Attributes of Monopolistic REITs

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Summary of Findings

1. REITs are more monopolistic than the average firm
2. Monopolism varies greatly by REIT vertical
3. Occupancy and monopoly power are strongly related
4. Sunbelt exposure relates positively with monopolism before 2023, but negatively after (which suggests overbuilding)
5. COVID significantly impacted REIT monopolism
6. REIT monopolism is not as persistent through time as that of nonfinancial corporations
7. Unlike nonfinancials, REITs' power does not predict forward looking risk-adjusted returns well

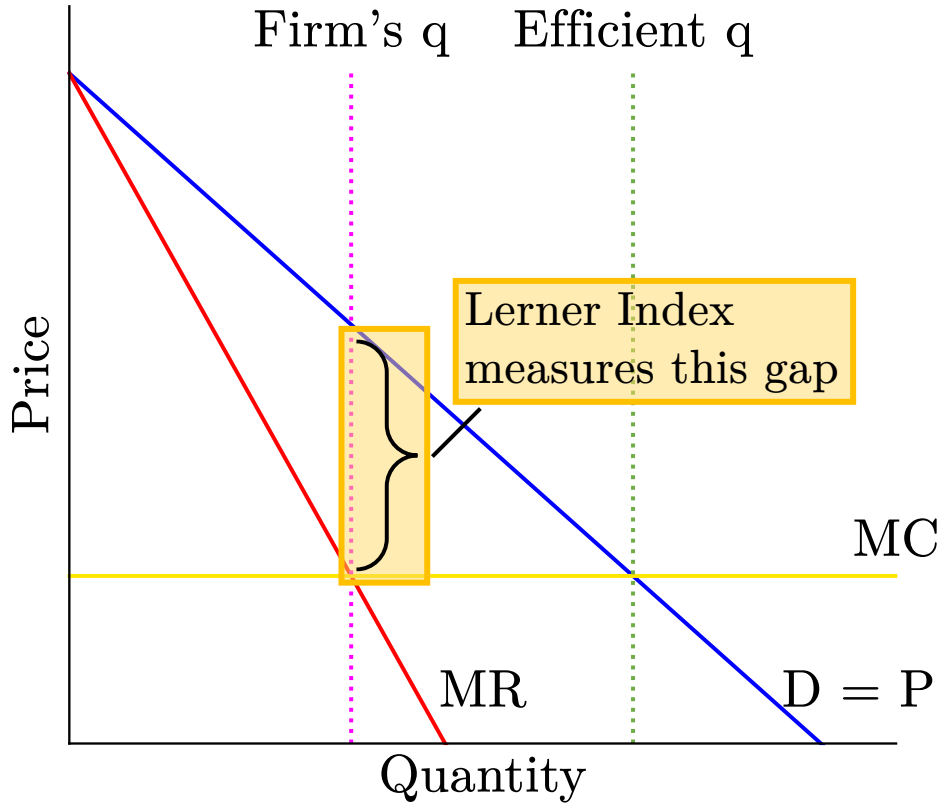
Measuring Monopoly Power

The Lerner Index

Lerner Index

- Theoretically rigorous measure of market power
- Gap between economic marginal price and cost
  - Considers required return to capital and accounting profit
- **"For each additional dollar of revenue, how much goes to monopoly profits?"**
  - In CRE, for each *additional* lease, what percent of rent goes to monopoly profits

See the appendix for Lerner derivation and calculation methodology.

