

# **Global Capital Markets and Local Innovative Capacity: Implications for American Economic and Technological Leadership**

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# The Role of Capital Market in Innovative Capacity: An Overview

- The **dynamism** and **transparency** of American capital markets have historically served as a powerful contributor to **US innovative capacity**
  - Liquidity and Leverage for Entrepreneurs
  - Allocating (and Reallocating) Capital Across Sectors and Locations
  - Enabling Risk Bearing over Diverse Economic “Experiments”
- While private capital markets are powerful channels for directing resources towards risky innovation investments, innovative capacity depends **equally** on investments in **basic research, Science, and knowledge institutions** which are poorly served by private markets
- Finally, while capital markets are **global**, innovative capacity is **local**. As an increasing number of locations around the world enhance their innovative capacity, the historical linkage between US capital market institutions and US innovative capacity may be weakening
  - Shift in risk capital allocation are a “leading” measure of shifts in innovation and global competitiveness.

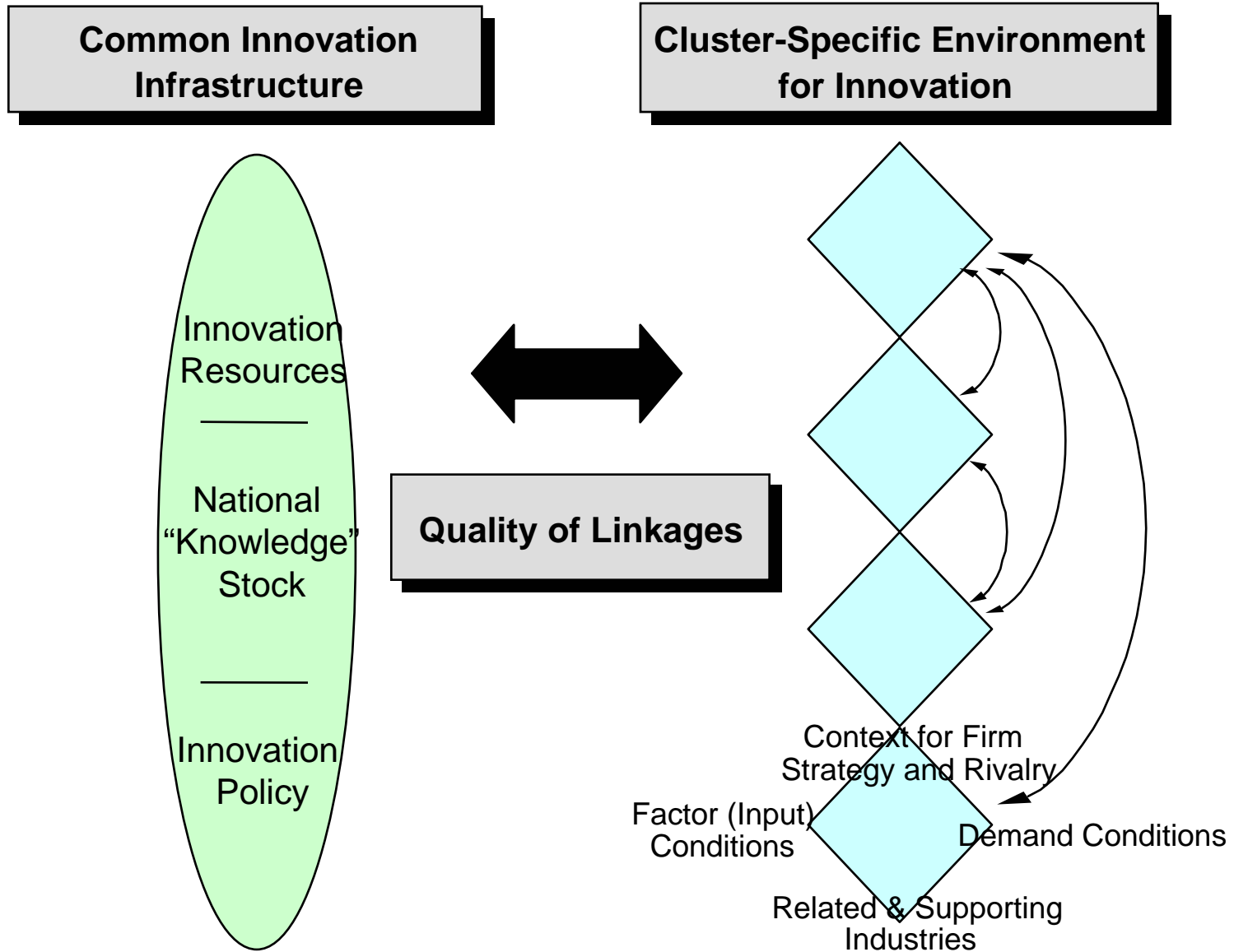
## What is Innovative Capacity?

