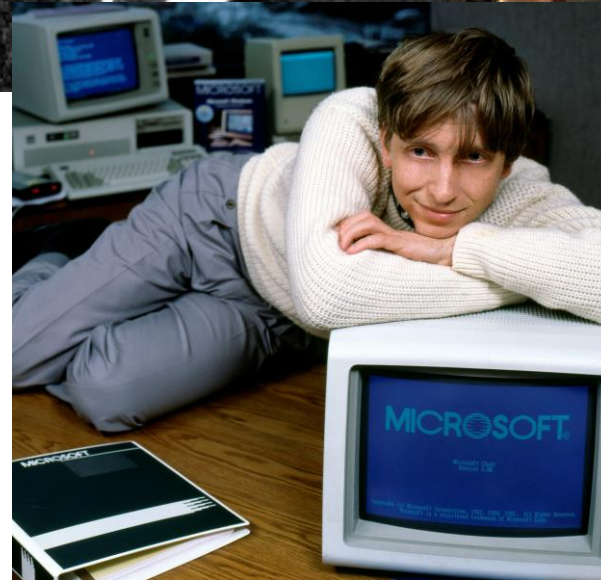
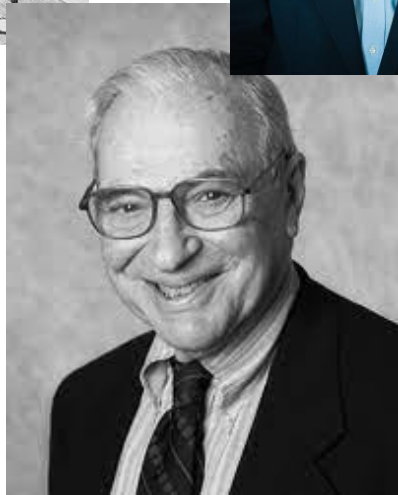
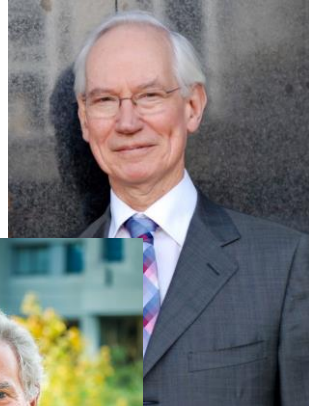


Product market competition, creative destruction and innovation



Rachel Griffith and John Van Reenen

Competition and innovation



Endogenous growth theory



Increasing opportunities for empirical work

At the same time new panel data, econometric methods and more powerful computers enabled a rich micro-empirical literature,

- eg, Blundell, Griffith, Van Reenen (1999) :
 - new firm level panel data on innovation counts
 - new econometric methods to deal with dynamics and unobserved heterogeneity
 - result were in line with models where high market share firms have greater incentives to pre-emptively innovative, but less competitive industries were less innovative