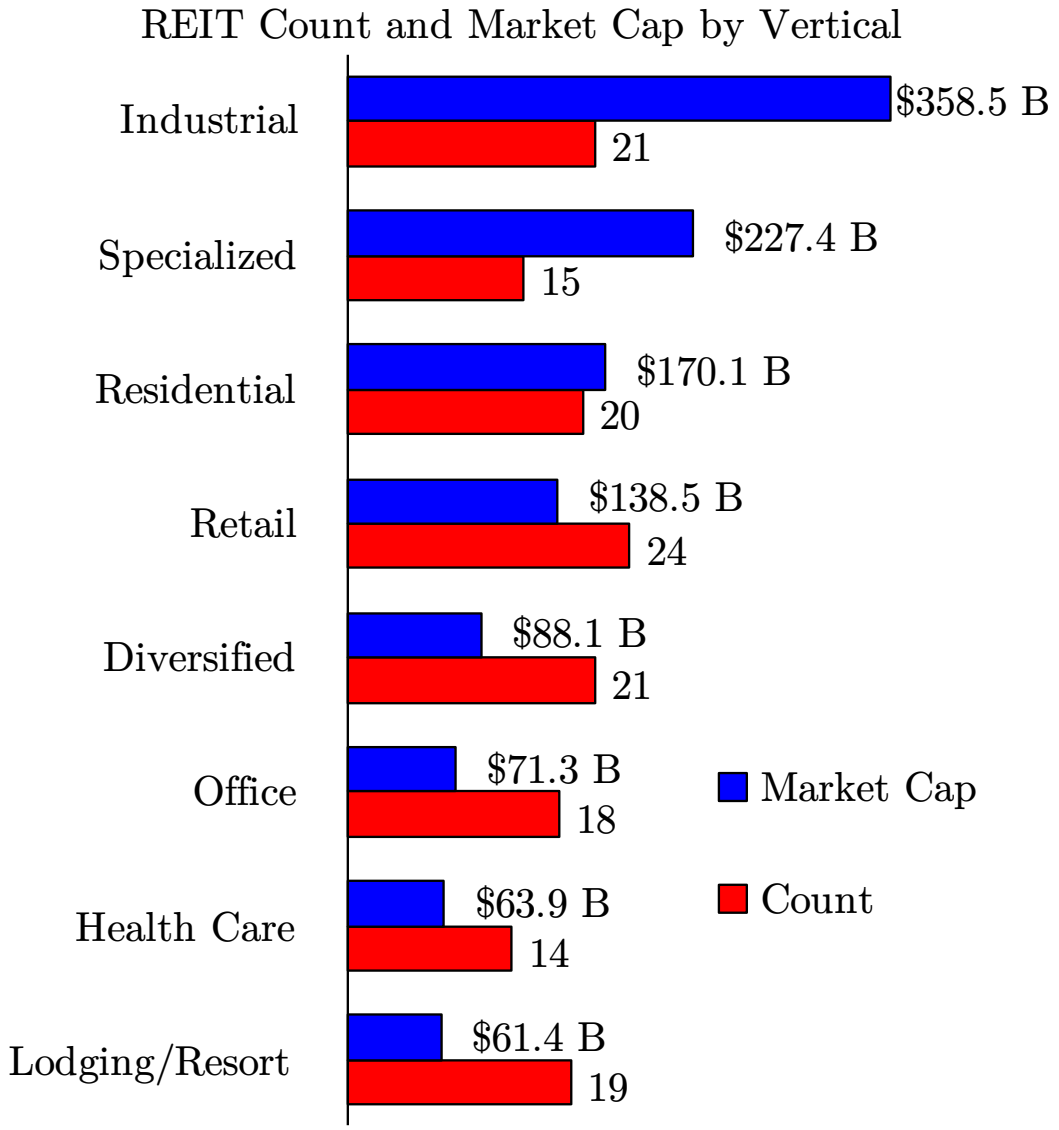


$$\text{Lerner Index} = \frac{\text{Price} - \text{Accounting Costs} - \text{Required Returns}}{\text{Price}}$$

$$\begin{aligned} \text{Lerner Index} > 0 &\Rightarrow \text{Monopoly Power} \\ \text{Lerner Index} = 0 &\Rightarrow \text{Perfect Competition} \\ \text{Lerner Index} < 0 &\Rightarrow \text{Excessive Competition} \end{aligned}$$

Data

- Wharton Research Data Services (WRDS)
- Quarterly financials for 150 REITs over 10+ years
- Comparisons to nonfinancial corporations comes from my honors thesis, "Systematic Risk and Measures of Monopoly power"



