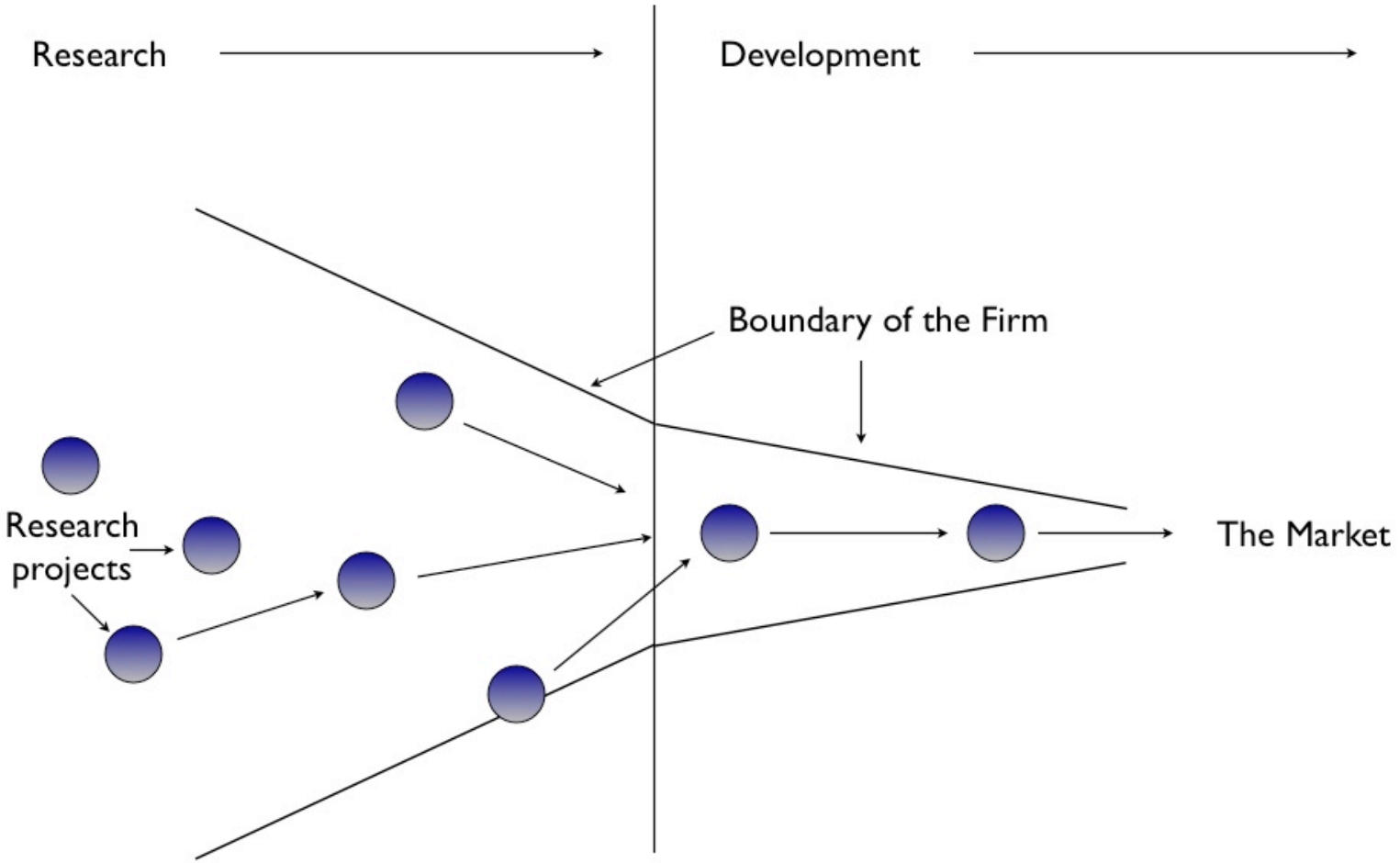
Closed innovation system: everything done inside the firm



