

# LEIO - Term Paper

Studying the impact of MNC patenting activity on patenting by  
local firms

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# Outline

## Introduction

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# Research Question

How do investments in patenting activity by MNCs influence patenting activity by local firms?

# Purpose

- Increased patenting is a proxy for higher levels of human capital and output

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- Increased patenting is a proxy for higher levels of human capital and output
- Interested in understanding if Indian firms are benefitting from increased patenting activity out of India

# Audience

- Policy makers who work on improving the environment for skill development and value creation in the country

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- Policy makers who work on improving the environment for skill development and value creation in the country
- MNCs and Local Firms in deciding how to compete



## Positioning in Literature

- Jaffe et al. (1993) and Almeida and Kogut (1999) used a US context to claim knowledge spillovers in geographic locations, highlighting mobility of engineers as a potential mechanism

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- Jaffe et al. (1993) and Almeida and Kogut (1999) used a US context to claim knowledge spillovers in geographic locations, highlighting mobility of engineers as a potential mechanism
- Zhao (2006) suggested that MNCs generate patents from weak IPR countries by substituting the weak institutional environment with internal organization
- Singh (2007) suggested that knowledge spillovers differ between MNCs and host country firms, and that personnel flows seem to explain the mechanism

# Hypothesis

- Increased patenting activity by MNCs may not necessarily spillover to local firms when the local ecosystem is services oriented rather than product oriented

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- Increased patenting activity by MNCs may not necessarily spillover to local firms when the local ecosystem is services oriented rather than product oriented
- Personnel flows between MNCs and local firms may be limited in such contexts

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# Unit of Analysis

- Intensity of patenting activity by a firm

# Dependent Variable

- Local firm share of patenting activity in a region (For all patents assigned to inventors from a region, Number of patents assigned to local firms in a certain time period/Total number of patents assigned in that time period)



# Independent Variable

- Size of the local patenting pool as measured by the number of patent inventors from the region over the past three years

# Control Variables

- Number of MNC affiliated patent inventors, Stock of patents owned by MNC firms in operation, Patent class/sub-class

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- Number of MNC affiliated patent inventors, Stock of patents owned by MNC firms in operation, Patent class/sub-class
- Year and Firm fixed effects

# Dataset

- PatentsView.org, Patents filed with the USPTO where atleast one inventor was located in the Bangalore region

# Identification

- Employee mobility across firms may result in spillovers to local firms

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## Alternative Explanations

- Lower absorptive capacity in local firms vs. higher absorptive capacity in MNCs may lead to the skew toward MNCs patenting more

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- Lower absorptive capacity in local firms vs. higher absorptive capacity in MNCs may lead to the skew toward MNCs patenting more
- Liability of foreignness may force local firms to compete in different markets of different segments than MNCs



# Implications of Work

- Would help to better understand the dynamics of spillovers in knowledge in the local context

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- Would help to better understand the dynamics of spillovers in knowledge in the local context
- May help inform policy makers and managers about ways to improve the spillover effects of human capital

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# Data Visualization





# Data Tabulation



- Almeida, P. and Kogut, B. (1999). Localization of knowledge and the mobility of engineers in regional networks. *Management Science*, 45(7):905–917.
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- Singh, J. (2007). Asymmetry of knowledge spillovers between mncs and host country firms. *Journal of International Business Studies*, 38(5):764–786.
- Zhao, M. (2006). Conducting r&d in countries with weak intellectual property rights protection. *Management Science*, 52(8):1185–1199.