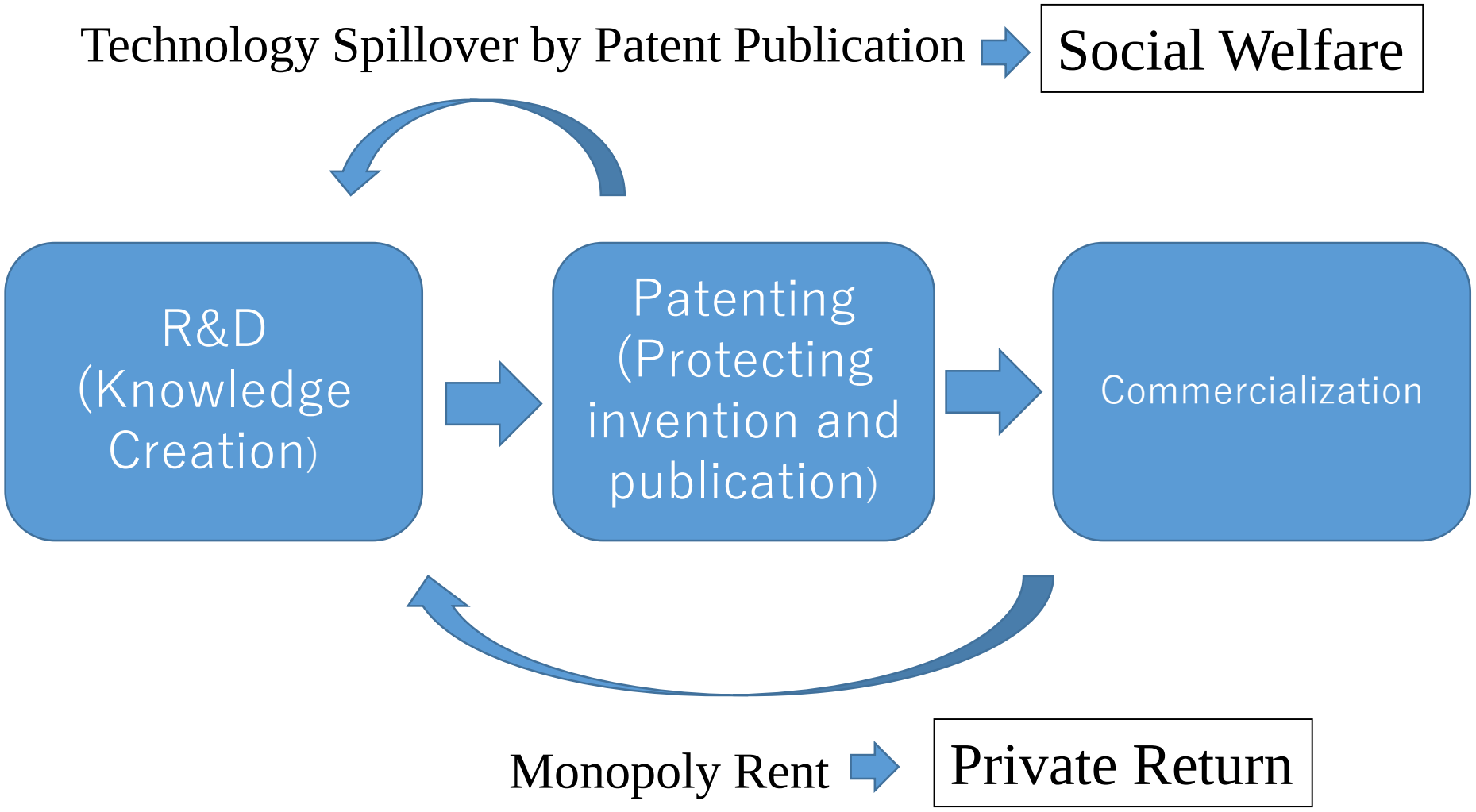
IP System and Technology Catching Up: China, India and Thailand (IP-CIT)

JSPS Fund for the Promotion of Joint International Research (Grants-in-Aid for Scientific Research, KAKENHI), 2019FY-2022FY

Principal Investigator

Kazuyuki Motohashi, U of Tokyo

Basic economics of patent system



Does strong patent spur innovation?