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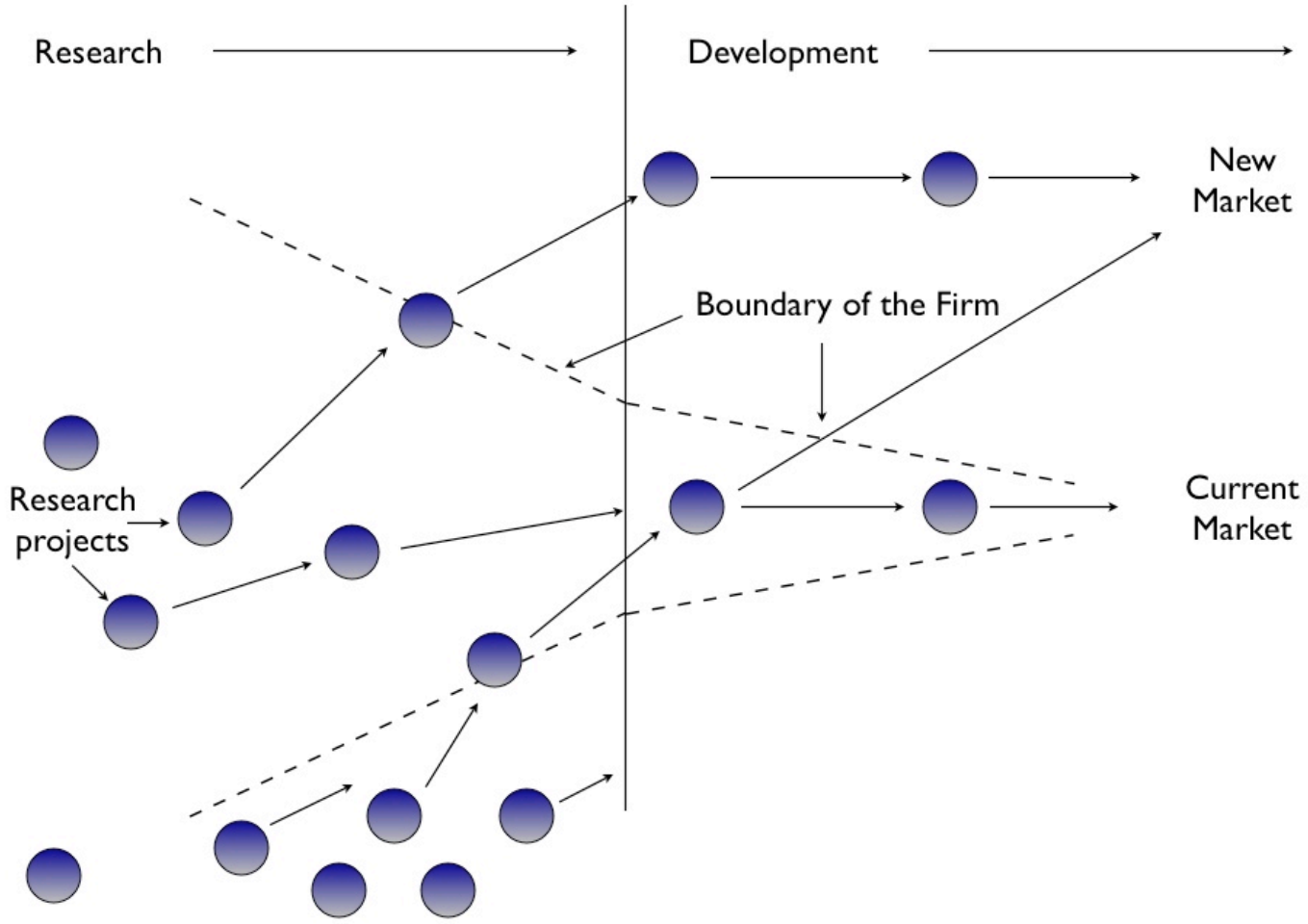
Open innovation: inflow and outflow of knowledge across boundaries of firm



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Open innovation: key features

- Seeks knowledge (not just technologies) from R&D both outside and inside company
  - Buy technology licenses, buy entire companies
  - Joint development
- Willing to spin some good ideas out of company
  - License out to start-up companies or other firms
  - Thereby make return-on-R&D-investment while maintaining business focus and hedging risk)
  - Seller company aims to achieve greatest return (which requires win-win license that aids success of the buyer firm, as well)

