The Design of Competitive Markets
Discussion

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ECA TALKS
February 3 2021
A giant problem

The rise of the corporate colossus threatens both competition and the legitimacy of business

Is Amazon getting too big?

By Steven Pearlstein

July 28, 2017

REPORT

A policy at peace with itself: Antitrust remedies for our concentrated, uncompetitive economy

William A. Galston and Clara Hendrickson - Friday, January 5, 2018
Dominant Market Trends: 
1. Rise of Star Firms

The Figure shows that the Return on Invested Capital (ROIC) is becoming more unequal over time, with star firms (90th percentile) pulling away from others. This phenomenon, in various manifestations, has also been noted by Kurz (2017), Autor et al. (2017), and Van Reenen and Patterson (2017), amongst others.
Dominant Market Trends:

2. Rise of Market Power

Figure 1: The Evolution of Average Markups (1960 - 2014). Average Markup is weighted by market share of sales in the sample.

Dominant Market Trends:

3. Rise of Intangible Capital
How to understand this?

Two traditions:

- **Market/power collusion ➔ Size**
  - Profits are a warning flag.
  - Size is a potential concern.

- **Efficiency ➔ Size**
  - The Demsetz hypothesis

- **Dynamics**
  - Efficiency ➔ Size ➔ Market Power
  - Creative destruction vs. preemption of competition
Are these a matter of concern?

• Some of the results may not be real due to mismeasurement of intangible capital?
• Should we be concerned if mark-ups are increasing?
• Star firms might be different: Autor et al. (2020)
• Will use through the lens of:


• Star firms: top 10% by ROIC
Model of Intangible Capital and Firm Productivity

- Consider the standard monopolistic competition model with non-CES preferences and the following demand structure:
  \[ q(p) = p^{-\sigma} d(Ap) \]

- Firms are heterogeneous in productivity, \( z \) (Melitz 2003). So higher \( z \) firms have higher factor inputs and higher outputs.

- Suppose the firm's inputs are labor \( L \), physical capital \( K_1 \), and intangible capital \( K_2 \), the production function is given by:
  \[ Y = zL^{1-\alpha}K_1^{(1-\eta)\alpha}K_2^{\eta\alpha} \]

  where \( \eta \) is intangible intensity and \( \alpha \) is labor share.

- With CRS the cost of producing one unit of a good is proportional to \( 1/z \).
Model of Star Firms and ROIC

• If $\nu$ is the measurement error in measuring intangible capital, $\eta$ is intangible intensity and $\delta$ is the depreciation rate, we can express ROIC as:

$$ ROIC = \frac{Earnings}{Invested Capital} = \frac{py - WL - \delta K_1 - \delta \nu K_2}{K_1 + \nu K_2} $$

*Prediction 1:* Star firms have higher price-cost markups

*Prediction 2:* High markup firms have high ROIC when intangible intensity = 0

*Prediction 3:* High intangible intensity firms have high ROIC even when markups = 1 (markets are perfectly competitive)

Measurement error adjustment in the paper $\Rightarrow$ $\nu$ closer to 1
Traditional ROIC definition

Splitting by Industry Intangible Capital/Assets
Traditional ROIC definition

Splitting by Industry Routineness

RMAN
Spend time making repetitive motions + Pace Determined by Speed of Equipment + Manual Dexterity + Finger Dexterity. Source: O*NET

Return on Invested Capital

Low RMAN Industries
High RMAN Industries

Conventional ROIC metric
ROIC with Intangible Capital Correction

The perceived run-up in ROIC disappears. Differences in rates of return of skilled vs. non-skilled industries disappears.
Rise in markups is amplified in high skilled industries where the measurement of intangible capital is even more important.
Markups and Star Status

Not all star firms have high markups!
Markups, Skills, and Stars

• We find markups predict star status. However, correction for intangible capital:
  – Reduces dispersions in ROIC overall and markups.
  – Higher markups are associated with the high investment in intangible capital.
  – Not all star firms have high markups.
  – Association between ROIC and markups is declining over time.
  – Association between ROIC and markups is weaker in high intangible capital industries.
Star Firms: Markups and Output

Output vs Markups
Low ICAP

Output vs Markups
High ICAP

Sales/Invested Capital

Markups with PT correction

All other firms

ROIC Stars
Star Firms: Markups and Capex

Graphs showing the relationship between investment and markups for firms with low and high ICAP, with separate plots for all other firms and ROIC stars.
Chinese Imports

- $\text{Imports}_{j}^{US} \rightarrow$ Total value of Chinese imports into the US in each industry $j$ scaled by initial absorption in 2005

- Instrument, $\text{Imports}_{j}^{ODC}$
  - Following Autor, Dorn, and Hanson (2013), contemporaneous composition and growth of Chinese imports in eight other developed countries - Australia, Denmark, Finland, Germany, Japan, New Zealand, Spain, and Switzerland.

Note: Import Penetration=$\frac{\text{Chinese Imports}}{(\text{Gross Output}+\text{Total Imports}-\text{Total Exports})}$
What about the superstars?

- There are many fewer of them – no statistical power
- Ex-post sampling and sample selection
- Case study – look at the evidence
Takeaways

• Part of the dispersion is due to measurement error
• It is likely that the high ROIC firms are investing more and doing more R&D – very little evidence that they are choking off future growth.
• The past is not a predictor of the future, but ....
• “This time it will be different” is not a reliable maxim
• Much depends on how we view creative destruction
GDP per capita in England since 1270
Adjusted for inflation and measured in British Pounds in 2013 prices

Source: GDP in England (using BoE (2017))
Note: Data refers to England until 1700 and the UK from then onwards.
THANK YOU
### Star Firms: Markups and Output/Investment

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## Star Firms and Innovation

### Output

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Return on Invested Capital

Low RMAN Industries

High RMAN Industries

Conventional ROIC metric
In this paper:

1. Who are America’s star firms on the basis of ROIC?

2. Are there significant measurement issues in the knowledge economy?

3. Monopoly power:
   - How is star status related to increase in pricing power as measured by markups?
   - How is star status related to firm innovation/productivity?
   - How does star status and markups map into firm’s actions:
     - How do star firms differ in their investment and output per unit of capital compared to other firms in the economy?
     - What is the role of shocks to competition?

4. Superstars
Sensitivity of ROIC to Markups over time
Includes PT correction for Intangible Capital

Regression includes size and age controls and industry and year fixed effects

\[ ROIC_{ijt} = a + \beta_1 \times \text{Log}(\text{Assets})_{ijt-1} + \beta_2 \times \text{Log}(\text{Age})_{ijt-1} + \beta_3 \times \text{Markups}_{ijt-1} \]
\[ + \beta_4 \times \text{Markups}_{ijt-1} \times \text{Year Dummies} + \phi_j + \gamma_t + \epsilon_{ijt} \]

↓relationship between ROIC and markups. Steeper declines in high ICAP industries
↑ positive association between ROIC and intangible capital/asset ratio