

The wealth of stagnation: Falling growth, rising valuations

James D. Paron

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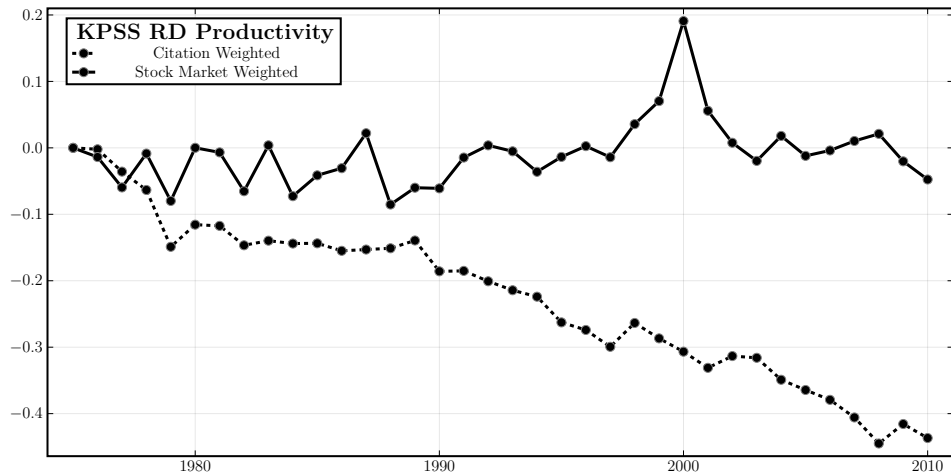
Erik Loualiche — University of Minnesota

This Discussion

- Innovation, R&D, and Valuations
- Estimating a Trend
- Caveats when using financial valuations to account for innovation

Innovation Productivity

Drop in RD Productivity (by USD spent in Compustat)



Valuation Rising

Shiller CAPE



A Puzzle

Innovation is Forward Looking Value.

- How to reconcile high valuations: future profits
- ... with low innovation returns

- Related to the secular decline in investment in the midst of high valuations ...
- See Andrei et al., Farhi-Gourio, Corhay-Kung-Schmid

Investment is Declining. Is R&D in Decline too?

Investment and R&D (ratio of PCE; BEA)



Adapting a familiar model to innovation productivity

Reallocation at micro-level.

- Firm composition
- More “valuable” firms do less R&D but become more entrenched (markups)
- More “valuable” firms become bigger (superstar theory)

Similarities with the familiar (Papanikolaou).

- Firms are defined by their “Assets-in-place” (AiP) or “Growth-options” (GO)
- Firms with GO benefit more from shocks to Investment Productivity (IST shocks)
- Firms with AiP are displaced and lose more from Investment Productivity

Seeing innovation productivity as Investment Productivity

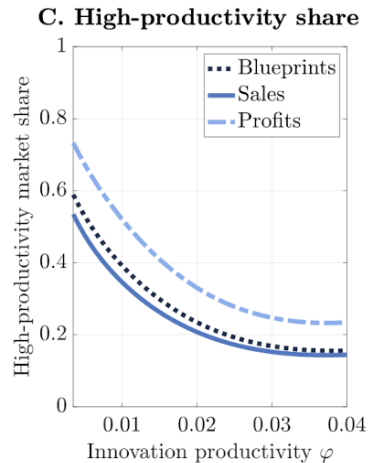
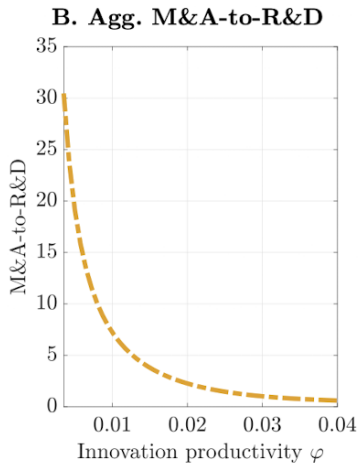
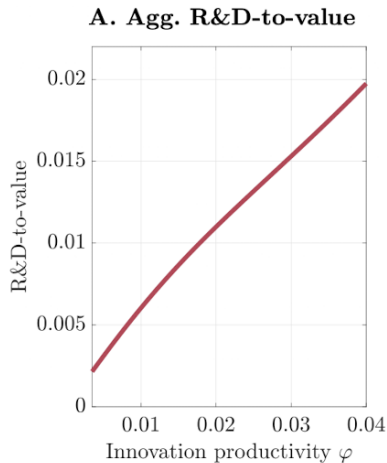
Model Mechanics.