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Some famous examples of open innovation - 1 - Microsoft: the early days

- Seattle Computer Products develops a prototype computer operating system (DOS) for personal computers (1980).
  - Microsoft first buys nonexclusive rights to the prototype (version 0.3) in late 1980.
  - Microsoft buys all rights to the first commercial version (version 1.00) in July 1981
  - Soon after that, IBM announced the first Personal Computer, which used MS-DOS from Microsoft -- Microsoft revenue skyrockets

Some famous examples of open innovation - 2 - Cisco Systems

- Cisco Systems founded in 1984
- Cisco's first major acquisition of another company: Crescendo Communications (in 1993)
- By mid 2008, Cisco had acquired over 127 companies
  - Most acquisitions were in computer networking, VOIP, LAN switching, or other communications equipment
  - Acquired companies now account for 1/2 the value of Cisco
- Cisco devotes special resources to integrate the knowledge of each acquired company.
  - Acquisitions are driven by Cisco vision of customer (latent) needs
  - Apparently, relatively few hostile takeovers
  - About $5.2 billion / year devoted to internal R&D

Points to remember about open innovation

- "Open" innovation is a relative concept: no innovation system is completely open or completely closed
  - But, external knowledge acquisition not mentioned in "The Knowledge Creating Company" (book) by Nonaka & Takeuchi
- Open innovation presents more complex challenges than closed innovation

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Requirements for successful open innovation

- Ability to evaluate external knowledge
  - Without long-term acquaintance of the people behind it
- Ability to integrate external knowledge
  - Tacit as well as explicit
- Clear vision of company direction and strengths
- Brilliant understanding of market psychology and potential new markets (unmet needs)
- Flexibility in business planning
  - Recognize when it's time to change plans
- Strategies to hedge risk
- Strong external sources of knowledge who will cooperate

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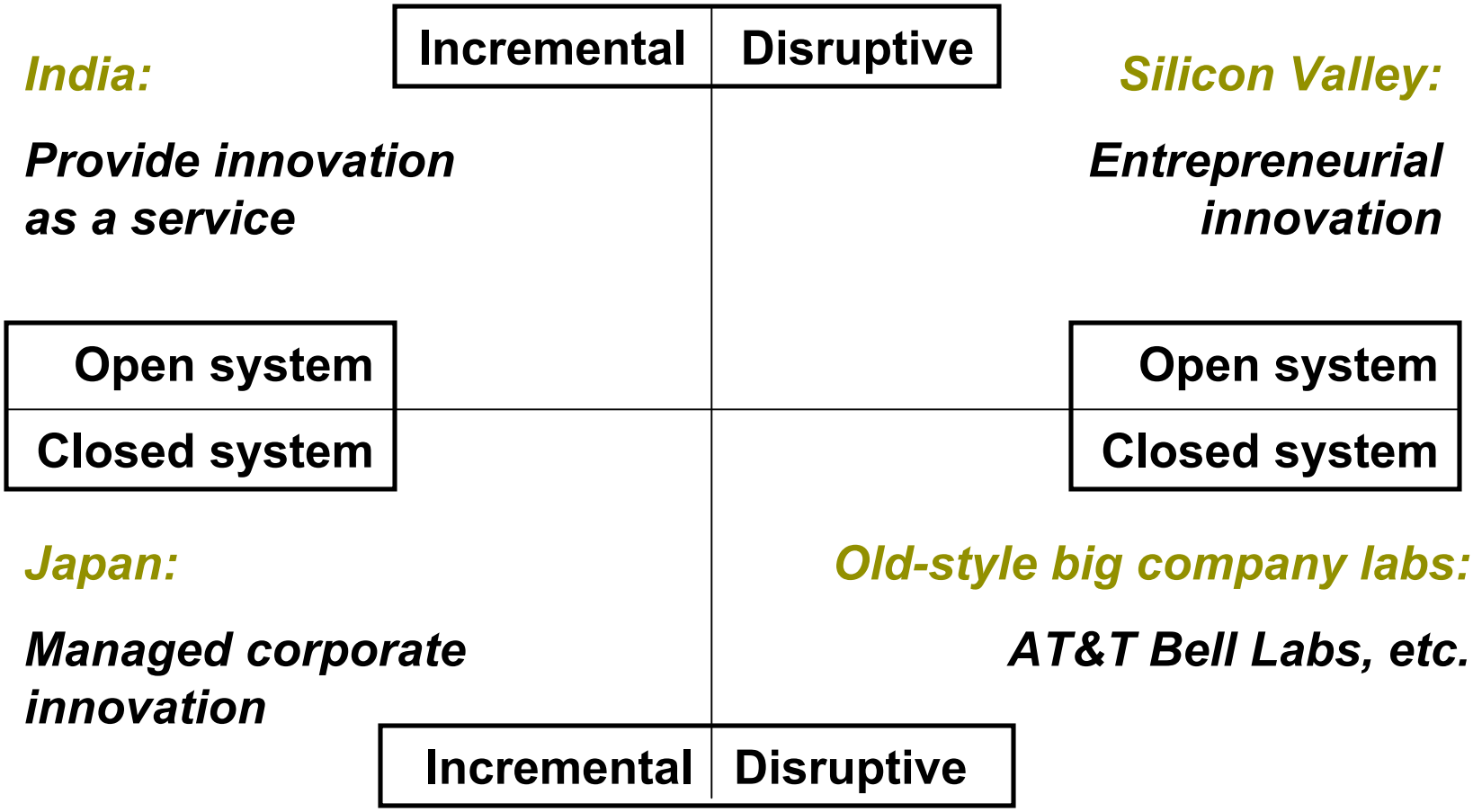
Silicon Valley and (Selected) Asia Models of Innovation

