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Discussion of ``Robustness, Model Uncertainty and Pricing´´ by Antoon Pelsser

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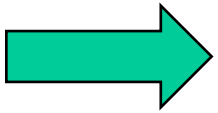
Summary of the main results

Motivation: Merton (1980), JFE

- Expected return difficult to estimate
- Variance is easier to estimate



we need to model uncertainty on expected return

Here this is done via an interval [mL,mH]

To get robustness: solution = worst case scenario

<u>Key results</u>:

- Still possible to have arbitrage-free pricing
- Extension to background risk and incomplete markets

Suggestions : Econ literature

- Relate to the economic literature on ambiguity:

  Gilboa-Schmeidler (1989), Hansen-Sargent-Tallarini (1999), Cagetti et al. (2002), Anderson-Hansen-Sargent (2003), Knox (2004)…

Robust control theory an learning theory

applied to economic problems

Suggestions : Fin literature

- Relate to finance literature on ambiguity:

- Gagliardini et al. (2004; term structureof interest rates),
- Epstein and Miao (2003; home bias),
- Liu et al. (2004; option pricing with rare events),
- Maenhout (2004; equity premium puzzle),
- Routledge and Zin (2001; liquidity),
- Sbuelz and Trojani (2002; equity premium puzzle),
- Trojani and Vanini (2002, 2004; equity premium puzzle and stock market participation)
- Uppal and Wang (2003; home bias).

Suggestions: Etrics literature

- Relate to econometric literature on robustness:

- Uncertainty in the estimated parameter: can use that to measure the impact of sample size on the pricing via conf. intervals (impact of k on theta*),

- Uncertainty in the model: can use robust econometric methods immune to departure from the model

(see the recent paper by

Trojani, Wiehenkamp, Wrampelmeyer (2010))

Suggestion: credit extension

- Extension of the setting for correlation uncertainty

In CDO pricing or first-to-default credit derivatives

the role of the default correlation in the Gaussian copula

…is huge!

Moreover it is very difficult to infer from the data

A lot of prior knowledge put in the model

Suggestions: numerical examples

Numerical illustrations

1. Uncertainty in the parameter
   vs uncertainty in the model

What is the most important?

Neglecting stochastic volatility (model uncertainty) or neglecting noise in expected return estimation (parameter uncertainty)

Suggestions: numerical examples

2. Impact on prices and hedging

For delta hedging :

uncertainty in expected returns is important

For gamma hedging

uncertainty in volatility is important

Suggestions: numerical examples

3. Role of static hedging

If we face uncertainty in expected returns,
optimal dynamic strategy is super hedging

Quid if we use static hedging with other options?

Is it better suited than dynamic approaches?