

# 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:

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

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:

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

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 HETEROGENOUS 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?

## MEASUREMENT CHALLENGES

- ▶ 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.