

Promoting Innovation to Foster Economic Development and Growth



Vivek Ghosal

**Georgia Institute of Technology
Atlanta, GA USA**

<http://www.econ.gatech.edu/people/person/vg34>

Innovation and Competition

2

- Influential literature linking innovation to competition, and economic growth
 - Significance of issues
 - ✦ Social welfare, overall innovation, future productivity, competitive advantage, development and growth
 - Optimal structure of markets, from an innovation perspective

Theory: Innovation and Competition

3

- Schumpeter (1942)
 - Innovation increases as markets become less competitive
- Arrow (1962)
 - Innovation decreases as markets become more competitive
- Aghion et al. (2005)
 - Highest innovation at intermediate levels of competition
- No clear theory result from oligopoly models with strategic interaction among firms
 - Aghion (2005) provides critical insights

Empirical: Competition and Innovation

4

- Survey by Cohen and Levin (1989)
 - More studies find innovation increasing as competition decreases
- Blundell et al. (1999)
 - More competition stimulates innovation
- Hall and Ziedonis (2001)
 - Semiconductor firms' patenting increase with tighter IPR and infringement policy, and competition
- Hall et al. (2012)
 - Existing firms' patent portfolios increase with competition
- Aghion et al. (2005) find intermediate levels of competition promotes innovation
- Overall, mixed findings

Competition, Innovation, Growth

5

- Aghion and Griffith (2008)
 - “While competition features prominently in the history of economic thought, it is fair to say that economists still have a limited, and sometimes contradictory, understanding of its economic effects and, in particular, of the relationship between competition and growth.”
- They examine tradeoffs between successful innovations (with possible monopoly power) and enhancing competitive pressures on firms to push the frontier
- Aghion et al. (2005) provide important insight
 - Intermediate levels of competition may generate more innovation, and may be optimal for longer-run growth and welfare gains

Competition, Innovation, Growth

Competition

6

- Competition (and regulatory) policy and enforcement can address issues about optimal interventions
 - Mergers, Cartels, and Dominance/Monopolization
- Policies to promote entrepreneurship and firm-growth
 - SME financing – perhaps weighted towards targeted innovative areas
 - World Bank and OECD initiatives: reduce entry costs and barriers
 - OECD: use **Competition Assessment Toolkit** to minimize regulatory barriers to competition
- Need multifaceted and coordinated set of initiatives and policies to clean up markets and promote entrepreneurship and competition in developing economies

Competition, Innovation, Growth

Innovation

7

- Significant initiatives, policies and institutions are needed to stimulate innovation in developing economies
 - Without this, domestic innovation will suffer, retarding growth and development in the longer run

Generating Innovation

Intellectual Property Rights

8

- IPR – Umbrella policy and institutional aspect
 - IPR essential, as lack of it will retard ***domestic*** innovation
 - ***Local*** entrepreneurs and innovators need IPR protection as this provides them incentive to innovate
 - Optimal IPR protection period can be debated
 - Need well structured IPR ***infringement*** system to protect innovators and entrepreneurs

Generating Innovation

Incubators and Accelerators

9

- Incubators
 - External management team to manage idea, focus on job creation, professional services, training, networking, venture capital financing, utilization of specific technologies
- Accelerators
 - Can be advanced stage incubator assisting mature entrepreneurial firms, or hybrid incubation programs designed for firms to enter (foreign) market. Characteristics of accelerators include competitive applications process, pre-seed investments, limited-duration, intensive mentoring

	Incubators	Accelerators
Duration	1 to 5 years	3 months
Business Model	Rent; non-profit	Investment, can be non-profit
Selection	Non-competitive	Competitive, cyclical
Venture Stage	Early, or late	Early
Mentorship	Minimal, tactical	Intense, by self and others
Venture location	On site	On site

Generating Innovation

Incubators and Accelerators

10

- Are multifaceted organizational forms to meet specific needs
- Can be private, public, or public-private partnership (PPP)
 - Developing economies – potentially important role of Government in later two, but also important to facilitate/incentivise former
 - International evidence points to private being more successful overall
 - ✦ Reasons: less administrative, oversight and project content inefficiencies

Generating Innovation

University-Based Initiatives

11

- Important in the overall strategy of organic development of technologies and fostering innovation
 - Universities can generate enormous knowledge/innovations
 - Harness via science parks and incubators
 - Incentivise researchers/faculty in **STEM** areas to participate in innovation and entrepreneurial processes
 - Will facilitate local generation of innovation and entrepreneurship in developing economies

STEM: Science, Technology, Engineering, Mathematics.

Generating Innovation

University-Based Initiatives: Examples

12

Name (Type, Start Year)	Country	Institution(s)
IncubaUC (UBI, 2002)	Chile-Santiago	Pontifical Catholic University of Chile
Industry Accelerator & Patent Strategy (UBI, 2013)	Taiwan-Hsinchu	National Chiao Tung University
Instituto Genesis PUC-Rio (UBI, 1997)	Brazil-Rio	Pontifical Catholic University of Rio de Janeiro
HUST Science Park Development Corp. (UBI, 2001)	China-Wuhan	Huazhong University of Science and Technology
NDRC (UBI, 2008)	Ireland-Dublin	Dublin City University; Dún Laoghaire Institute of Art, Design and Technology; National College of Art and Design; Trinity College Dublin; University College Dublin
Chrysalis (UBI, 2012)	Chile-Valparaíso	Pontifical Catholic University of Valparaíso
National Chiao Tung University (UBI, 1998)	Taiwan-Hsinchu	National Chiao Tung University
Hub China (UABI, 2013)	China-Beijing	Capital Normal University; Beijing Technology and Business University; North China University of Technology
Nanotechnology y Incubator (UABI, 2005)	Mexico-Monterrey	Instituto de Innovación y Transferencia de Tecnología de Nuevo León

Generating Innovation

Other Initiatives

13

- Standard policy basket includes, for example:
 - R&D tax credits – perhaps emphasising specific innovation areas
 - Early-stage funding – directed towards targeted innovation areas
 - ✦ E.g., Biosciences, energy – can be tailored to domestic needs

Wrap-up

14

- Innovation fundamental to long-run growth and development
- Need two-pronged strategy to maximize innovation output
 - Broad-based policies related to IPR, IPR-infringement, R&D tax credits, early-stage funding, among others
 - Focused and targeted policies and initiatives
 - ✦ University-based development and commercialisation of innovation
 - ✦ Private, public and PPP incubators
 - ✦ Identification of targeted areas of innovation based on domestic needs and domestic resource base
- Institutions, initiatives and policies need to be developed for the long-haul as myopic approach to generating innovation not likely to succeed