

Discussion: Asset Pricing with the Awareness of New Priced Risks

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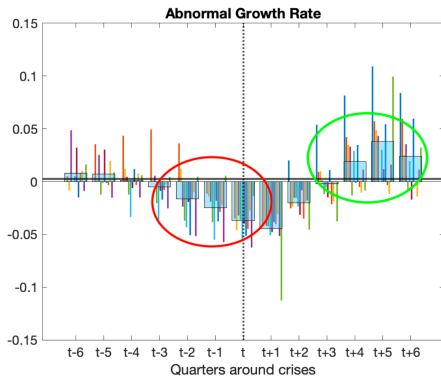
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Summary of the Paper: Main Results

- This paper studies how consumption and asset prices respond to news about crisis
- Empirical:
 - Output growth is "s" shaped. It slowly declines ahead of each financial crisis but "bounces back" after the crisis.
 - However, risk premium do not comove immediately, but with a delay
- Model:
 - Prior to each crisis, agents are aware of new potential risks
 - The risk triggers delayed reactions in consumption and asset prices
 - Match the conditional moments during crisis

Summary of the Paper: Empirical Evidence

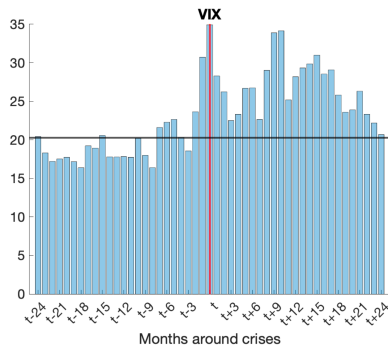
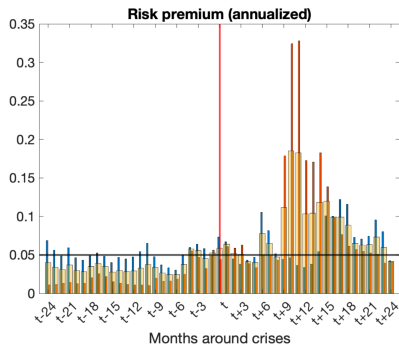
- Abnormal GDP growth rate around crisis



- Pre-crisis: slow decline
- Post-crisis: rapid recovery

Summary of the Paper: Empirical Evidence

- Risk premium and return volatility around crisis



- Pre-crisis: no reaction
- Post-crisis: delayed hike

Summary of the Paper: Theory

- A rep agent model with external habit formation
- Output has two components

$$Y_t = \hat{Y}_t \eta_t \quad (1)$$

- (normal times) potential growth: $\frac{d\hat{Y}_t}{\hat{Y}_t} = \mu dt + \sigma dB_{Y,t}$
- (crisis) output destruction:

$$d\eta_t = \kappa (x_{s,t} - \eta_t) dt + \underbrace{\sigma_\eta \eta_t (1 - \eta_t) dB_{\eta,t}}_{\text{new Brownian risk}} \quad (2)$$

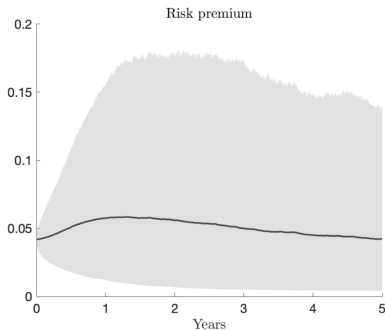
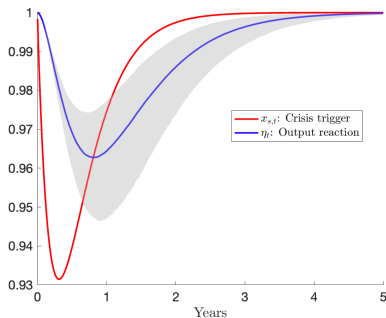
with exogenous news about future growth rate at $s \leq t$

$$x_{s,t} = 1 + \left(e^{-\kappa_1(t-s)} - e^{-\kappa_2(t-s)} \right) \underbrace{\epsilon_s}_{<0 \text{ news shock}} \quad (3)$$

- In the future, output growth rate is moving around x_t

Summary of the Paper: Theory

- Delayed response of **output** to **news (crisis trigger)**
- Delayed hikes of risk premium in response to news



Comment 1: Microeconomics Foundations

- Key assumption of the model: output growth rate is **exogenously** driven by a negative news shock ($x_{s,t}$)
 - However, empirically, it is easy to measure output dynamics but hard to quantify “news”
 - Question: what is the micro-foundation for news shock?
- Suggestion: News-driven business cycle literature (e.g., Beaudry and Portier, 2004, 2014)
 - Agents receive information about the economy's future technology shock ahead of the realization of that shock
 - Consumption and output are **endogenous** outcomes
 - Consistent with the assumed output dynamics in the paper

