The Secular Rise in Markups: Measurement, Causes, and Macroeconomic Implications

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Sources of markups

- Canonical models with markups
- Larger markups drive inefficiencies but no standard model
- Standard model would depress capacity; evidence for this

$=>$ New investment economics may turn this on its head!

Canonical modeling approaches with markups

- Romer growth model where R&D is financed with pure profits
- Quality ladder models where new varieties generate short-run profits
- Dixit–Stiglitz models with entry

=> Inelastic demand generates rents that finance R&D, fixed costs, varieties, innovation or growth.

Markup, profit, and economic rent

$$\mu = \frac{P}{MC}, \qquad \text{CES demand:} \quad \mu = \frac{\sigma}{\sigma - 1}$$

- A markup measures price relative to marginal cost.
- CES demand gives each small variety a constant price elasticity $\sigma > 1$.
  $=>$ Lower price elasticity allows a higher markup.
- Free entry can dissipate economic profits while price exceeds marginal cost. The operating margin covers fixed costs, for example.

Mankiw and Whinston (1986): entry and welfare with large markups

- **Business stealing.** Higher price-cost margins increase the private gain from taking rivals' customers.
- **Free entry.** Entrants ignore the profits they displace at incumbent firms.
- **Product variety.** Differentiation can create consumer benefits that offset or exceed the business-stealing externality.

Intangibles: Advertising, customer acquisition, brand capital, etc can capture or protect rents without proportionate productivity gains. High markups coexist with intangible investment; welfare implications are ambiguous.

Mankiw and Whinston (1986), "Free Entry and Social Inefficiency," *RAND Journal of Economics* 17(1), 48–58.

Downward sloping demand proxies for other unmodeled sources of market power

Source	Modeling device
Differentiation	Imperfect substitutes
Few competitors	Cournot or Bertrand oligopoly
Entry barriers	Sunk costs, patents, regulation
Consumer frictions	Search, switching, inattention
Scale and networks	Increasing returns, platforms
Innovation and IP	Quality ladders, patent races

We don't have a standard framework for incorporating and measuring these sources.

The IO approach: Berry, Gaynor, and Scott Morton (2019)

Markups may increase because of:

- Greater pricing power following mergers or reduced competition.
- Lower marginal costs from technology or organizational investment.
- Endogenous increases in fixed and sunk costs.
- Changes in product quality or differentiation.
- Reallocation toward firms with different technologies and cost structures.

Berry, Gaynor, and Scott Morton (2019), "Do Increasing Markups Matter? Lessons from Empirical Industrial Organization," *JEP* 33(3), 44–68.

Implications of market power: taking the demand proxy seriously

- Capacity and capital investment are too low
  - Marginal returns and marginal q are less than average returns and average q
  - Desired scale is lower the less elastic is demand and the higher are markups, other things equal
- There may be too much entry (Mankiw–Whinston); more on this at the end
- Investment as a lens to see the implications of different sources of market power.

Rents and intangibles create a Q–q gap

$$Q_K = \frac{V}{K}, \qquad q_K = \frac{\partial V}{\partial K} \quad \textit{the shadow value of capital}$$

- Decompose the valuation–investment gap: Crouzet and Eberly (2023)
- The gap includes installed intangibles, rents on physical capital, and rents on intangibles.
- The rents terms correspond to those in the markup literature.

A (fairly) general Q-theory model

A firm chooses investment according to:

$$V_t^c(\mathbf{K}_t) = \max_{\mathbf{K}_{t+1}} \left\{ \Pi_t(K_t) - \widetilde{\Phi}_t(\mathbf{K}_t, \mathbf{K}_{t+1}) \quad + E_t\left[M_{t,t+1} V_{t+1}^c(\mathbf{K}_{t+1}) \right] \right\}$$

$$\text{s.t.} \quad K_t = F_t(\mathbf{K}_t), \qquad \mathbf{K}_t = \{K_{n,t}\}_{n=1}^N$$

- $F_t(\cdot)$ is homogeneous of degree 1.
- $\Pi_t(\cdot)$ is homogeneous of degree $1/\mu$, with $\mu \geq 1$.
- Adjustment costs $\Phi_{n,t}$ increasing and convex

$$\widetilde{\Phi}_t(\mathbf{K}_t, \mathbf{K}_{t+1}) = \sum_{n=1}^{N} \Phi_{n,t}\left(\frac{K_{n,t+1}}{K_{n,t}} \right) K_{n,t},$$

The value of the firm

Lemma: Firm value decomposition

$$V_t^e = \sum_{n=1}^{N} q_{n,t} K_{n,t+1} \quad + \sum_{n=1}^{N} \sum_{k \geq 1} E_t[M_{t,t+k}(\mu - 1)\Pi_{n,t+k} K_{n,t+k}]$$

$$V_t^e = E_t\left[M_{t,t+1} V_{t+1}^c\right], \qquad q_{n,t} \equiv \frac{\partial V_t^e}{\partial K_{n,t+1}}, \qquad \Pi_{n,t} \equiv \frac{\partial \Pi_t}{\partial K_t} \frac{\partial K_t}{\partial K_{n,t}}$$

