Investment Lumpiness and Equity Returns

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Discussed by

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Key Takeaways

Asset pricing implications of lumpy investment

1. A closed-form "**expected distortion**" Γ that captures the average gap between a firm's actual and optimal capital stock.

$$\Gamma \propto \sqrt{\text{Expected inactive duration}} \times \text{skew-style moment ratio of } |\Delta k|$$

2. Sorting industries on the measure and building a **high-minus-low portfolio**
   - Annual avg. returns approx. **3.9 %** (value-weighted),
   - Annual CAPM alphas of approx. **5.5%** (value-weighted),
   - A **negative** market beta.
3. **Parsimonious two-shock model** (aggregate productivity and "adjustment friction" shocks) with heterogeneous fixed costs reproduces both the positive alpha and negative beta puzzle.

Mechanism

Why does expected distortion earn a premium?

- **High-friction firms** rely more on **existing capital**, so their cash flows co-move mainly with aggregate **productivity shock** (high price of risk).
- **Low-friction firms** tilt their value **growth options**, their pay-offs are tied to aggregate **adjustment friction shock** (low price of risk).
- Because **friction shock dominates market variance**, low-friction firms inherit higher betas but lower risk premia.
  The opposite holds for high-friction firms $\rightarrow$ higher expected returns but lower market betas.

Mechanism

From quantitative model

- Two aggregate shocks: productivity shock x and adjustment friction shock z

  Volatility: $\sigma_x = 0.06 < 0.5 = \boldsymbol{\sigma_z}$

  Price of risk: $\boldsymbol{\lambda_x} = 0.7 > 0.2 = \lambda_z$ (Table 4)
- Two types of firms: low friction L and high friction H

  Exposure to productivity shock: $\beta_x^L = 0.892 < 1.383 = \boldsymbol{\beta_z^L}$

  Exposure to adjustment friction shock: $\boldsymbol{\beta_x^H} = 1.189 > 0.187 = \beta_z^H$ (Table 6)
- Market beta:

$$\boldsymbol{\beta_m^L} = \frac{\mathrm{Cov}(R^L, R_m)}{\mathrm{Var}(R_m)} \approx \frac{\beta_x^L \sigma_x + \boldsymbol{\beta_z^L \sigma_z}}{\mathrm{Var}(R_m)} > \frac{\beta_x^H \sigma_x + \beta_z^H \sigma_z}{\mathrm{Var}(R_m)} \approx \frac{\mathrm{Cov}(R^H, R_m)}{\mathrm{Var}(R_m)} = \boldsymbol{\beta_m^H}$$

- Expected returns:

$$\mathbb{E}[\mathbf{R^L}] = \beta_x^L \lambda_x + \beta_z^L \lambda_z < \beta_x^H \lambda_x + \beta_z^H \lambda_z = \mathbb{E}[\mathbf{R^H}]$$

Contributions

1. **Measurement innovation**
   - Literature: Discrete binary spike share. Duration alone misses the asymmetric nature of investment spikes.
   - This paper: a closed-form, data-recoverable measure that captures both the **inactive duration** and the **asymmetry** of investment spikes.
2. **Lumpy investment and asset pricing**
   - Im and Park (Economics Letters, 2020): **time-series predictability** of aggregate stock returns.

     The proportion of firms with investment spikes forecasts excess stock returns negatively, suggesting cyclical discount-rate dynamics.
   - This paper: link heterogeneous fixed adjustment costs across industries to the **cross-section of stock returns**.

Comment I

Are GE feedbacks from investment to pricing abstracted away?

- Carlson, Fisher, and Giammarino (JF, 2004) and Cooper (JF, 2006): **no significant effect** on expected stock returns.
- Thomas (JPE, 2002): aggregation reduces the effect of lumpy investment in equilibrium business cycle models.
- Hall (QJE, 2004): nonconvexities are not important for estimating investment Euler equations at the industry level.
- Fiori (JME, 2012): wage and interest-rate responses offset much of the non-convex investment shock.

Comment I

Suggestion

- This paper: heterogeneous fixed adjustment frictions lead to significant expected return differences across industries.
- If GE feedbacks dampen the expected distortion spread, the **5.5% alpha could shrink** when the same friction is embedded in a **production-based asset-pricing GE framework**.
- If many firms share high frictions, aggregate investment and risk-free rate dynamics could change, potentially feeding back into the pricing results.
- Suggestion: Report the proportion of firms with high friction, check robustness with quintile and decile portfolios.

Comment II

The rise of intangible adjustment costs

- Since the mid-1990s the investment frontier has shifted toward **intangible assets** that do not hit the Property, Plant & Equipment (PPE) account and have **different adjustment technology**.
- If high-Γ industries are simply those that still rely on old-economy tangible capital, would the Γ spread be subsumed for the **intangible value factor** from Eisfeldt, Kim, and Papanikolaou (2020)?
  Conversely, sectors that invest **heavily in intangibles** may appear to have **low lumpiness** (few PPE jumps) even though they face large, non-convex costs when re-platforming their software stack or reorganising human capital.
- Suggestions: check R&D-to-sales by Γ-quartile, run spanning tests with other factors.

Comment IIII

Endogeneity / reverse causality

- Real options channel: when expected cash-flow growth or discount-rate premia rise, managers rationally **delay investment to preserve option value**. Hence, high expected returns $\rightarrow$ longer inaction $\rightarrow$ high expected distortion.
- Bloom (Econometrica, 2009): uncertainty shocks trigger a "wait-and-see" pause in hiring and capex, even when adjustment costs are unchanged.
- Suggestion: instrument expected distortion with exogenous drivers of capital adjustment costs (e.g., environmental regulation shocks, changes in tax depreciation rules).

Other Comments I

- **Measurement-error in capital stock**: Compustat's book capital is known to contain sizeable reporting noise (inflation adjustments and mergers). Since Γ uses $(K^* - K)^2$ terms, any error in K mechanically inflates the distortion.
- Suggestions: (1) instrument capital with lagged PPE, or (2) use inflation-adjusted perpetual-inventory capital from BEA's KLEMS as a robustness check; (3) show that excluding heavy-write-off industries (e.g., telecom post-2001) leaves the alpha intact.

Other Comments II

- Besides physical adjustment costs, Γ could partly capture financing frictions if equity issuance is correlated with investment bursts. Would controlling for issuance frequency tease this out?
- Explain why certain industry like Mining has the highest expected distortion while Construction/Retail has the lowest distortion. I would report Figure 2 with more industries.
- Figure 4's cumulative-return plot would benefit from shading NBER recessions to visualize acyclicality claim.
- Repeat annual frequency to check that results are robust to lower-frequency smoothing.

Conclusion

- An innovative measure motivated by a stylized model.
- Very interesting mechanism, backed with empirical results and a quantitative model.
- All the best with polishing the paper!