- RD-shock changes tradeoff between M&A and Innovation for high production firms
- M&A leads to higher market shares to the productive firms

Low innovation productivity.

- Lower overall innovation:
 - AiP firms invest less
 - GO firms or startups invest less
- Lower competition ... leading to higher valuations for AiP firms

Innovation Productivity



How do we identify the mechanism behind a trend?

Identification of Innovation Productivity.

Innovation productivity is identified by the aggregate R&D-to-value-ratio

- Estimate directly link between innovation productivity and R&D?
 - Both values and R&D spending move in response
 - Model simplifies things: ratio R&D-value is exactly proportional

$$\frac{\text{R\&D spending}}{V} \propto \varphi$$

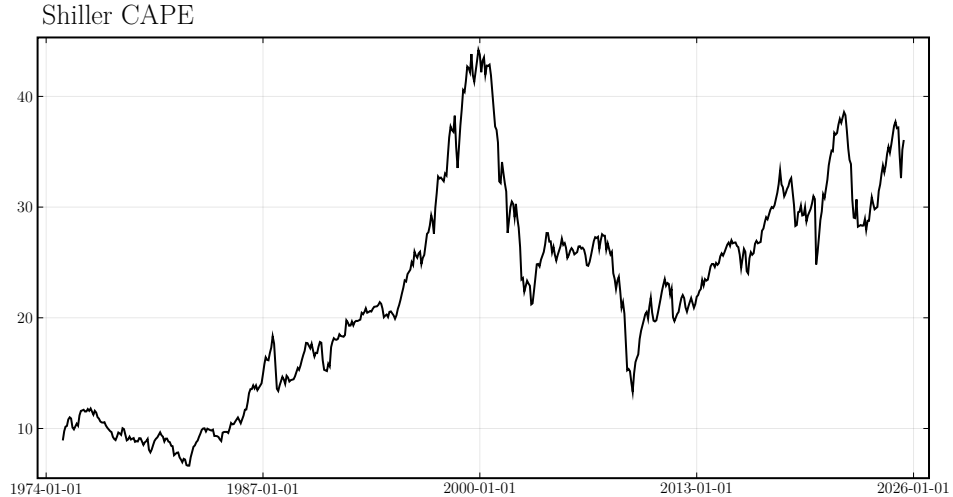
- Beyond trend ... what about shocks to R&D?
 - AiP are exposed to R&D shocks and value likely to move disproportionately?
 - External validity of the 1:1 scaling? Lots of innovation shocks out there!

Valuation and Innovation: Caveats

Bubbles and the Value of Innovation (w. Haddad+Ho).

Booming innovation often coincides with intense speculation in financial markets

Valuation and Innovation: Caveats



Valuation and Innovation: Caveats

Two Facts

- *Fact 1 Overreaction:* Innovation raises the stock price of its own-firm by 40% more than is justified by future outcomes.
- *Fact 2 Underreaction:* Innovation in a firm steals profits of competitors, these negative spillovers have no impact on the competitors stock prices.

A Simple Explanation: Detail Disagreement

- Investors do not disagree on aggregate innovation (Miller 1977)
- ... they disagree on which firms will carry out innovation
- Overweights their chances of being leader of new innovation
- Underweights the costs of innovation on their assets-in-place

Valuation are not always reliable guide of benefits of innovation.

Final Thoughts

Great Paper! Worth reading.

Take away

- A new view on the disconnect between valuation and investment focused on R&D
- A tour de force of modelling to estimate the mechanism behind a trend