- $\mu = 1$: $V_t^e = \sum_n q_{n,t} K_{n,t+1}$ — Hayashi and Inoue (1991)
- $\mu > 1$: $V_t^e = \sum_n q_{n,t} K_{n,t+1} + \text{rents}$ — Lindenberg and Ross (1981)

$$(\mu - 1)\Pi_{n,t} = \underbrace{\left(\frac{\Pi_t}{K_t} - \frac{\partial \Pi_t}{\partial K_t}\right)}_{\text{gap between average and marginal product}} \frac{\partial K_t}{\partial K_{n,t}}$$

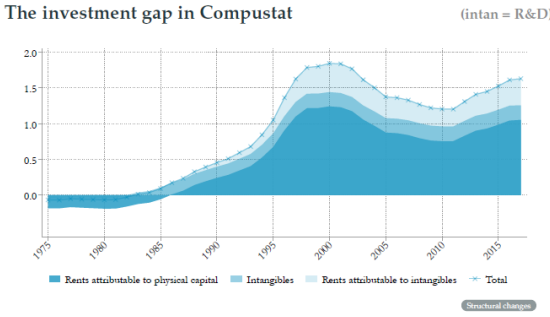
Flow value of rents attributable to capital type n

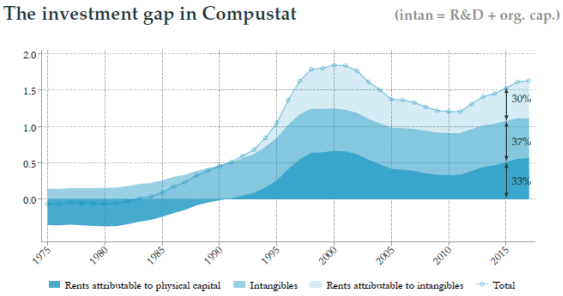
Decomposing Q+ with a markup

$$Q_K = q_K + \frac{N}{K} q_N + \frac{(\mu - 1) m_K}{r - g} + \frac{(\mu - 1) \frac{N}{K} m_N}{r - g}$$

- m_K and m_N are marginal revenue products.
- For constant μ, stationary marginal revenue products, common capital growth g, and discount rate $r > g$.
- The final two terms value rents on physical (K) and intangible (N) capital.

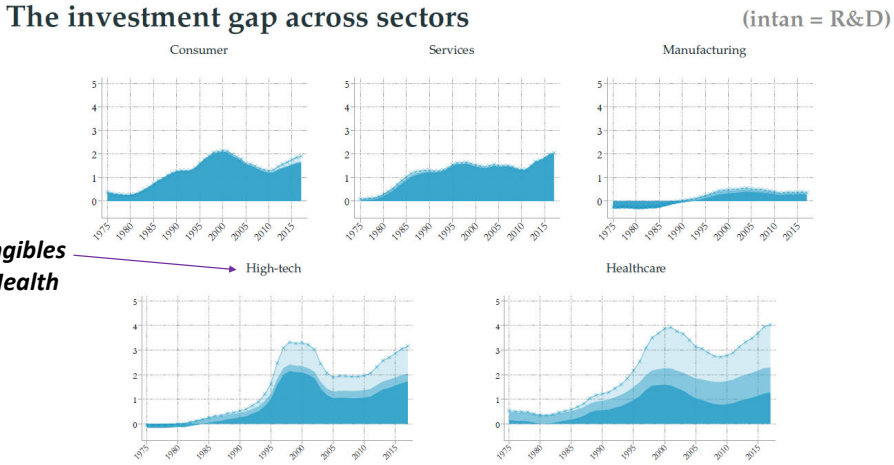
Broader intangibles explain more of the valuation gap





- With R&D only, intangibles account for about one-third of the rise in Tobin's Q. Adding organizational capital raises this to about two-thirds.
- Installed intangibles and the rents they generate both matter.

Intangibles matter most in high tech and healthcare



Largest effects of intangibles are in High Tech and Health care

These results tell us

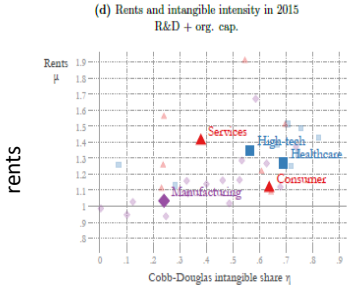
- Some industries have low gaps between the measured shadow value of capital and average valuations.
  - These tend to be slow growing with low Tobin's Q.
- Rapidly growing industries have high valuation gaps, associated with both rents (high average returns) and intangibles, whether from R&D or broader measures.

These results tell us

- Some industries have low gaps between the measured shadow value of capital and average valuations.
  - These tend to be slow growing with low Tobin's Q.
- Rapidly growing industries have high valuation gaps, associated with both rents (high average returns) and intangibles, whether from R&D or broader measures.
- But they don't tell us the underlying source of the rents beyond our proxy.