The potential for a region – as both a political and economic entity – to produce and commercialize a stream of innovation with potential global impact.

Not simply the realized level of innovation, but the fundamental conditions, investments and policy choices that create the environment for innovation

Innovative capacity determines the ability of an economy to support (and select among) a diverse range of competing economic “experiments”

# The Drivers of Innovative Capacity



# The Innovation Infrastructure

## Innovation Resources

- Science & Engineering Workforce
- Access to Higher and Postgraduate Education
- Availability of Risk Capital
- High Quality of Information Infrastructure

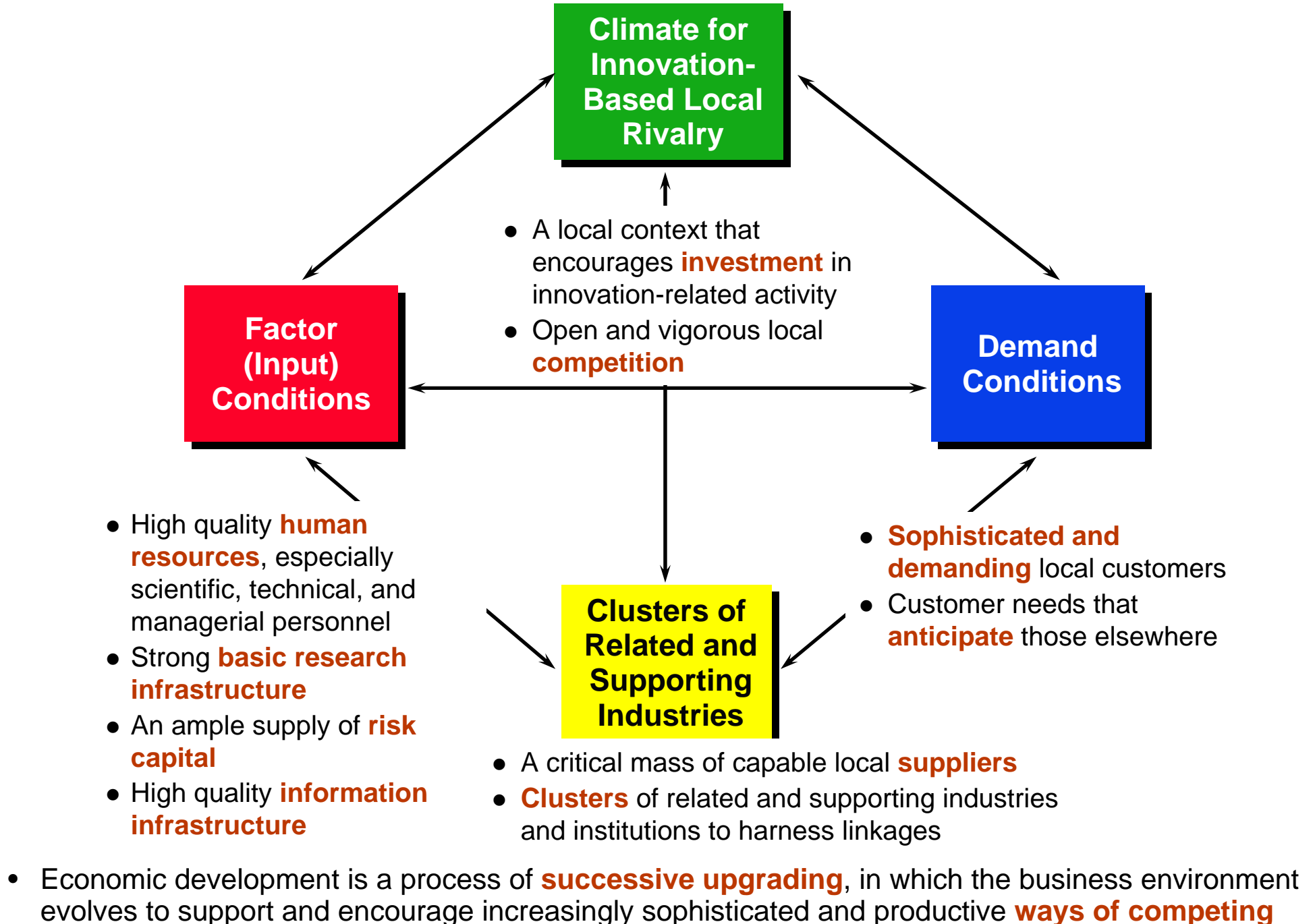
## Innovation Policy

- Subsidy and Grant Programs
- R&D Tax Policy
- Education Policy & Funding
- Intellectual Property Protection Policy
- Openness to International Trade and Investment

