and Risk Free Rate puzzles (e.g. Mehra and Prescott (1985), Weil (1989), Julliard and Ghosh (2012))
  2. explain the excess volatility of stock prices ⇒ Excess Volatility Puzzle (e.g. Shiller (1981))
  3. rationalize the cross-sectional dispersion of returns
     ⇒ Size Premium and Value Premium puzzles (e.g. Mankiw and Shapiro (1986), Campbell (1996), Cochrane (1996))

Main reason of failure:

- Per capita aggregate consumption growth covaries too little with stock returns at 1, 5, and 10 year horizons (correlation puzzle)

But: in the data, consumption risk does matter for explaining asset returns (e.g. Lettau and Ludvigson (2001), Parker and Julliard (2005))

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Typical Solution Attempts

Typical solution attempts:

- modify preferences and/or the structure of the economy, so that the pricing kernel becomes a function of consumption growth and something else.

Examples: models with habit formation, recursive utility in the presence of long-run risks, heterogeneous agents...

- Most of these models load all uncertainty onto the supply-side of the economy (e.g. stochastic process for the endowment) and abstract from shocks to the demand for assets.
- Demand shocks may also be potentially important in explaining aggregate phenomenon.

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Key Ingredients:

The key ingredients of the paper are:

- Epstein-Zin recursive utility function with a preference for early resolution of uncertainty
- A time-preference shock, λ_t, in the utility function that determines how the representative agent trades off current vs future utility:

$$U_t = \max_{C_t} \left[\lambda_t C_t^{1-\frac{1}{\psi}} + \delta \left(E_t \left[U_{t+1}^{1-\gamma} \right] \right)^{\frac{1-\frac{1}{\psi}}{1-\gamma}} \right]^{\frac{1}{1-\frac{1}{\psi}}}$$

- Random walk processes for the aggregate consumption and dividend growth rates (instead of the more complicated dynamics often assumed in the literature to account for the asset pricing puzzles e.g., long-run risks, stochastic volatility)

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- The model can explain the equity premium and risk free rate puzzles as well as the correlation puzzle.
- The model's estimated risk aversion coefficient is ≈ 1, much smaller than the values needed by other existing models.
- The long-run risks model can account for the equity premium and risk free rate puzzles for $\gamma = 10$ but it cannot account for the correlation puzzle (Bansal and Yaron (2004), Bansal, Kiku, and Yaron (2011))

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Dynamics of the Price-Dividend Ratio

In the data, the market-wide price-dividend ratio is procyclical.

- In the model:
- the risk-free rate is a decreasing function of the single state variable, $\frac{\lambda_{t+1}}{\lambda_t}$:

$$r^f_{t+1} = \alpha - \log\left(\frac{\lambda_{t+1}}{\lambda_t}\right)$$

- $\Rightarrow$a high value of $\frac{\lambda_{t+1}}{\lambda_t}$ seems to be related to economic downturns (recessions).
- However, the model-implied market-wide price-dividend ratio is

$$z_{dt} = A_{d0} + \left(\frac{1}{1-\kappa_{d1}\rho}\right)\log\left(\frac{\lambda_{t+1}}{\lambda_t}\right)$$

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Expected Market Return

In the data:

- the expected market return is countercyclical (e.g., Campbell and Cochrane (1999))

In the model:

- the risk-free rate is a decreasing function of the single state variable, $\frac{\lambda_{t+1}}{\lambda_t}$.
- the expected equity premium is constant.
- $\Rightarrow$the expected market return is a decreasing function of $\frac{\lambda_{t+1}}{\lambda_t}$!

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Properties of the Price-Dividend Ratio

- The authors do not provide the fit of the model for the mean and volatility of the price-dividend ratio.
- The long run risks model greatly understates the volatility of the log price-dividend ratio ($0.16 - 0.26$ vs ≈ 0.45 in the data) (Beeler and Campbell (2012), Constantinides and Ghosh (2011))

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Conclusion and Suggestions

Baseline:

- The model introduces demand shocks to an otherwise standard recursive utility framework to account for the equity premium, risk free rate, and correlation puzzles.
- Unlike the existing literature, the model can explain these puzzles for very low values of the risk aversion coefficient.
- It does not rely on complicated dynamics in the consumption and dividend growth processes that are difficult to identify in the data.

Suggestions:

- Would strengthen the paper considerably to relate the preference shocks to observable variables and obtain testable implications.

  The current version of the model:

  - relates the growth rate of the preference shocks inversely to the risk free rate;
  - but this generates counterfactual predictions for the price-dividend ratio and expected market return.
- Increase the set of moments to be matched (e.g., volatility of the price-dividend ratio, cross-section of returns)

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