

Rents and Intangibles: a Q+ Framework by Crouzet and Eberly

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July, 14th 2020



Motivation

- Worrying trends in US macroeconomy
 - ▶ Declining labor shares in output (e.g., Karabarbounis and Neiman (2013))
 - ▶ Rise of markups (e.g., De Loecker et al. (2020))
 - ▶ Rise of concentration in product markets (e.g., Autor et al. (2020))
 - ▶ Rise of monopsony power in labor markets (e.g., Benmelech et al. (2018))

⇒ Common theme: rise of corporate market power

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- market power creates a wedge between average Q and marginal q (Hayashi (1982))

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This paper explores instead the role of **intangible capital**

What the paper does: theory

Extends Hayashi (1982) to include intangibles:

■ Rents & 1 type of capital: $V = qK + \text{NPV}(\text{profits} - K \times \text{marginal profits})$

■ No rents, 2 types of capital: $V = K^{\text{physical}} q^{\text{physical}} + K^{\text{intangible}} q^{\text{intangible}}$

■ Rents & 2 types of capital:

$$\begin{aligned} V = & K^{\text{phy}} q^{\text{phy}} + K^{\text{int}} q^{\text{int}} \\ & + \underbrace{\text{NPV}(\text{profits} - K^{\text{phy}} \times \text{marginal profits in } K^{\text{phy}} - K^{\text{int}} \times \text{marginal profits in } K^{\text{int}})}_{=\text{NPV}(\text{rents on physical capital}) + \text{NPV}(\text{rents on intangible capital})} \end{aligned}$$

What does the paper do: empirics

- Investment gap: difference between average Q and marginal q (for physical capital):

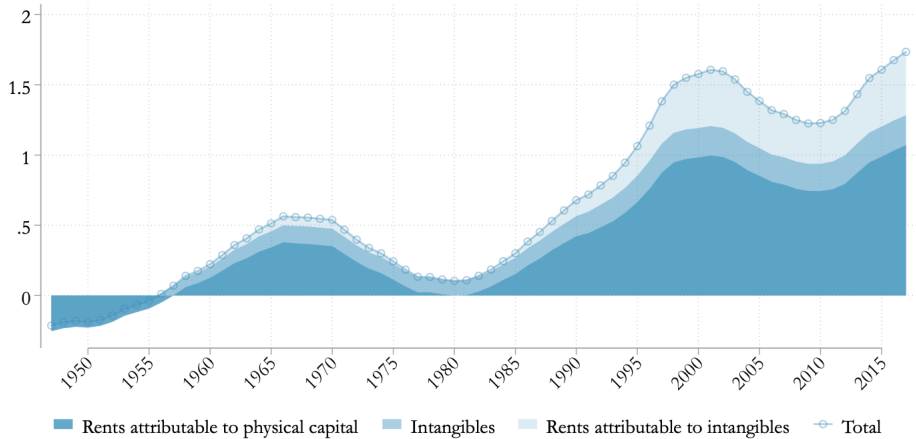
$$Q^{\text{phy}} - q^{\text{phy}} = \underbrace{\frac{K^{\text{int}}}{K^{\text{phy}}} q^{\text{int}}}_{\textcircled{1}} + \underbrace{\frac{\text{NPV}(\text{rents on physical})}{K^{\text{phy}}}}_{\textcircled{2}} + \underbrace{\frac{K^{\text{int}}}{K^{\text{phy}}} \text{NPV}(\text{rents on intangible})}_{\textcircled{3}}$$

- Combine parametric, balanced-growth path assumptions with:

1. Aggregate data on K^{int} , K^{phy} , i^{int} , i^{phy} , V , and corporate profits
2. Calibration for adjustment costs (γ^{phy} , γ^{int})

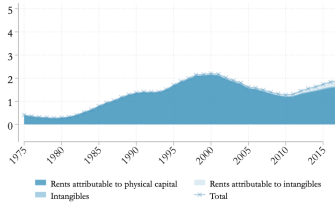
to calculate investment gap and relative contributions of $\textcircled{1}$, $\textcircled{2}$ and $\textcircled{3}$

Result (1)

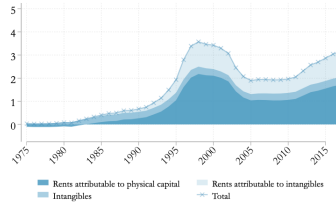


Result (2)