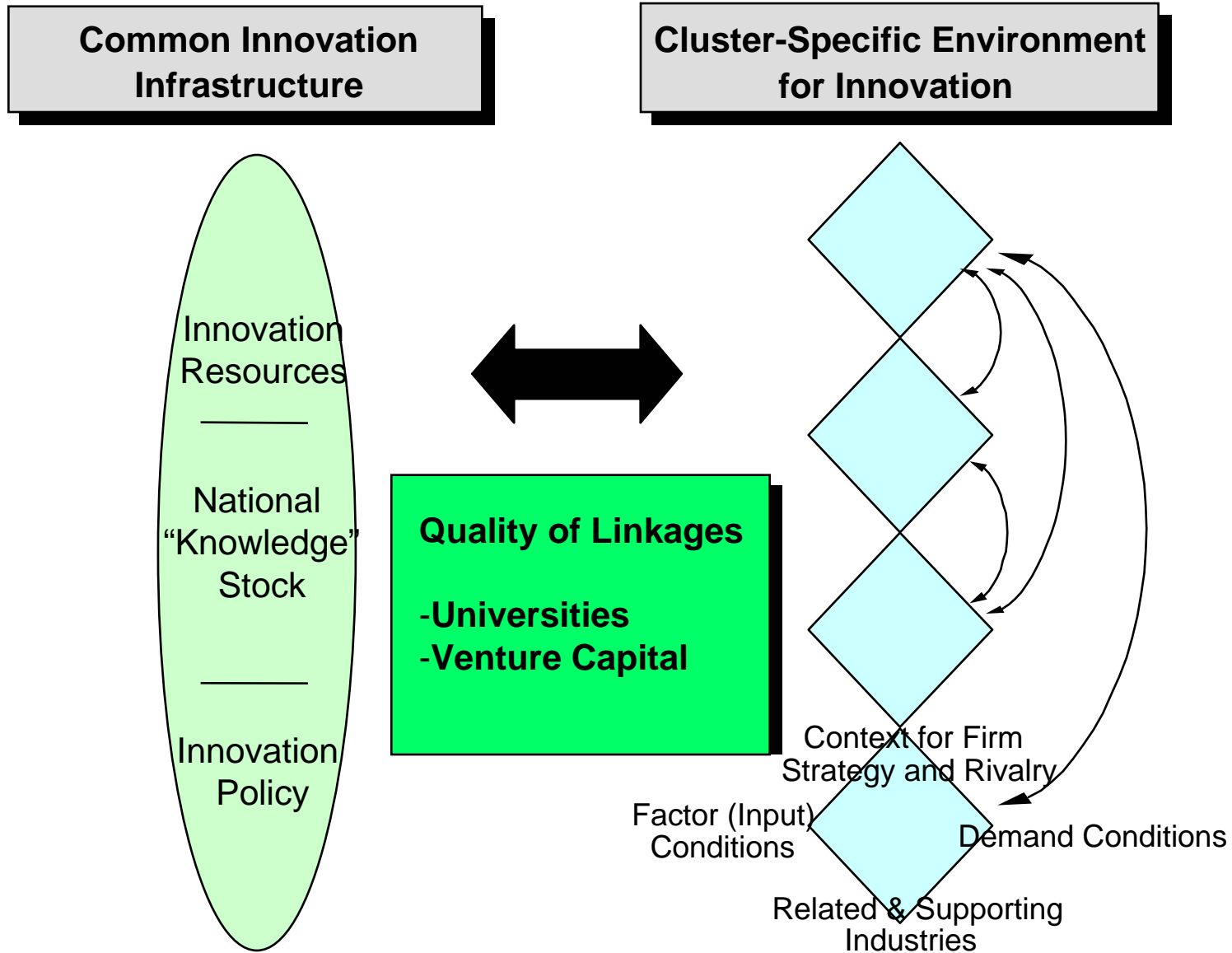
## National “Knowledge” Stock

- “Basic” Research Investments
- Cumulative Innovation Record
- Overall Technological Sophistication

# Innovation-Oriented Industrial Clusters



# Innovative Capacity Depends on Strong Linkages Between Solid Infrastructure & Dynamic Clusters



# Capital Market Have Served as a Powerful Contributor to American Innovative Capacity

- **Leverage and Liquidity**
  - Private equity and venture capital provide financial resources over a medium-term horizon for entrepreneurs to turn an “idea” into a technology and prototype with the potential for commercialization
  - Public markets provide ongoing risk capital for established firms, as well as a pivotal liquidity “outlet” for entrepreneurs and venture capitalists
- **Allocating Capital Across Sectors and Locations**
  - Both private and public equity markets serve to reallocate investment capital across sectors and locations in response to technological opportunity
  - For example, rapid redeployment of venture capital during the 1990s was a key spur for the investment and innovation-driven boom of the 1990s (Kortum and Lerner)
- **Enabling Risk Bearing over Diverse Economic “Experiments”**
  - Fluid and flexible capital markets allow different types of investors and entrepreneurs to “experiment” with different approaches, in terms of technology, market, and organization

# Innovative Capacity Depends Equally on Investments Poorly Served by Private Capital Markets

- **Basic scientific and engineering research**

- Basic scientific and engineering research, by construction, is largely *inappropriable* – those who make the initial investment cannot earn the full financial benefit from its exploitation
- Scientists contribute to a non-rivalrous “commons” which can then be repeatedly exploited over time by entrepreneurs and innovators
- Norms and resources to support basic scientific and engineering research offers the highest *social* payoff is often associated with the smallest (indeed, negative) private returns

- **Cumulative Knowledge Institutions**

- Beyond direct support for scientific research *per se*, private capital markets will tend to avoid investments in institutions that support continuing access to cumulative knowledge over time