1. REITs are more monopolistic than nonfinancial corporations.

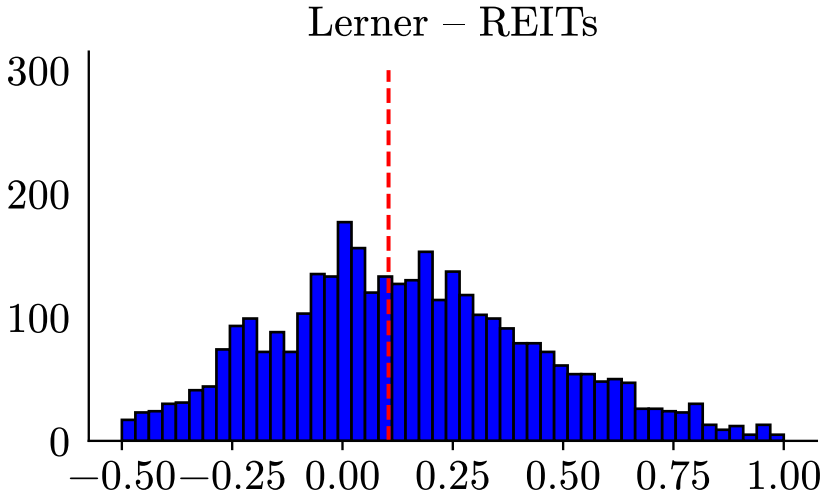
REIT Market Power in Context

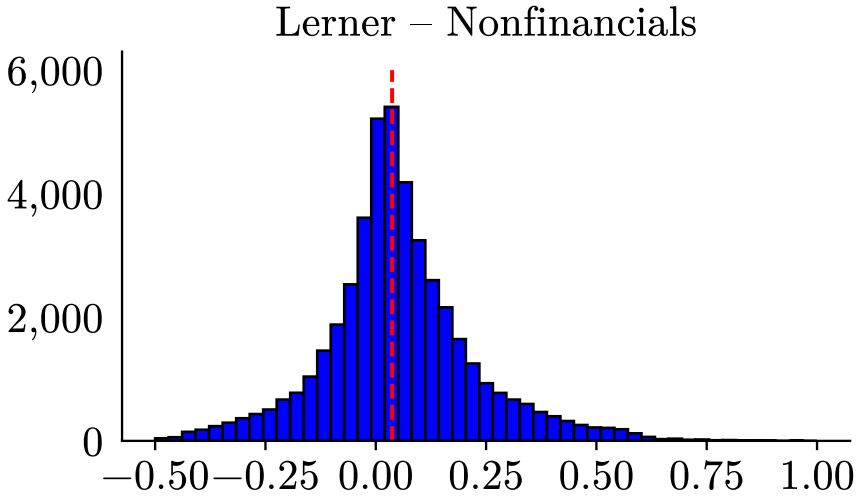
REITs

- Lower Risk
  - Median Unlevered Beta: 0.53
- Higher variance in monopolism

Nonfinancials

- Normal Risk
  - Median Unlevered Beta: 0.94
- Lower variance in monopolism





Mean	0.108
Median	0.104
Std. Dev	0.439

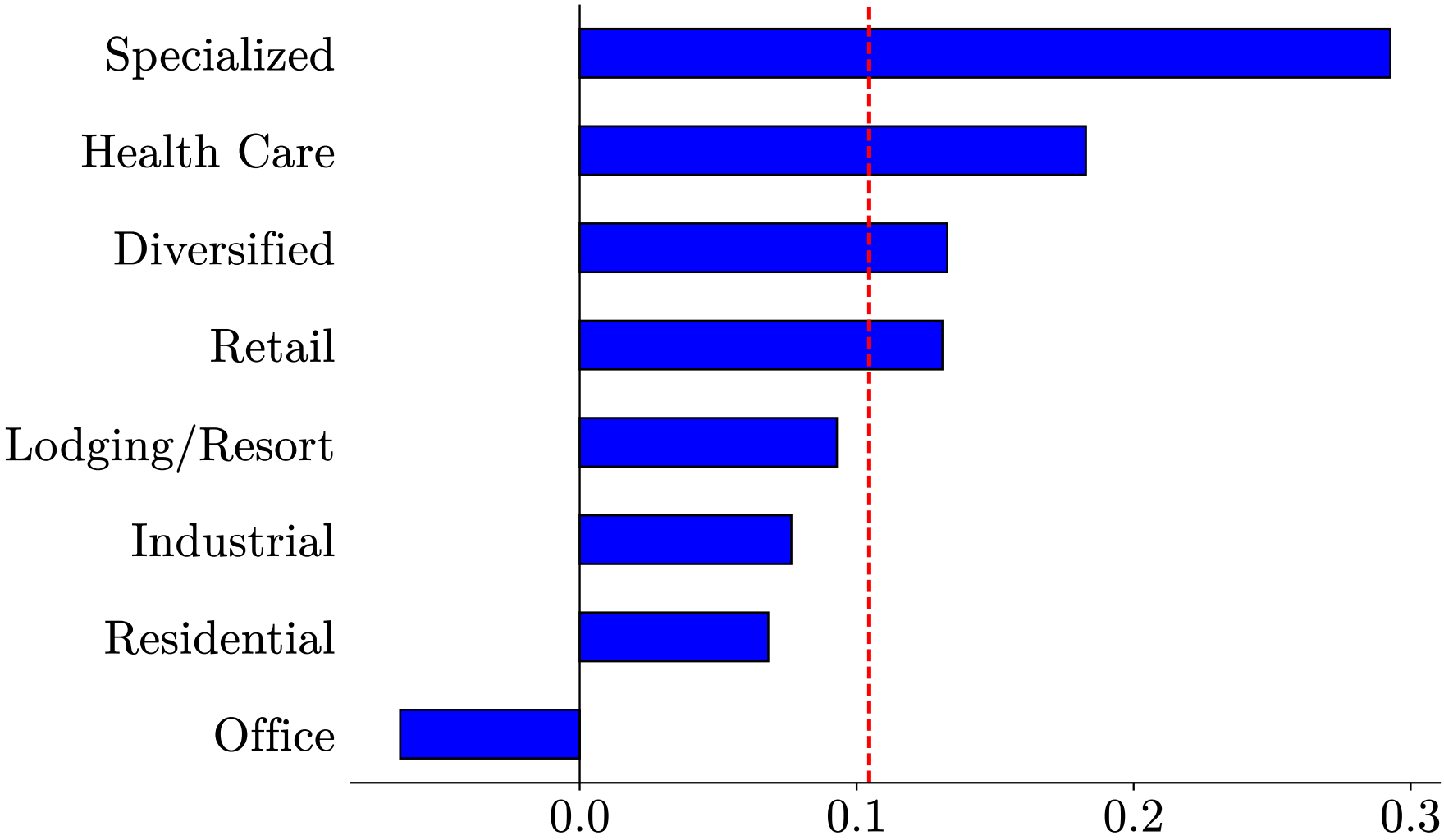
REITs more than twice as monopolistic versus nonfinancials.