Models of Innovation



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Silicon Valley-style versus Japanese-style (Open?) Innovation

Silicon Valley-style

- Individual people leave big firms and universities to create start-ups
- Investors seek to maximize the growth of the start-up
  - Always looking for "exit strategy"
  - Start-ups grow before acquisition by big firms
- Strong: incubating disruptive innovation

Japan-style

- Company spins off new ideas, business activities as separate companies
- Hierarchy: core companies lead captive supplier companies
  - Group planning tends to be centralized
  - Small affiliates usually stay in niche markets
- Strong: managing incremental innovation

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Different innovation models are related to different stages of growth

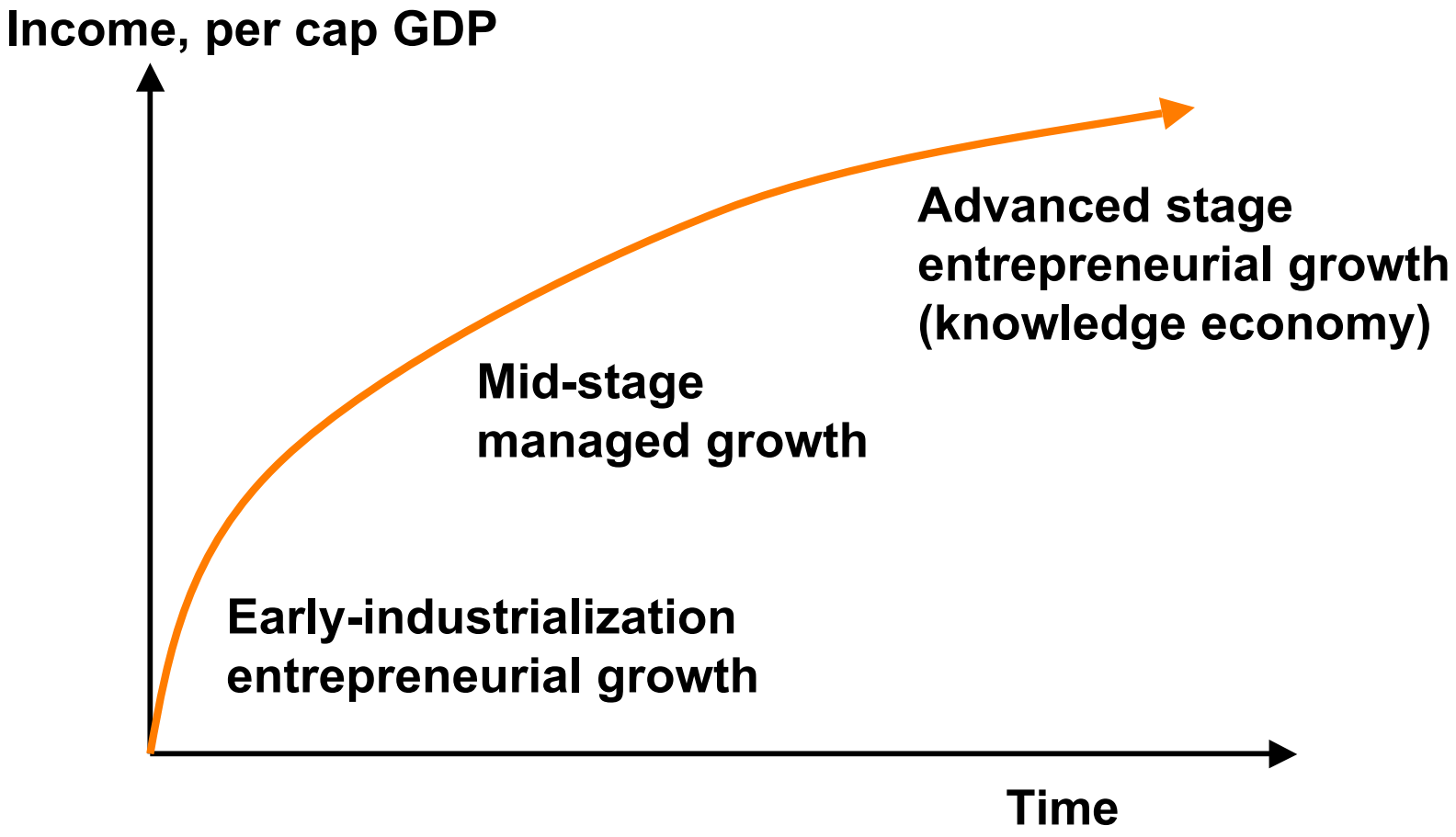

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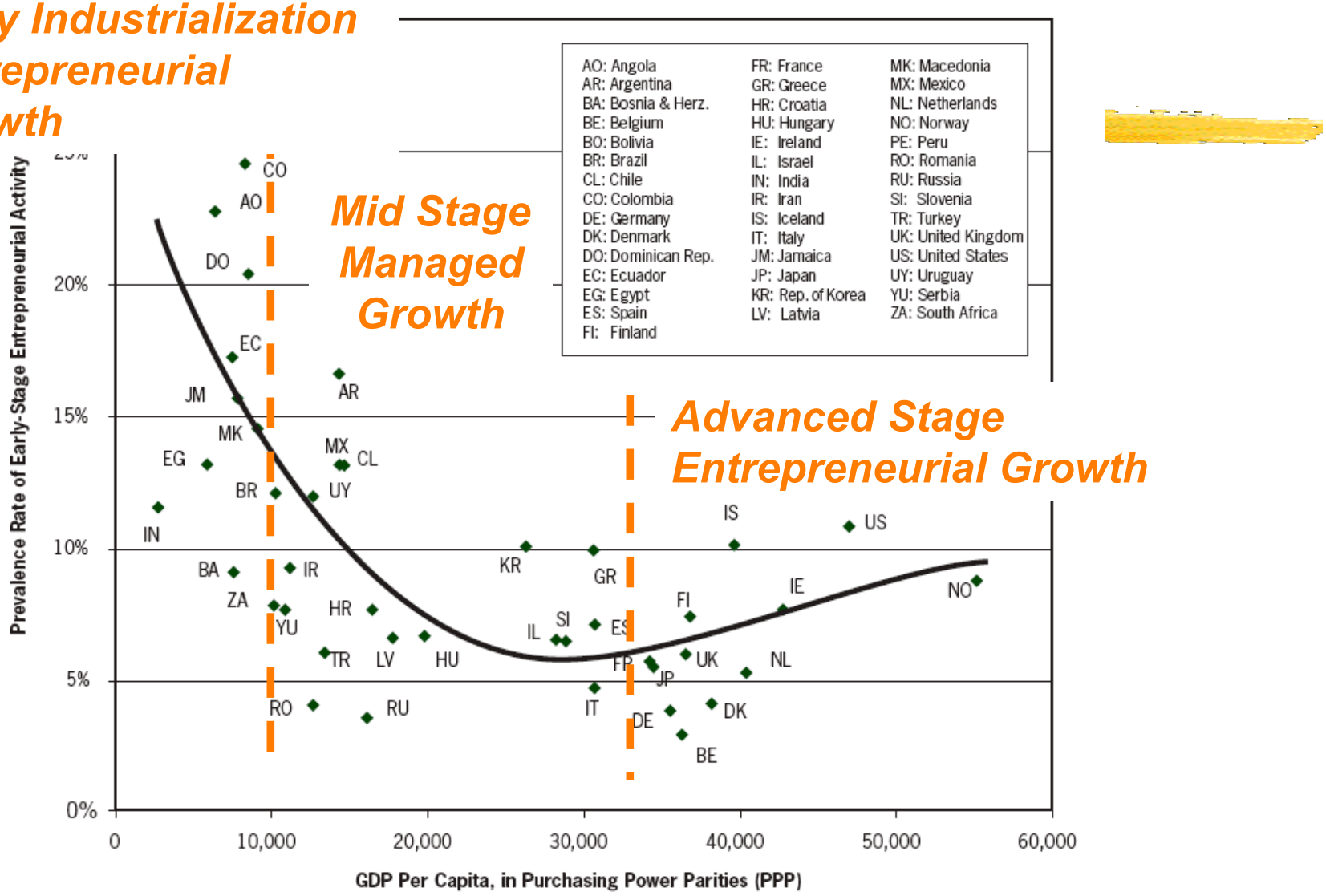
Figure 8 — Early-Stage Entrepreneurial Activity Rates and Per Capita GDP, 2008

