Foreign Direct Investment, Absorptive Capacity and Regional Innovation Capabilities: Evidences from China

Xiaolan Fu
Queen Elizabeth House
University of Oxford

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Channels for FDI impact on regional innovation

- Greater R&D inputs (direct)
- Spillovers (linkages, demonstration, labour turnover)
- Competition effect
- Innovation efficiency
Pre-conditions for a significant innovation effect of FDI

- Absorptive capacity
  (human capital, R&D)
- Complementary assets
  (infrastructure, industry structure, institutions)
- Linkages
FDI and innovation in China

Regional Distribution of FDI inflows 2003

- Coastal region: 86%
- Inland region: 14%

Regional distribution of number of invention applications, 2004

- Inland regions: 18%
- Guangdong: 23%
- Shanghai: 12%
- Other coastal regions: 14%
- Jiangsu: 7%
- Zhejiang: 8%
- Tianjin: 18%
- Study 1: regional level panel data
  (28 regions, 1998-2004)

- Study 2: firm-level panel data
  (60,000 firms, 2001-2005)
Findings

- FDI has contributed significantly to the overall regional innovation capacity in China.
- FDI is also positively associated with regional innovation efficiency.
- The strength of this positive effect depends on the availability of the absorptive capacity and the presence of innovation-complementary assets in the host region.
- The increased regional innovation capabilities contribute further to the regional economic growth.
- FDI plays a leading role in the high-tech sector; but indigenous firms take a lead in low- and medium-tech sectors.
Implications

- The quality and type of FDI do matter.
- Diverging regional competitiveness
- A large role remains for government policies
  -- Enhancement of local absorptive capacity
    Invest in human capital and R&D
  -- Development of complementary assets
    Infrastructure, institutions
  -- Match the type and sector of FDI with local industry structure and development strategy
  -- FDI from industrialised countries more effective for high-tech industries. Technology embedded in South-South FDI more appropriate for LDCs.
Empirical evidence: FDI and regional innovation capacity

Knowledge production function:

\[ Y_{it} = \alpha + \beta RDS_{it-1} + \lambda RDP_{it-1} + \gamma HC_{it-1} + \delta FDI_{it-1} + \varepsilon_{it} \]

\[ Y_{it} = \alpha + \beta RDS_{it-1} + \lambda RDP_{it-1} + \gamma HC_{it-1} + \delta FDI_{it-1} + \theta ABC_{it-1} \cdot FDI_{it-1} + \phi CA_{it-1} \cdot FDI_{it-1} + \varepsilon_{it} \]

Y = number of patents per 10 thousand population
RDS = R&D to GDP ratio (year t-1)
RDP = R&D personnel to total population ratio
HC = % of population with 15 years education
FDI = FDI intensity in industry
ABC: absorptive capacity
CA: complementary assets

Data: Panel data, 31 provinces / M. cities, 1998-2004