Some clues from rents and intangible intensity

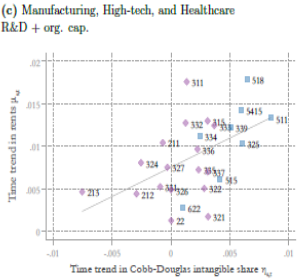
cross-industry



rents

intangibles

… and over time



- Industries with high intangibles tend to have high rents.
- Industries with growing intangibles tend to have rising rents.

Market power and investment margins

Market power dampens capacity, but encourages other forms of rent-augmenting investment

Investment margin	**Mechanism**	**Response**
Capacity	Lower elasticity lowers MR	Lower investment, other things equal
Demand expansion	Added sales earn the markup	Expand/shift demand
Cost reduction	Savings apply to units sold	Depends on scale and cost pass-through
Innovation and entry	Expected rents	Entry barriers discourage challengers

The new economics of investment and markups

- This analysis was developed in a world with weak investment and sluggish growth
- Is it all moot with AI and the associated investment boom?
- *Investment Tournaments*: Benmelech, Crouzet, and Eberly (2026)
  - Business-stealing on a huge scale with winner-take-all payoff
  - AI platform economics with physical investment of $trillions

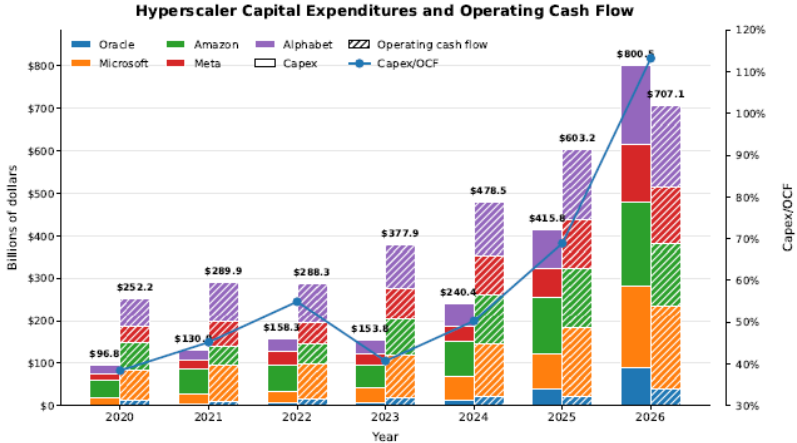


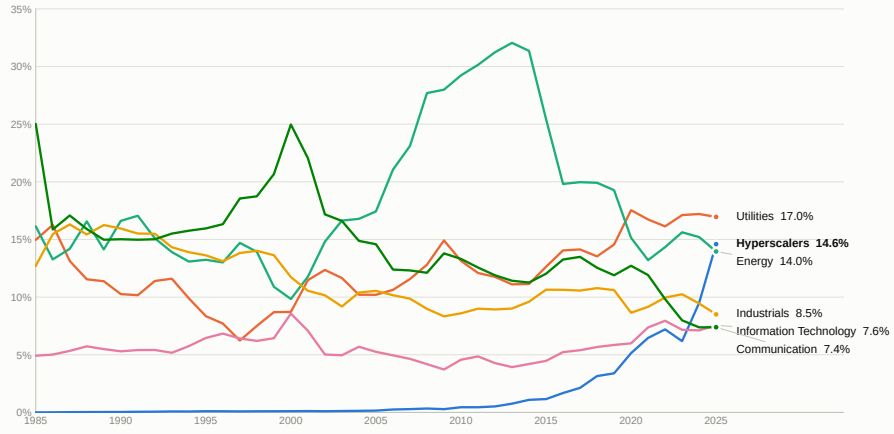
Figure 1. Hyperscaler Capital Expenditures, Operating Cash Flow, and Capex Intensity

Source: Stijn Van Nieuwerburgh, *Brookings Papers on Economic Activity*, September 2026.

Investment waves: Hyperscalers replacing Energy and Communications

The hyperscalers are now the second-largest CAPEX "sector" in Compustat

Share of aggregate Compustat capital expenditure, 1985–2025



Source: Compustat. GICS sectors; "Hyperscalers" = Alphabet, Amazon, Meta, Microsoft and Oracle, removed from their GICS sectors.
Six of twelve sectors shown; the remaining six (Consumer Discretionary, Financials, Materials, Consumer Staples, Health Care, Real Estate) appear in Figure 1.

Platforms and AI

- Platforms combine network effects, switching costs, and access to customers.
  $\Rightarrow$ Two sided matching and winner takes all dynamics
- But winning the platform race requires computing services.
  $\Rightarrow$ Capital buildout

Market power drives an investment tournament rather than dampening capacity. This is an extreme form of Mankiw and Whinston's business stealing externality: private incentives focus on winning rather than socially optimal investment.

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