Early Industrialization Entrepreneurial Growth



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Based on Global Entrepreneurship Monitor *2008 Report* (Jan 2009)

October 2009

Characteristics of the entrepreneurial sandwich

	Early industr. growth	Managed Growth	Advanced stage growth
Social developments	Industrialization, urbanization	High skill levels, labor and capital shortages	Wealth spreads throughout pop, high ed level
Business opportunities	"Gold rush" to supply basic demands	Develop new markets - domestic or int'l	Fresh new ideas, "out of the box" thinking
Key competitive strengths	Get there first!	Efficiency, rapid scaling, high quality	Manage (allow) risk, early ID of great new ideas
Typical focus of new government policies	Basic laws, establish industry base	IPR, promote the winners	Stimuli to bridge "valley of death"

India and China: Different Paths at Early Industrialization Growth

China

- Very fluid labor market
- Innovation focus: domestic market growth
  - Business innovation
  - Relatively little market demand for technology innovation
  - Work force generally lacks global skills
- Concern: "Gold Rush" problems

India

- Very fluid labor market
- Innovation focus: leverage global & tech skills
  - Now more for domestic market, as well
- Headed for a more closed ("managed") system ?
  - Consolidation of resources in big firms
  - Seek stable ("captive") supplier relationships
- Concern: value chain positioning

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Japan: in a sea change from "managed growth" to "advanced stage growth"

- A.k.a. aiming at a knowledge-based economy
- Opening up of innovation system
  - Cross-keiretsu M&A and partnerships, university-industry collaboration, start-up companies
- Increased importance of entrepreneurial companies
  - Ownership structures that can efficiently handle increased risk
  - More fluid labor markets
- Education for new skill sets (with focus on critical thinking, individual decision-making)
  - Global skills, entrepreneurship
- To build into economy: more diverse paths to success

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Summary

- Technology strategy as a set of business questions
- Types of innovation
  - Disruptive versus incremental
  - Open versus closed systems
- Silicon Valley success
  - Depends on open innovation system
  - But, it resulted more from entrepreneurial environment: aimed at incubating maximum success of disruptive innovations
- "Entrepreneurial sandwich" of three-stages of economic growth and its impact on innovation models
  - Applied to selected Asian economies: Japan, India, China
- Next week: managing R&D outsourcing in India

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