

Comments on “Risk Premiums and  
Macroeconomic Dynamics in a Heterogeneous  
Agent Model” by F. De Groot, M. Dossche, M.  
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# Aim of the paper

- ▶ A macro-model that describes simultaneously dynamics of real variables and of financial risk premia
- ▶ High and counter-cyclical risk premia
- ▶ Realistic moments of real variables (pro-cyclical employment)
- ▶ Calibrated model of post-war U.S (shocks variance is estimated)
- ▶ Equally careful modeling of financial and labor markets

# Main results

The model generates:

- ▶ sizable risk premia
- ▶ realistic volatility and correlations
- ▶ low volatility of the real wage
- ▶ counter-cyclical wage share
- ▶ high volatility of profits, returns to equity and price–dividends ratios
- ▶ high consumption volatility for shareholders

# Three type of households

- Type 1** : shareholders buy stocks and bonds. They have lower risk aversion. Their preferences set rates of return. They work at the spot wage.
- Type 2** : bondholders. They buy only bonds. They work at the spot wage.
- Type 3** : workers who don't participate in capital market and consume immediately their entire labor income. They engage in long term labor contracts.

# Financial assets

- ▶ stocks: remunerated by dividends; owned by shareholders, only
- ▶ 10-year bonds: owned by shareholders and bondholders
- ▶ Firms debt financing is assumed to be a constant fraction of the capital stock
- ▶ Makes it easy to compute portfolios
- ▶ Only endogenous wealth distribution concerns bonds

# Asset prices model and perturbations (I)

From Olaf Weeken's adaptation of Jermann (1998) model.

- ▶ Euler equation

$$1 = E_t \left\{ \beta \frac{\Lambda_{t+1}}{\Lambda_t} R_{t+1} \right\}$$

- ▶ Risk free rate

$$R_t^f = \left[ E_t \left\{ \beta \frac{\Lambda_{t+1}}{\Lambda_t} \right\} \right]^{-1}$$

- ▶ Expected rate of return on equity

$$E_t \{ R_t^s \} = E_t \{ \alpha A_{t+1} K_t^{\alpha-1} N_{t+1}^\alpha \}$$

- ▶ Equity premium

$$EP_t = E_t \{ R_t^s \} - R_t^f$$

## Asset prices model and perturbations (II)

- ▶ 2nd order effect of future shocks: (unconditional) variance of future shocks
- ▶ 3rd order effect of future shocks: 3rd moment of future shocks and (variance of future shocks)  $\times$  state

# Overall statistics of the model

- ▶ Details statistics are provided for the model calibrated with two shocks: productivity and distribution shocks.
- ▶ Overall the moments of the model are close to the data for the financial statistics as well as for the real economy
- ▶ The sensitivity analysis shows that simple representative agent models have difficulties to match the financial statistics, but also the great sensitivity to the utility function.
- ▶ The three types of agents seem necessary to obtain a good match.
- ▶ Which calibration for specification comparisons?



## Inspecting the mechanisms

- utility function** : the Greenwood, Hercowitz and Huffman (GHH) specification is preferred because a non-separable utility function reduces the counter-cyclical nature of employment and increases the volatility of profits.
- bond market** : provides an instrument for risk sharing between shareholders and bondholders. Because shareholders can better smooth their consumption (diminishes consumption variance by 41.8%), it diminishes equity premium. But the very existence of firm debt thru bonds increases the volatility of profits and therefore the equity premium.
- long term labor contracts** : along with costly price adjustment and the redistributive effect of productivity shocks, they transfer volatility from workers to shareholders (increases consumption variance by 32.6%).

# Time variation in risk premium

- ▶ consistent with other descriptions of the post-war period
- ▶ this variation is much more due to variation in financial returns than in variation of consumption growth

# The Great Moderation

- ▶ Effects of a drop in shocks variance
- ▶ Consequences a very strong on financial variables contrarily to the data
- ▶ Difficulties in the comparison
- ▶ Can we use Markov switching?

# Questions

- ▶ Why no demand shocks in the benchmark model?
- ▶ What is the purpose of the bonds?
- ▶ If workers were allowed to hold bonds, would they do it?
- ▶ Accuracy of approximation
- ▶ Limited feedback effects from risk premia on the real economy?
  - ▶ Risk premia aren't an additional mechanism
  - ▶ Taking into account risk at 2nd order will only shift IRFs
- ▶ Estimation