Mean	0.051
Median	0.037
Std. Dev	0.171

But that monopolism comes with increased variance...

2. Monopolism varies significantly by REIT vertical.

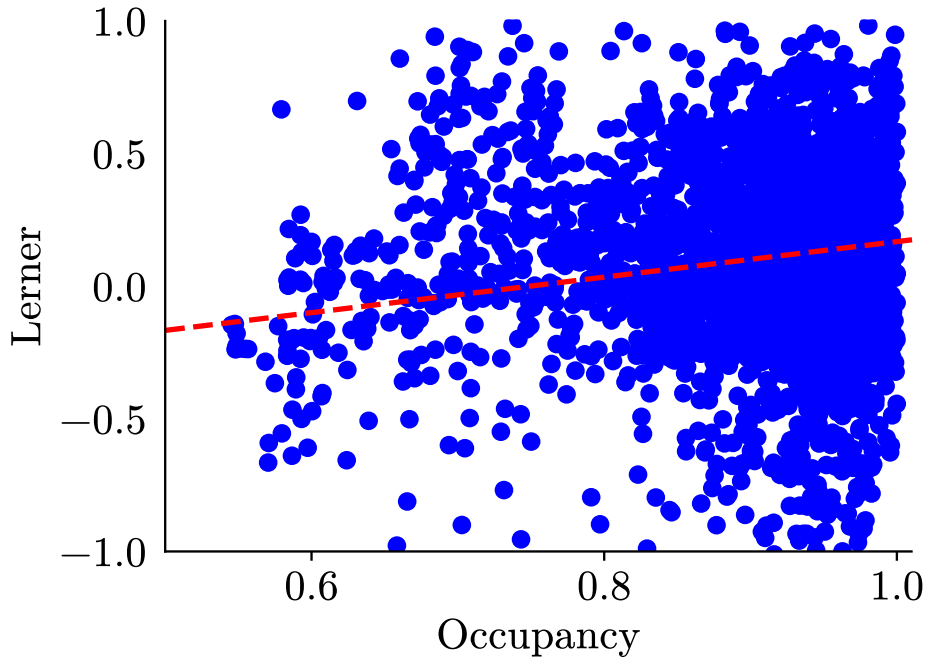
Lerner by REIT Vertical



3. Occupancy and monopoly power are strongly related.

Occupancy and Power

- *Strong* positive relationship between a REIT's occupancy levels and its market power
  - Even with controls for REIT vertical
- Further indicates inelastic supply in real estate
- One standard deviation increase in occupancy (~9.5 percentage points) results in an increase in the Lerner of over 0.06
  - That's a 50% boost in the median Lerner for REITs



$$\text{Lerner}_i = b_0 + b_1(\text{Occupancy}_i) + \Gamma_{v,t}$$

Occupancy (b_1)	0.669 ***
	(0.081)

Regression controls for REIT vertical (v) and year (t).

4. Sunbelt exposure relates strongly with monopoly power in interesting ways.

Sunbelt and Monopolism

Pre-COVID	*Post-COVID*
• Underbuilt Sunbelt with influx of firms and households	• CRE commentary suggests Sunbelt markets overbuilt
• High rents and strong returns for market incumbents	• Even multifamily faces headwinds from oversupply
• *Positive* relationship in 2010s	• *Negative* relationship in 2023