The inverted U – a surplus of economists



The inverted U

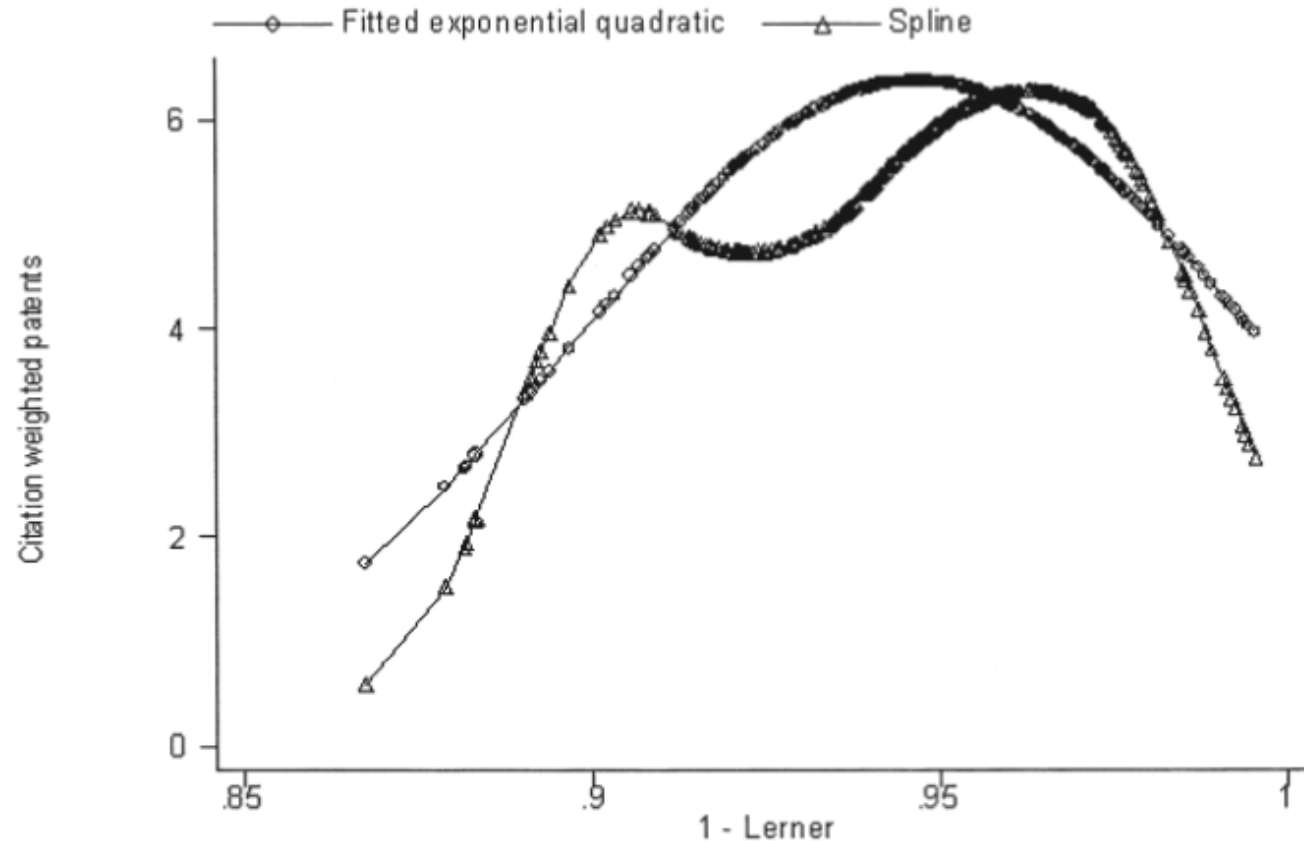


FIGURE II

Innovation and Competition: Exponential Quadratic and the Semiparametric Specifications with Year and Industry Effects

Extensions

- A growing literature that proposes both complementary and contradictory theoretical models, and that provides both empirical support for the inverted-U and evidence that challenges the robustness of the empirical relationship

“Aghion et al. (2005) have championed an influential ‘new’ hypothesis, known as the inverted-U relationship. ...Apart from its technical sophistication, the nonlinear model also has much intuitive appeal, not the least because it can reconcile the arguments of both Arrow and Schumpeter. Taken together, the papers collected in this issue attest to the powerful inspiration which the Aghion et al. (2005) model provides to the new literature.”

- Michael Peneder



Programme on
Innovation and Diffusion

Competition and Innovation: Application and Developments

“Economics of Creative Destruction”, Paris, June 9th 2021

John Van Reenen

LSE Ronald Coase School Professor & MIT Digital Fellow

Introduction

- Our Applications section focuses on three areas:
 - Competition Policy
 - Trade (e.g. understanding the “China Shock”)
 - Structural IO models of innovation & competition

OUTLINE

Competition Policy

Trade Policy

Structural IO models of innovation & competition

Competition Policy (1/4)

- **Innovation increasingly important in thinking about competition policy**
 - More of economy has shifted towards high tech, digital, high R&D sectors where innovation issues loom large
 - Rise of “Superstar Firms” (Autor, Dorn, Katz, Patterson & Van Reenen, 2020), especially in digital - GAFAMs



Competition Policy (2/4)