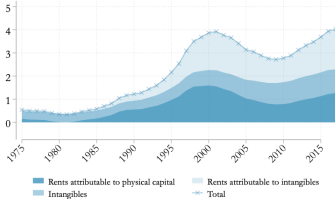
(a) Consumer sector



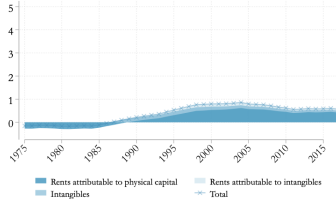
(b) High-tech sector



(c) Healthcare sector



(d) Manufacturing sector



Discussion

- I really enjoyed this paper:
 - ▶ First-order topic
 - ▶ Very elegant empirical work
 - ▶ Provocative finding: markups not so important in explaining investment behavior

My discussion: some more skepticism on the role of markups

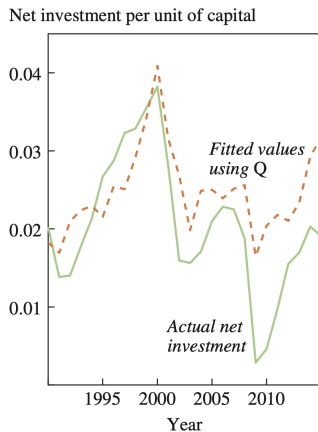
1. Q-theory works really well post-1995
2. Reasonable measures of intangibles leave little role for markups

Lackluster investment

Paper's starting point: post-2000, investment has been lackluster relative to valuations

Gutiérrez and Philippon (2017)'s methodology:

- regress $\frac{i_t}{k_{t-1}}$ on $\frac{Q_{t-1}}{k_{t-1}}$ in 1990-2000
- forecast investment in post-2000
- compare with actual investment



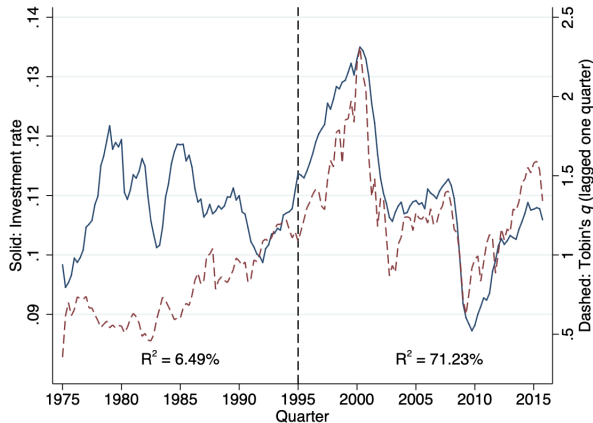
Comment 1: empirical performance of basic Q-theory

In a world of rising markups, with no other structural change:

- Coefficient estimate of regression of $\frac{i_t}{k_{t-1}}$ on Q_{t-1} should decrease over time
 - Q becomes a poorer proxy for q over time
- R^2 should decrease over time

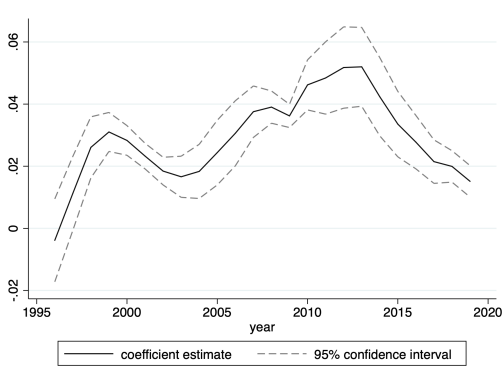
Over 1990-2015, Q-theory works remarkably well

Andrei, Mann and Moyen (2019):



Coefficient estimate over time

10-years rolling regressions of $\frac{i_t}{k_{t-1}}$ on Q_{t-1} for private sector and physical capital:



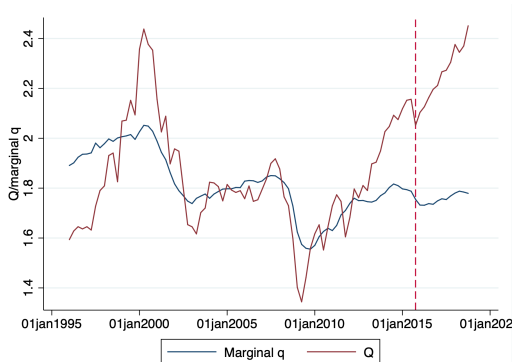
■ Coefficient $\nearrow$ since 1990s. Same for R^2 .

$\Rightarrow$ Would be great for the paper to use these facts as additional model restrictions

Comment 2: do we need rents?