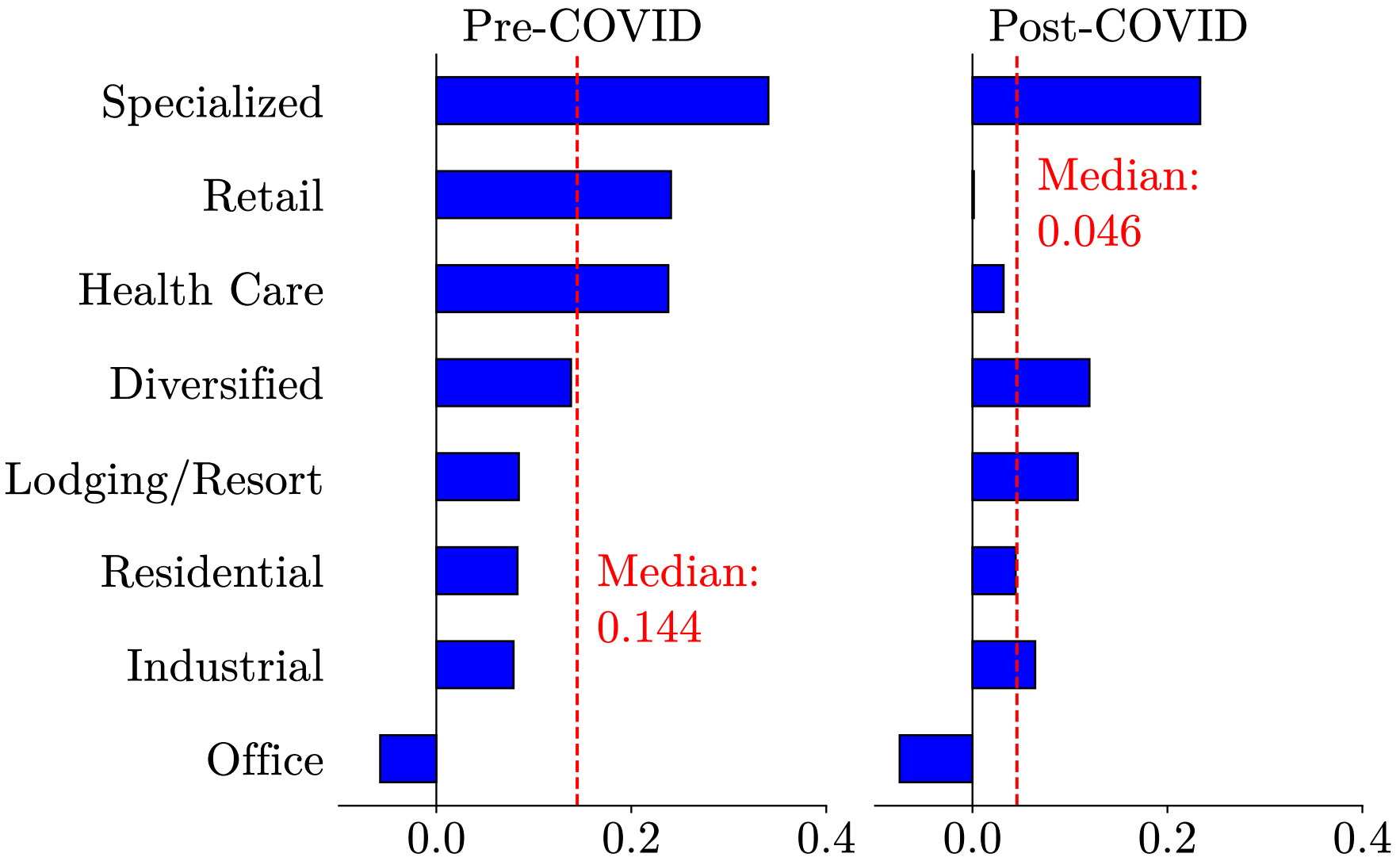
$$\text{Lerner}_i = b_0 + b_1(\%\ \text{Sunbelt}_i) + \Gamma_{v,t}$$

	2012-2023	Only 2023
% Sunbelt (b_1)	0.045 **	−0.188 ***
	(0.021)	(0.072)

Regression controls for REIT vertical (v) and year (t), except for "Only 2023" model which just controls for vertical.
Sunbelt includes AL, AR, AZ, CO, FL, GA, LA, MS, NC, NM, NV, OK, SC, TN, TX, UT.

5. COVID significantly impacted REIT monopolism.

Lerner Pre- and Post- COVID



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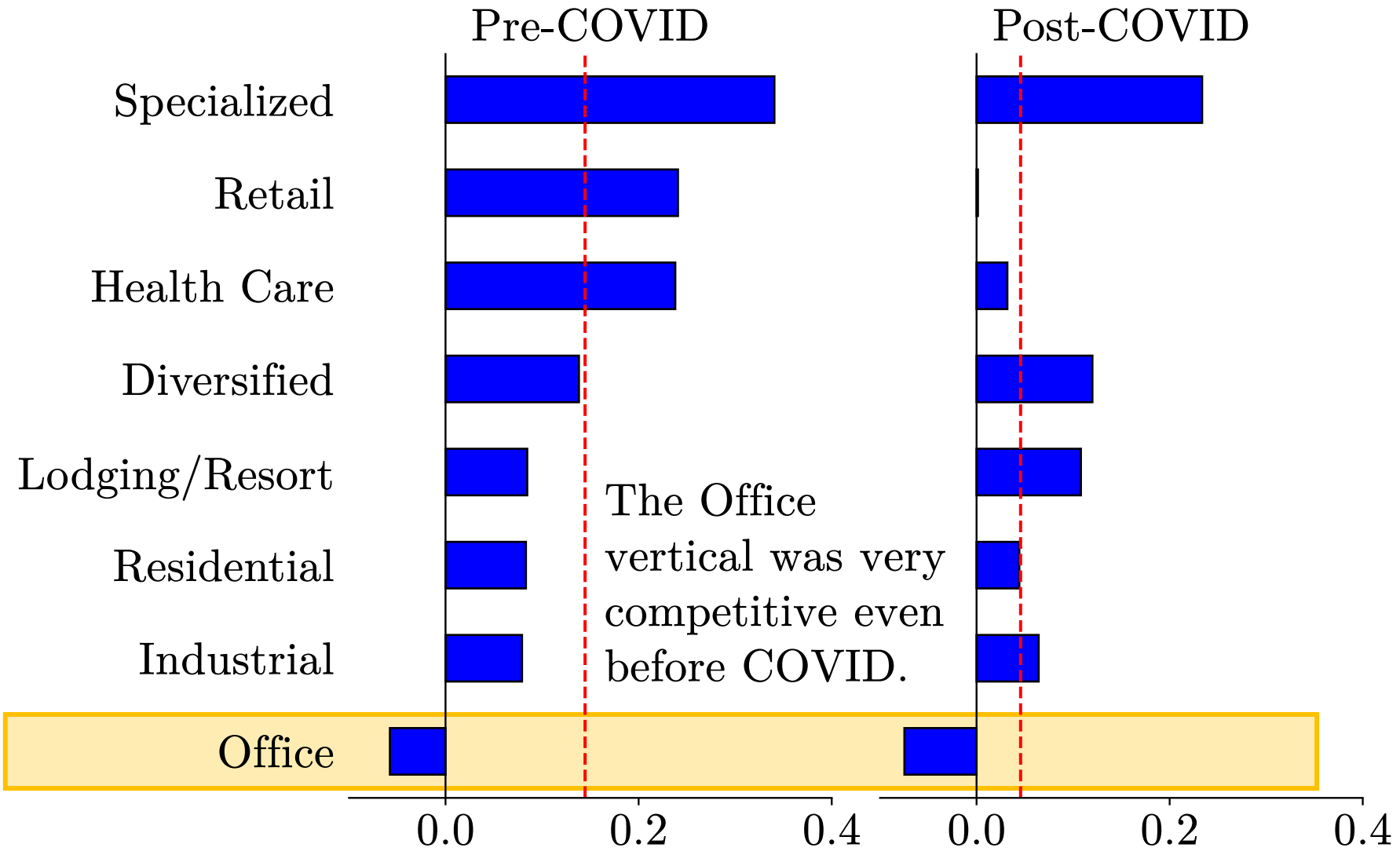