- There are few incentives for individual researchers or private actors to ensure an effective level of support and effective rules to govern *institutions for collaboration*

# While Capital Markets are Global, Innovative Capacity is inherently Local

- **Factor Market Speed and Flexibility**

- Whereas regional innovative capacity and competitiveness can only be built slowly over time, capital markets are dynamic and responsive to new circumstances and opportunities
- In most cases, innovation-driven regional clusters **do not** depend on natural resources, but on the agglomeration of institutions, people, infrastructure, and long-lived capital investments
- While individuals and firms may be tied to a given location, capital markets allow investors to be increasingly global and responsive to opportunities across sectors and location

- **The Capital Market Impact of Convergence in Innovative Capacity**

- The most important single fact about regional competitiveness over the past two decades has been the rise in the number of locations around the world with a high (and growing) level of innovative capacity
- As US capital markets seek to exploit global innovation opportunities, the historical linkage between US capital market institutions and US innovative capacity may be weakening

# Capital Markets and the US Competitiveness Challenge

- **US capital markets play both a local and global role in competitiveness**
  - Continuing the historical role of providing liquidity, allocating capital across sectors and locations, and enabling an extremely diverse set of economic “experiments”
    - These roles depend crucially on the transparency and reputation of public markets and private investment opportunities. Lack of confidence in public markets place a long-term tax on American innovative capacity
  - At the same time, US capital markets are increasingly serving a “global” role, and the strengths of US capital markets are increasingly being adopted abroad
    - Venture capital is increasingly adopted as a model for innovation finance globally
- **A Proactive Policy Agenda**
  - Capital market movements are an important “leading” indicator for shifts in the regional innovation environment
  - While troubling data on US innovative capacity has not **yet shown up** in lagging measures of international competitiveness, capital market indicators provide further impetus for a vigorous policy to reinvigorate US innovative capacity