Example: Beaudry and Portier (2004)

- Final good is produced as CES composite of non-durable and durable (construction) goods

$$C_t = (aX_t + (1 - a)K_t)^{1/\nu}$$

Non-durable good is produced using labor

$$X_t = A_t L_t$$

Capital good accumulation

$$K_{t+1} = (1 - \delta) K_t + I_t$$

- Technology in non-durable good sector

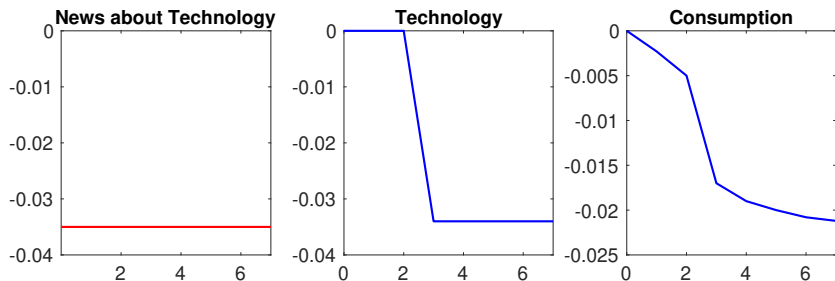
$$\log A_t = \rho \log A_{t-1} + \varepsilon_t$$

Agents receive news about the technology shock j periods ahead

$$s_t = \varepsilon_{t+j}$$

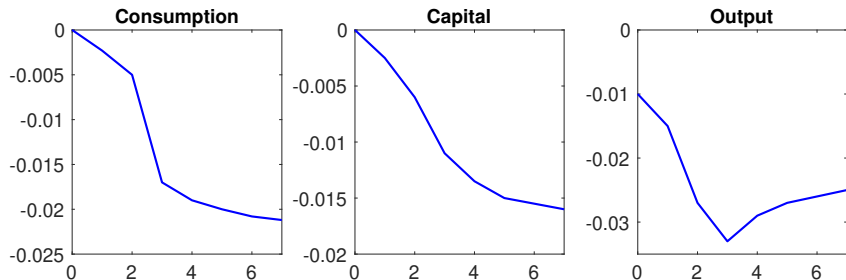
Impulse Response Functions

- Agent receives a negative signal about technology (Covid) at time 0. This negative technology shock is expected to arise at time 3.



- At time 0, news is received
- At time 3, technology shock is realized
- (Endogenous) delayed response of consumption to news

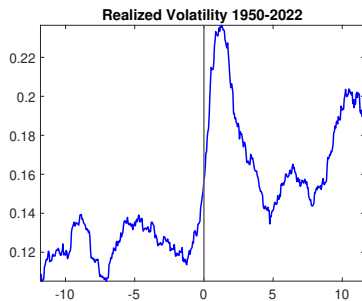
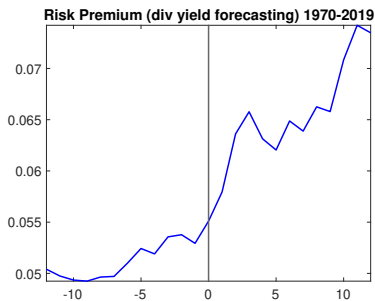
Impulse Response Functions



- A negative news shock lowers the marginal product of capital
- Agents reduce investment and slow down capital accumulation
- Risk aversion requires that consumption and output drop *gradually* over time

Comment 2: Alternative Empirical Measures

- Risk premium (Martin, 2017) (1996-2012) only covers 2 crisis
 - Predict realized return in the short horizon
- Alternative: e.g. dividend yield
 - Predict return over long horizons, suit for business cycle dynamics
- VIX (1990-2022) only covers 4 crisis
- Alternative: realized return volatility
 - Expected variance = realized variance in the model
 - Longer sample



Minor Comments: Quantitative Results

- Conditional moments

	Crisis (NBER=1)		Non-crisis (NBER=0)	
	Model	Data	Model	Data
Average consumption growth	-7.85%	0.23%	2.98%	5.87%
Consumption growth volatility	3.50%	8.32%	2.00%	2.59%
Excess stock return	7.321%	-18.99%	3.84%	10.16%
Return volatility	22.50%	19.75%	16.65%	17.09%

- Need more work on the conditional moments during crisis
- Use risk premium as excess return during crisis instead of using realized return
- More moments to match: e.g. serial correlation and cross correlation (leads and lags) of output, consumption, stock prices etc.

Conclusion

- Extremely interesting paper
- There is an interesting link between the paper and the literature on news-driven business cycles
- This literature may potentially provide a micro-foundation for the delayed response of consumption and output to news
- This paper is still preliminary, however contains a lot of interesting insights. I look forward to the next version