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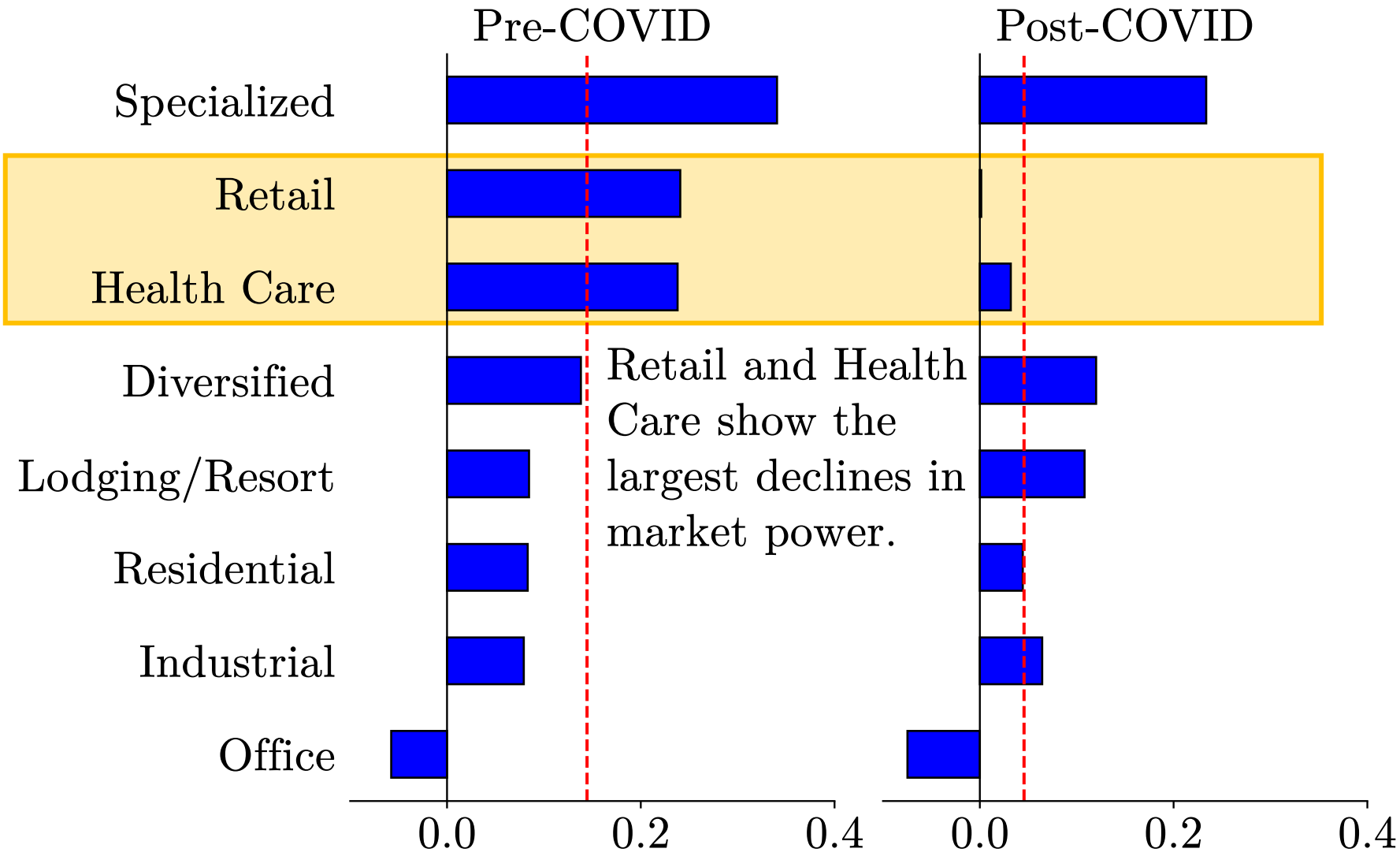