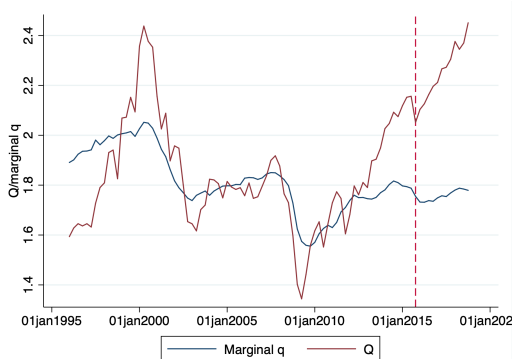
- Consider basic q-theory:
 - ▶ **No rents, no intangibles.**
 - ▶ marginal adjustment cost $\approx 1 + \gamma \left(\frac{i_t}{\bar{k}_{t-1}} - \delta \right) = q = Q$.
- Estimate model over entire 1995-2015 period (when Q theory actually works):
 - ▶ Only physical capital (structure and equipments)
 - ▶ Quarterly data

Investment gap using simple model



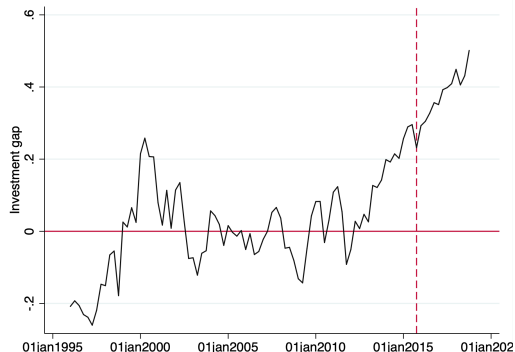
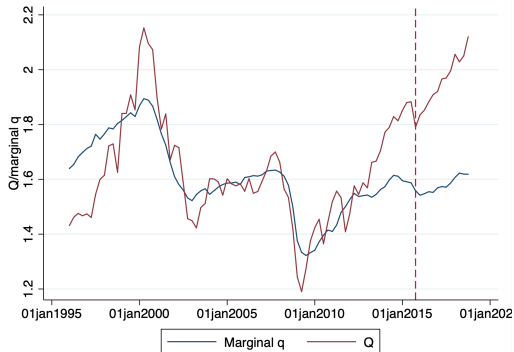
- No intangibles while we know there are large share of capital inputs!
- Use total capital instead of structure & equipment in previous analysis

Investment gap using simple model



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Even better fit using simple model and total capital



Implications

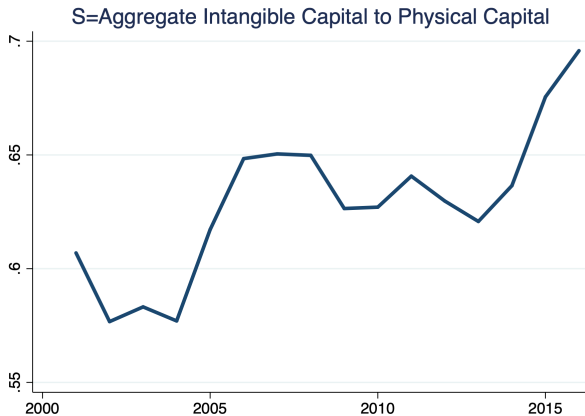
- Previous model leaves little role for rents from 1995 to 2013.
 - ▶ Post-2013: basic Q-theory works less well and large > 0 investment gap
- Is this a reasonable model?
 - ▶ Estimated parameters: $\delta = 6.3\%$, $\gamma = 12$ (high)
 - ▶ But it fits aggregate investment for both physical and intangibles well from 1995 to 2013.

Comment 3: measuring intangibles

- Main aggregate result measures intangibles using:
 - ▶ BEA's measure: R&D; own-account software; and artistic originals
- ⇒ Low measured intangible intensity in 2000-2017:

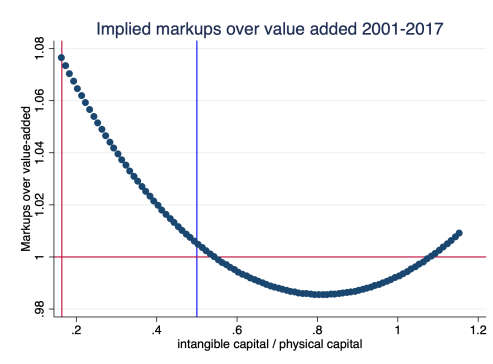
$$S^{2000-2017} = \frac{K^{\text{intangible}}}{K^{\text{physical}}} = .164$$

S in Compustat data (Peters and Taylor (2017))



⇒ post-2000, S could well be at least .5 or more.

Implied markups with alternative intangible intensity (post-2000)



- If $S > 40\%$, implied markups are basically 0
- Consistent with analysis in the paper (fig 2), but could be more emphasized

Conclusion

- Important debate on role of rising markups for macro-economic outcomes
 - ▶ Corporate finance side of this debate: lackluster investment?
- This paper offers an elegant look at the data to entertain markup and intangible hypotheses:
 - ▶ Find limited effect of markups on investment
 - ▶ There may be additional reasons to be even more skeptic given the data
- Highly recommend reading this paper and the whole literature!

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