Simulated process (with shocks) spends most of the time near high and low intersections; rational investors choices

- Price volatility increases and price typically falls
- Market moves between “good” (low volatility, high price) and “bad” (high volatility, low price) regimes
- Regime switches driven by information acquisition and asymmetry, feedback from investors
- Effects can be potentially dramatic even without negative information of fundamentals

With more information:
- Dividend process follows: $D_t = \bar{D} + \rho (D_{t-1} - \bar{D}) + M_t$, $\rho \in [0, 1)$
- Riskless asset has return $R$; supply of risky asset is: $X_t \sim N(\mu_X, \sigma_X^2)$
- Dividend innovations decomposed as: $M_t = m_{t-1} + \theta_{t-1} + \epsilon_t$, corresponding to private knowledge, public knowledge, and random perturbation
- Precisions are given by: $\phi_t = Var [m_t + \theta_t] / Var [M]$, $\phi_t = Var [m_t] / Var [m_t + \theta_t]$
- Overlapping generating investors choose to become informed or not at a cost $c_t$
- Based on their information, they solve

$$f_t^{\phi_t} = \max_q E \left[ \frac{1}{2} \gamma Var [W_{t+1} | f_t^{\phi_t}] - \frac{1}{2} \gamma Var [W_{t+1} | f_t^{\phi_t}]^{\phi_t} / f_{t+1}^{\phi_t} \right]$$

Model solved by: market clearing and information equilibrium
- Demand of risky asset equals its supply
- Investor is indifferent between getting informed (at the cost) or not

There exists a market equilibrium with a linear price process as $P_t = a(f_t) + b(f_t)m_{t-1} - c(f_t)(X_t - \mu_X) + g\theta_t + d(f_t)D_t$
- There exists $(b, c, \lambda)$ such that $(b, c)$ defines a market equilibrium given $\lambda$, and $\lambda$ defines a possibly mixed information equilibrium given $(b, c)$

1. Level of knowable information model

$$f_t = \Pi_{[0,1]}(a_f + k_f f_{t-1} - a_f) + b_f \lambda (f_{t-1} - r), b_f > 0$$
- Informed fraction generally increases with precision
- Simulated process (with shocks) spends most of its time near high and low intersections
- Middle intersection is an unstable equilibrium
- Two regimes emerge from information choices

More information is available/more investors seek information
This drives up the price variance (in a dynamic model):
- information reduces uncertainty about the current dividend...
- ... but it increases uncertainty about end-of-period price (when more information becomes available about the next dividend)
With higher variance, more asymmetry, risk-averse investors require a higher return, lowering the price
This could be one factor (not the only one) in crashes and crises

With brokerage disclosure (a negative shock $\epsilon_{\phi_t}$ in our model)
- Prices of affected stocks become less informative
- $c(\phi_t)$ increases, implying greater price impact, less liquidity
- Hedge funds trade more aggressively on affected stocks
- Goldstein-Yang (2015) measure of trading intensity increases,

$$I_t = \lambda t \frac{\partial q_t}{\partial m_t} = \frac{b(\phi_t)}{c(\phi_t)}$$
- Hedge funds experience better investment performance
- Moving out of the region $\lambda(\phi_t) = 0$, the first investor to become informed has an increase in expected utility
- Sophisticated investors increase their information acquisition
- Conditional on large hedge fund presence, closure has smaller effect on price informativeness (marginal quantities decrease)
- Negative feedback stabilizes the price impact after brokerage closure

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2. Public-private mix model

$$\phi_t = \Pi_{[0,1]}(\phi_{t-1} + b_\phi \lambda (\phi_{t-1} + \epsilon_{\phi_t}), b_\phi < 0$$

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Selected references