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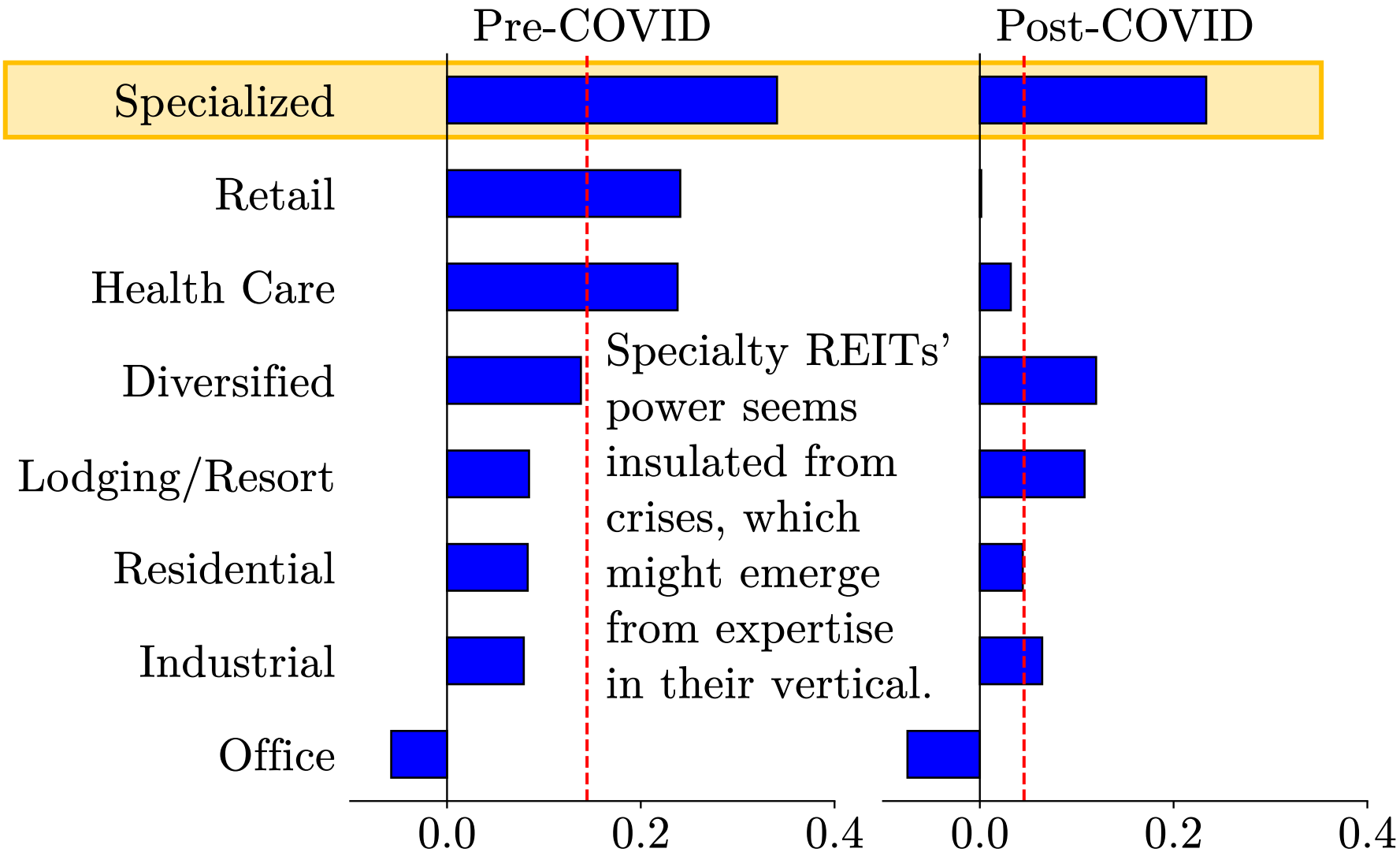
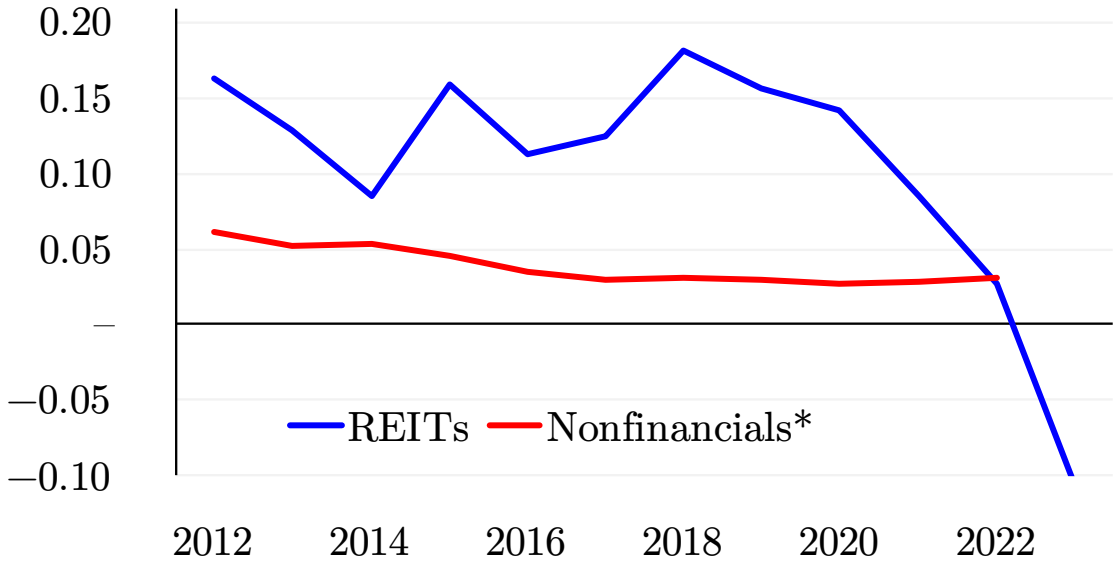


