The Role of Chinese State-Owned Enterprises in Portfolio Beta Hedging

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Outline

Introduction

- ▶ Chinese capital market is highly speculative and state-influenced.
- ▶ SOEs dual role: stabilizing agents and structurally inefficient companies controlled by the government.
- ▶ SOEs presence in critical sectors.

Research Question:

- ▶ Do Chinese SOEs provide higher diversification benefits compared to private firms across different economic cycles?

Data

- Sample: total of 312 A-share firms (171 SOEs, 141 non-SOEs), retrieved from 2012 to 2025.

- Market portfolio: Shanghai Composite Index.

- Risk-free rate: 10-year Chinese government bond yield.

- Economic cycles identified from the Li Keqiang Index. Recession and expansion defined as values below 25th and above 75th percentile, respectively.

- Firm-level SOE ownership and GICS sector classification collected at a single point in time and assumed as fixed.

Data Characteristics
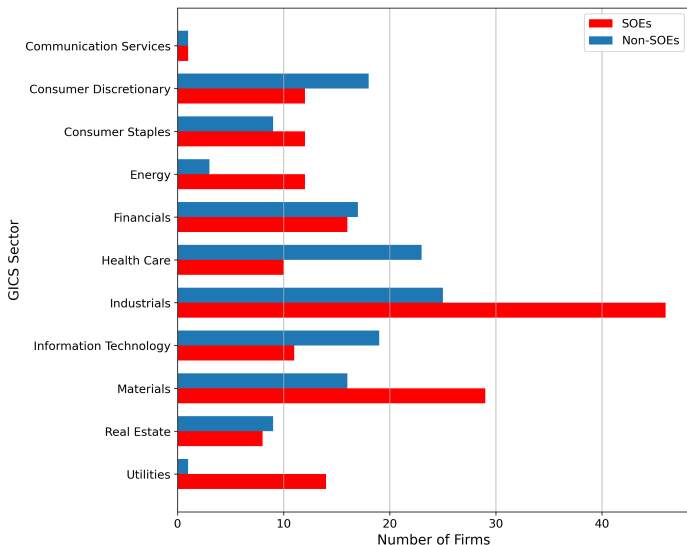
Source: LSEG Refinitiv database

Methodology

CAPM 5-year Monthly Rolling Window Regression:

$$(R_{i,t} - R_{f,t}) = \alpha_t + \beta_{i,t}(R_{m,t} - R_{f,t}) + \varepsilon_t$$

▶ HAC SEs.

Second-stage regression:

$$\hat{\beta}_{i,t} = \gamma_0 + \gamma_1 \text{Recession}_t + \gamma_2 \text{Expansion}_t + \gamma_3 SOE_i$$
$$+ \ \gamma_4 (\text{Recession}_t \times SOE_i) + \gamma_5 (\text{Expansion}_t \times SOE_i)$$
$$+ \sum_{s=1}^{S-1} \delta_s \text{Sector}_{i,s} + \nu_{i,t}$$

▶ Clustered SEs at firm level.
▶ Controls: GICS sector classification fixed effects.

Main Findings

- **Sector fixed effects** are the strongest explanatory factor for firm-level beta.
  - R^2 increases from 0.019 with no controls to 0.183 with sector dummies.
- **State ownership (SOE) factor** has no statistically significant effect on beta.
- **Macroeconomic cycles effects** have statistically significant effects on the baseline sector:
  - Recession reduces beta: -0.027 (significant at 5% level)
  - Expansion increases beta: $+0.061$ (significant at 1% level)

Robustness Checks

- Tested 1-year, 3-year, 5-year windows.
- 1-year: high volatility, low R^2 (0.038).
- 3-year: some stability, modest R^2 (0.149).
- 5-year: best balance of smoothness and fit ($R^2 = 0.183$).

Limitations

- ▶ Data availability.
- ▶ State ownership and sector classification are assumed as time-invariant.
- ▶ SOE variable definition.
- ▶ CAPM model assumptions may not hold in China.
- ▶ The Li Keqiang Index economic phases identification is percentile-based.
- ▶ SOEs endogeneity: government ownership is not random.

Future Research

▶ Utilize Chinese-specific datasets (e.g., Wind).

▶ Use time-varying ownership and sector classification.

▶ Include Fama-French 3 factor model or other multifactor models.

▶ Employ WLS regressions using market cap.

▶ Alternatively, regress beta with stocks with same debt level and same sector membership.

▶ Use an IV to control for state ownership status (e.g., political connections, size).

▶ Use alternative indicators for economic cycles.

Conclusion

Main Takeaways:

▶ Sector classification has a significant effect in explaining beta evolution across firms.

▶ Economic cycles significantly affect beta dynamics of a firm within a sector.

▶ State ownership factor exhibit lower magnitude and is statistically insignificant.

Conclusion: the effect of state ownership on systematic risk (beta) remains an open question, requiring further exploration.