- Lerner (2002), PATENT PROTECTION AND INNOVATION OVER 150 YEARS, NBER WP #9877
  - 175 IP policy changes over 100 countries
  - Stronger patent (pro-patent) induce more innovation, particularly when initial level of patent protection was low, and when a country made significant economic development
- However, too strong patent may be harmful
  - Tragedy of anti-commons (Eisenberg and Heller, 1998)
  - Patent thicket (commonly found in electronics products)
  - *Innovation and Its Discontents: How Our Broken Patent System is Endangering Innovation and Progress, and What to Do About It* , by Jaffe and Lerner, 2004

What is pro-patent policy (in case of Japan) ?

	Patents in new fields	Scope of protection expansion	Strengthening protection	Reviewing operation of the system
1970's	Microorganism patents (1979)	Substance patents (1976)		Disclosure of application (1971) Request for examination (1971)
1980's	Animal patents (1988)	Improved multiple claims system (1988) Exception of patent term extension (pharmaceutical products, 1988)		
1990's	Clarification of the scope of the subject of software (1993) Electronic money patents (1995) Software medium patents (1997)	Application of the doctrine of equivalency (Ball Spline case, 1998)	Post grant opposition system (1996) Infringement damage compensation raised (1999) Improvement of dispute settlement system (1999)	Responding to electronic applications (1990) Applications in foreign languages (1995)
2000's	Software patents (2002) Medical treatment patents (2005)		Improvement of litigation and interpretation proceedings (2000) Establishment of Intellectual Property High Court (2005) Strengthening of dispute settlement function (2005)	Shortening of period of request for examination (from 7 years to 3 years, 2001) Expeditious patent examinations (setting a goal, increasing the number of examination officers, etc.)

IP-CIT Project (IP policy in catching up perspective)

- Understanding IPR and technology catching up (multinationals vs domestic firms) in emerging economies. (WTO north-south dispute, recently China-US trade talks)
- Looking into institutional and industry (technology) characteristics of local economy (Original research outcomes from local researchers, or Asian scholars)
- Cross country * Cross industry case studies, as well as bird's eye research based on patent information (plus firm level data…)

	TRIPS compliance (not managed)	TRIPS compliance (managed)
FDI Policy (Open)	Thailand	
FDI Policy (Managed)	China	India

Important Reference :
TRIPS Compliance, National Patent Regimes and Innovation Evidence and Experience from Developing Countries (Edward Elger, edited by Mani and Nelson, 2013)

1. Introduction :Sunil Mani and Richard R. Nelson

2. Innovations in the Brazilian Pharmaceutical Industry in Post-TRIPS
Thiago Caliari, Roberto Mazzoleni and Luciano Martins Costa Póvoa

3. TRIPS Compliance of National Patent Regimes and Domestic Innovative Activity, The Indian Experience : Sunil Mani, Sudip Chaudhuri, V. K Unni, Carl Pray and Latha Nagarajan

4. Knowledge Transfer in the Thai Automotive Industry and Impacts from Changing Patent Regimes : Patarapong Intarakumnerd and Peera Charoenporn

5. National Patent Regime and Indigenous Innovations in compliance with TRIPS: A Case Study of China :Song Hong

6. Conclusion Sunil Mani and Richard R.Nelson

Members

Japan

- Kazuyuki Motohashi, U of Tokyo
- Patarapong Inrarakumnerd, GRIPS
- Byeongwoo Kang, Hitotsubashi U