6. REIT monopolism less persistent through time versus nonfinancial corporations.

Persistence of Power

- REIT monopolism less stable through time
  - Industry- and firm- level
- Less monopolism predictability than nonfinancials
- Autoregressive analysis shows that REITs lose monopoly power almost twice as quickly as other firms, even when excluding COVID effects
- **Indicates industry-wide inelastic supply**



$$\text{Lerner}_{i,t+5 \text{ years}} = b_0 + b_1(\text{Lerner}_{i,t})$$

	REITs		Other
	inc. COVID	ex. COVID	Corps.
5y AR Coef.	0.152	0.096	0.249
	(0.014)	(0.016)	(0.006)
Intercept	0.080	0.167	0.015
	(0.007)	(0.010)	(0.001)

Nonfinancials data only spans 2012-2022.

7. Unlike nonfinancial corporations, using monopoly power to predict REIT returns might not be possible.

Monopolism and Excess Returns

$$\alpha_i = b_0 + b_1(\text{Lerner}_i) + b_2(\text{Mkt. Cap}_i) + \Gamma_{v,t}$$

risk-adjusted return

	Contemporaneous Alpha		5-Year Forward Alpha	
	REITs	Nonfinancials	REITs	Nonfinancials
Lerner (b_1)	0.0014 ***	0.0085 ***	0.0004	0.0045 ***
	(0.0003)	(0.0004)	(0.0004)	(0.0006)
$\Delta\alpha$ for $1\Delta\sigma$ in Lerner	0.0006	0.0004	0.0002	0.0002
Annualized $\Delta\alpha$	0.74%	0.52%	0.23%	0.28%

From 2012 to 2023, an investor could have earned an excess return by investing in monopolistic nonfinancial firms or REITs, but for REITs it could just be luck.

Regressions control for market capitalization, industry/vertical (v), and year (t).

Conclusion

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- This research offers a quantitative approach to assessing real estate market dynamics.
  - It confirms expectations regarding occupancy and sunbelt exposure, while opening new questions about persistence of power.
- Though I focus on REITs, this research is applicable to real estate at the asset level.
- Current academic research in this area is exceptionally limited.
  - Future research should use the public data REITs provide to better understand this industry.

Appendix

Lerner Index and Derivation and Calculation

Calculating the Lerner

$$P = \text{Price}, c = \text{Marginal Cost}, q = \text{quantity}$$

$$\text{Theoretical Lerner Index: } \frac{P-c}{P} > 0 \Rightarrow \text{Monopoly Power}$$

$$\text{Economic Profit: } (EBIT - RR_{IC}) \approx \Pi$$

$$\Pi = Pq - cq - \text{Fixed Costs}$$

$$\Pi = (P-c)\,q - FC$$

$$\Pi = \left(\frac{P-c}{P}\right) Pq - FC$$

Calculating the Lerner

- We can estimate the Lerner using an approximation for economic profit and revenue
  - Earnings before interest and taxes minus the required return to the firm's invested capital
- We are given (or we can calculate) those variables, allowing us to approximate the Lerner and fixed costs
- 20-quarter rolling regressions

$$\Pi = \left(\frac{P-c}{P}\right) Pq - FC$$

Estimate Lerner with

$$(EBIT - RR_{IC}) = c_0 + m_{\text{Lerner}}(\text{Revenue})$$

Calculate Required Return with

$$RR_{IC} = \text{IC}(\beta_{UL} \times ERP + RFR)$$

Unlevered Beta

$$\beta_{UL} = \frac{\beta_L}{1 + (1-\tau)(\frac{\text{Debt}}{\text{Equity}})}$$