COMMENTS ON SPECULATION AND RISK SHARING WITH NEW FINANCIAL ASSETS

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Main result

- Representation of equilibrium portfolio and prices with heterogeneity in preferences and endowments
- Decomposition of the (weighted) average portfolio variance term where the weights depend on a relative measure of risk aversion and a term that captures dispersion in beliefs.
- Complement to the classic (but uncited) paper: An aggregation theorem for security markets, Rubinstein, JFE, 1974.
WELFARE: WHY FOCUS ON VARIANCES?

Consider a Pareto like problem and work from there:

\[ \sum_{i=1}^{\infty} \omega_i x_i \cdot \mu_i + \frac{\omega_i \theta_i}{2} x_i' \Sigma x_i \]

subject to:

\[ \sum_{i} x_i = 0 \]

\[ \sum_{i} \omega_i = 1 \]

where \( \omega_i \) is a Pareto weight for person \( i \), \( \theta_i \) is risk aversion parameter, \( \mu_i \) is a vector of means for person \( i \) and \( \Sigma \) is a common covariance matrix.

Modify to include background risk as is done in this paper.
HOMOGENEOUS BELIEF CRITERION: WHY FOCUS ON VARIANCES?

Compare to the homogeneous belief criterion:

$$\sum_{i=1}^{\infty} \omega_i x_i \cdot \mu + \frac{\omega_i \theta_i}{2} x_i' \Sigma x_i$$

subject to:

$$\sum_i x_i = 0 \quad \sum_i \omega_i = 1$$

explore implications for a range of $\mu$. Bewley’s version of ambiguity preferences with incomplete preferences applied to a planner.

- Modify to include background risk as in this paper.
- For the single “risk case”, $|\mu|/\Sigma$ matters to the planner for each $\mu$.
- Other approaches in which planners design policies to the “fix” or adapt to the private sector beliefs.
Why heterogeneous beliefs

- Historical sample evidence is weak which permits nontrivial amounts of heterogeneity.
- Ambiguity aversion, pessimism, optimism

Use quality of statistic evidence as a formal guide?
If dispersion in beliefs is more prominent when historical evidence is weak, makes actual implementation of these decompositions challenging. Perhaps use survey evidence but these data are very limited in scope.

Known variance, unknown mean formulation is very limiting. Motivated by continuous-time Brownian information structures. Absolute continuity is arguably a “bottleneck”. Recent work by probabilist Peng pushes in new and interesting directions.

Even if variances are revealed with great accuracy, persistence in conditional variances is hard to quantify but relevant in a dynamic setting.
Dynamics and market structure

- Dynamic economies could adopt a more primitive starting point where the source of belief heterogeneity pertains to the dynamic cash flows.
- Survival - extensive literature - growth and the specification of preferences matter - recent papers by Borovicka and Kogan and Ross are examples.
- Derivative claims, exchange based trading versus over the counter transactions - Implicit Brownian information structure may be too limiting.