Discussion of
Natural Expectations, Macroeconomic Dynamics, and Asset Pricing
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Question: Source of excess volatility, return predictability in risky asset returns?
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Assumptions

- Fundamentals process hump-shaped, with short-run persistence in growth rates, long-run mean reversion
- Agents overestimate long-run persistence of fundamentals by using fewer AR lags than in true DGP
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Model has “flavor” of bounded rationality
- Statistical motivation: Even in relatively large samples, typical model selection criteria tend to prefer low-order models
- Psychological motivation: Preference for simple models
Example: Simulated AR(40) sample path

40-period-ahead forecasts of dividend level
Subjective vs. objective expected returns

- Campbell-Shiller present value identity

\[
\frac{P_t}{D_t} = E_t \sum_{i=1}^{\infty} \Delta d_{t+i} - r_{t+i} = E_t^N \sum_{i=1}^{\infty} \Delta d_{t+i} - r_{t+i}
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- Following a string of high fundamentals growth rates...
  - \( E_t^N[\Delta d_{t+i}] > E_t[\Delta d_{t+i}] \), resulting in overpricing
  - \( E_t^N[r_{t+i}] > E_t[r_{t+i}] \)
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- In this model, subjectively perceived (= objective) expected returns are constant

- In canonical rational expectations asset-pricing models (difference habits, long run risks, ...) subjective (= objective) expected returns are counter-cyclical
1. Cyclicality of subjective expected returns
2. Learning
Counter-cyclical subjective expected returns – really?

1979

BusinessWeek

THE DEATH OF EQUITIES
How inflation is destroying the stock market
Page 64

MONEY MANAGEMENT
Indexing bonds to oil and gold
Page 78

CORPORATE STRATEGIES
Page 83

1999

DOW 36,000
THE NEW STRATEGY FOR PROFITING FROM THE COMING RISE IN THE STOCK MARKET

"Rock-solid investment advice... Long-term investors can place it on an altar next to the works of Benjamin Graham and Peter Lynch, as well as Warren Buffett's annual homilies to his Berkshire Hathaway investors."

—Knight A. Kiplinger,
Kiplinger's Personal Finance Magazine

JAMES K. GLASSMAN & KEVIN A. HASSETT
Pro-cyclical variation in subjective expected returns

Individual investor one-year expected equity premium
- American Association of Individual Investors survey

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Pro-cyclical variation in subjective expected returns

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- Following a string of good fundamental news, with (substantially) greater than zero measure of rational investors, ...
  - \(E_t^N[\Delta d_{t+i}] > E_t[\Delta d_{t+i}]\) as before
  - But now overpricing dampened: \(P_t/D_t\) not as high
  - \(E_t^N[r_{t+i}]\) is high (pro-cyclical), not constant
  - \(E_t[r_{t+i}]\) is low (counter-cyclical), but less low than with zero rational investors
Learning

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As implemented in the paper, natural expectations still share one aspect with rational expectations models: Agents are assumed to know the true parameters of the lower order AR model they use to construct forecasts.
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More realistic view

- Agents have to construct forecasts based on real-time parameter estimates
- Tendency to use limited amount of historical data in parameter estimation
  - Learning from experience (Malmendier and Nagel 2011)
  - Constant-gain learning (e.g. Orphanides and Williams 2005)
Example: Learning with fixed window size $N = 50$

40-period-ahead forecasts of dividend level
Learning might also be helpful if one wants to match model-implied natural expectations with survey data on beliefs.
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Learning might also help to endogenize the number of AR lags in construction of forecast.

- Right now, agents’ AR order viewed as free parameter that is (informally) picked to fit asset price data.
- Viewed as a model selection problem: AR order chosen in real time based on model selection criteria like BIC.