- Competition **for** the market is as important as competition **in** the market
 - Some degree of market power as a reward for innovation (traditional dynamic efficiency defense)
 - **But** must guard that rivals (e.g. potential entrants) are not disadvantaged by anti-competitive actions of powerful incumbents. Examples:
 - Abuse of a dominant position (Data as essential facility; degrading interoperability – Genakos et al, 2018 on Microsoft)
 - M&A (e.g. killer acquisitions of Cunningham et al, 2021)

Competition Policy (3/4)

- Chief Economist of DG-COMP Kuhn et al (2012) argues:
 - Anti-trust cases in markets where there are fears of weak competition
 - Hence, presumption is that this is on upward sloping part of “Inverted U”. A further reduction of competition likely to decrease innovation



Competition Policy (4/4)

- **How to reform?** (Tirole, 2020)
 - Greater focus on future competition & innov, not just current market
 - Standard/Burden of Proof must be shifted towards dominant platforms when they want to take over potential platform startups
 - *Ex ante* regulation: e.g. CMA's Digital Market Unit; DG-COMP Digital Market Agency
 - Org Economics – agency acquires capability and expertise of making effective interventions



March 2019



OUTLINE

Competition Policy

Trade Policy

Structural IO models of innovation & competition

Trade Policy

- Reducing **Trade barriers** a key way that competition can be boosted
 - Increased import competition via reduced lower tariffs barriers, technology reducing transport costs, etc.
 - Other mechanisms e.g. market size discussed in Melitz-Redding chapter

Trade Policy

- **Example:** Rise of **China** a major exogenous shock to Western product markets, due to Deng Xiaoping's policy choices
 - Massive increase in Chinese imports, esp. after 2001 WTO Accession
 - Bloom, Draca & Van Reenen (2016) firm-level data in 12 EU countries. IV from detailed industry change in MFA textile quotas. Found:
 - Big **fall** in jobs, especially for low-tech firms (reallocation effect)
 - Big **increase** in innovation (cite-weighted patents) within more exposed firms (as well as greater IT diffusion & TFP)



Trade Policy: China Shock

- Autor et al (2020) look at China shock in US. Also find jobs fall but a negative effect on innovation. Bloom et al (2021) show that using same IV as Autor still gives different result in EU
- “Inverted U” helps interpret the different results.
 - Competition initially weaker in EU than US pre-China, so on upward part of the Inverted U: higher competition from China shock increases innovation
 - US already had high competition, so on a downward part of the Inverted U: higher competition from China shock decreases innovation

OUTLINE

Competition Policy

Trade Policy

Structural IO models of innovation & competition

Structural IO models

- Aghion-Howitt brought IO models of innovation into macro growth models
- “Inverted U” relies on cross industry variation and shows the ambiguity. But what about an industry specific approach?
- Recent empirical literature goes more deeply into specific sectors and explicitly models the R&D stage and the later price/quantity stage.
 - Advantage of the structural approach is that explicit counterfactuals can be modelled and welfare effects compared
 - Disadvantage is a narrower focus and more parametric assumptions
 - Structural dynamic IO models much more technically challenging compared to more well developed static approaches (Pakes, 2021)

Some Examples

- **Goettler & Gordon** (2011, JPE) *PC Micro-processors Intel vs. AMD*
 - Full solution concept. More innov under monopoly but welfare lower
- **Hashmi & Van Biesebroeck** (2014, REStat) *Automobiles*
 - 2 step approach of BBL. Total innov higher with entry
- **Igami** (2017, JPE) *Hard-Disk Drives (HDD)*
 - 2 step approach + allows for many firms. Incumbents innovate less
- **Igami & Uetake** (2020, ReSTUD) *HDD 1996-2016*
 - Models dynamic merger policy. Innovation increases from monopoly to duopoly to triopoly
- **Bhattacharya** (2021, ECMA)
 - R&D procurement in US Navy. More competition would increase welfare
- **Summary**: *General sense is that increase in PMC (from low comp) usually increases innovation. But much heterogeneity*

Conclusions

- Aghion-Howitt created a rich agenda for micro work on firms and industries as well as a very powerful macro framework
- Applications very relevant to competition policy, trade & has inspired new structural IO models
- Useful framework for studying competition and innovation. General sense that competition tends to increase innovation: a bit more Arrow than Schumpeter?

