What drives Q and investment fluctuations?

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Overview

The main result

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- Cash flow changes vs discount rates matter more than we think to explain fluctuations in managers decisions.
- The authors show it cleanly using an Euler equation and a Campbell and Shiller (1988) decomposition

A quick summary

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  - Changes in expectations of profitability growth
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- **Contribution 3** Most of the variance goes to marginal Q

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  - Why does it seem that investors care about discount rates and not managers?
  - Authors suggestion: Waves of investor sentiment?
  - Or maybe changes in risk aversion matter for investors' valuations and not for managers' perceived benefit from investing?

Methodology

- Starting point: the first order condition of firm's optimization problem as in Liu, Whited and Zhang (2009)

$$R_{i,t+1} = \frac{\overbrace{(1-\tau_{t+1})\left[\alpha\frac{Y_{i,t+1}}{K_{i,t+1}} + \frac{a}{2}\left(\frac{I_{i,t+1}}{K_{i,t+1}}\right)^2\right] + \tau_{i,t+1}\delta}^{M_{i,t+1}\text{ Marginal profits}} + (1-\delta)\overbrace{\left[1 + (1-\tau_{t+1})\frac{a}{2}\left(\frac{I_{i,t+1}}{K_{i,t+1}}\right)\right]}^{1+Q_{i,t+1}\text{ Marginal }Q}}{\underbrace{1 + (1-\tau_t)\frac{a}{2}\left(\frac{I_{i,t}}{K_{i,t}}\right)}_{1+Q_t\text{ Marginal }Q}}$$

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- Estimate return on debt using an ordered-probit model

Methodology: Present Value relation

- Derive a present value relation from the first order condition:

$$R_{t+1} = \frac{(1-\delta)(1+Q_{t+1}) + M_{t+1}}{1+Q_t}$$

à la Campbell and Shiller (1988)

$$mq_t = c + \underbrace{\sum_{j=1}^{\infty} \rho^{j-1} \mathbb{E}_t r_{t+j}}_{\text{Discount Rates}} - \underbrace{\sum_{j=1}^{\infty} \mathbb{E}_t \rho^{j-1} \Delta m_{t+j}}_{\text{Growth on marginal profitability of capital}}$$

Methodology: Predictive Regressions

Predictive regressions

- Weighted long-horizon regressions following Cochrane (2008, 2011) and Maio and Santa-Clara (2015) for different horizons.

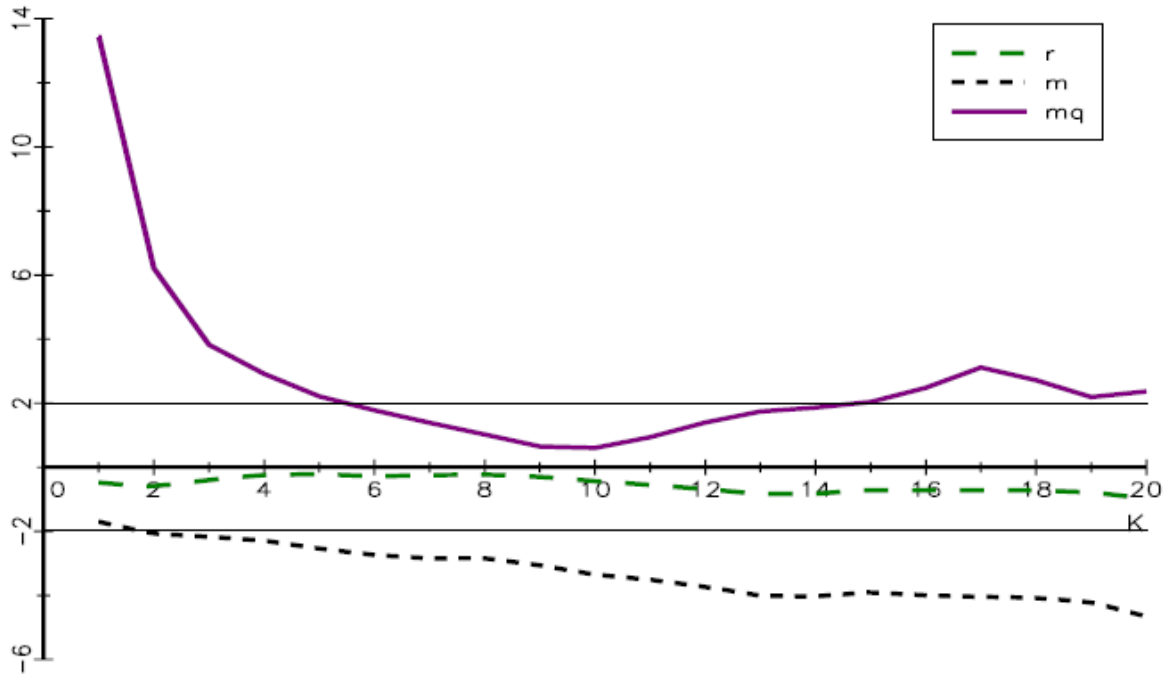
$$\sum_{j=1}^{K} \rho^{j-1} r_{t+j} = a_r^K + b_r^K mq_t + \epsilon_{t+K}^r$$

$$\sum_{j=1}^{K} \rho^{j-1} \Delta m_{t+j} = a_m^K + b_m^K mq_t + \epsilon_{t+K}^m$$

$$\rho^K mq_{t+k} = a_{mq}^K + b_{mq}^K mq_t + \epsilon_{t+K}^{mq}$$

Methodology: Results

Slopes and t-statistics (selected results)



Panel B (t-stats)

Methodology (cont.)

- mq_t predicts future mq_{t+k} in the first years
- mq_t predicts future m_{t+k} up to 20 years.
- No return predictability of mq_t on r_{t+k}
- Similar results based on value or equally weighted portfolios, or single vs VAR based regressions

General Feedback

- Interesting results arising from a very simple but powerful idea.
- I personally like the link that the authors make with the Campbell Shiller decomposition during the paper. It makes it intuitive and easy to follow.
- Resurrect interest on predictability. Most papers in the Q-theory literature focus on cross-sectional stories. Clear way of separating from the rest.

1 main comment

Economic relevance

- Can you present your results like in Cochrane's presidential address? Plot in the same graph a time series of Δm_{t+k} and a scaled time series of mq_t.
- How economically significant is the prediction? Does it get better with horizon?
- Perhaps study the co-integration between m_t and q_t?

Suggestions

- If m_t and q_t are cointegrated, how fast are deviations corrected? (ECM) Is it a long or a short run story?
- I like the original present value relation without linearising. It would be nice to see more analysis on the original formula. GMM Estimators could allow you to work with non-linear models.

$$1 + Q_t = \sum_{k=1}^{\infty} (1-\delta)^{k-1} \mathbb{E}_t \left[\frac{M_{t+k}}{R_{t \to t+k}} \right]$$

- Do results hold with asymmetric adjustment costs as in Zhang (2005), every quarter an average 18.2% of firms record negative gross investment (Clementi and Plazzo 2018)

Conclusions

- Very interesting empirical evidence
- Q-theory of investment applied to time series data rather than cross-sectional data.
- Cash flow channel vs Discount rate channel

Thank you!
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