China

- Can Huang, Zhejiang U
- Jiangwei Dang, Tongji U
- Dong Huo, HIT Shenzhen

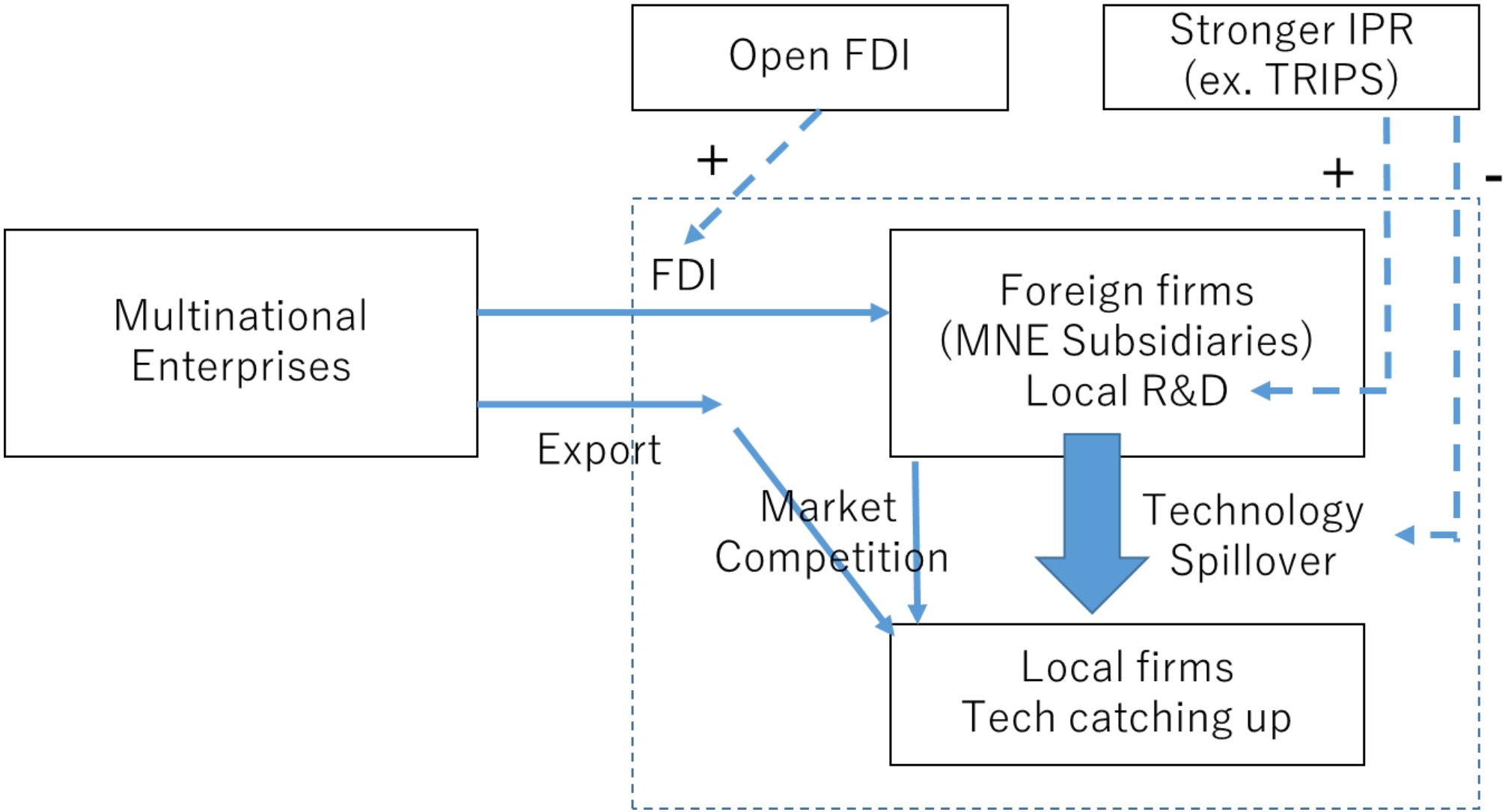
Thailand

- Peera Charoenporn, Tammasat U.

India

- Sunil Mani, Center for Development Studies (CDS)

Research Framework



Division of labor

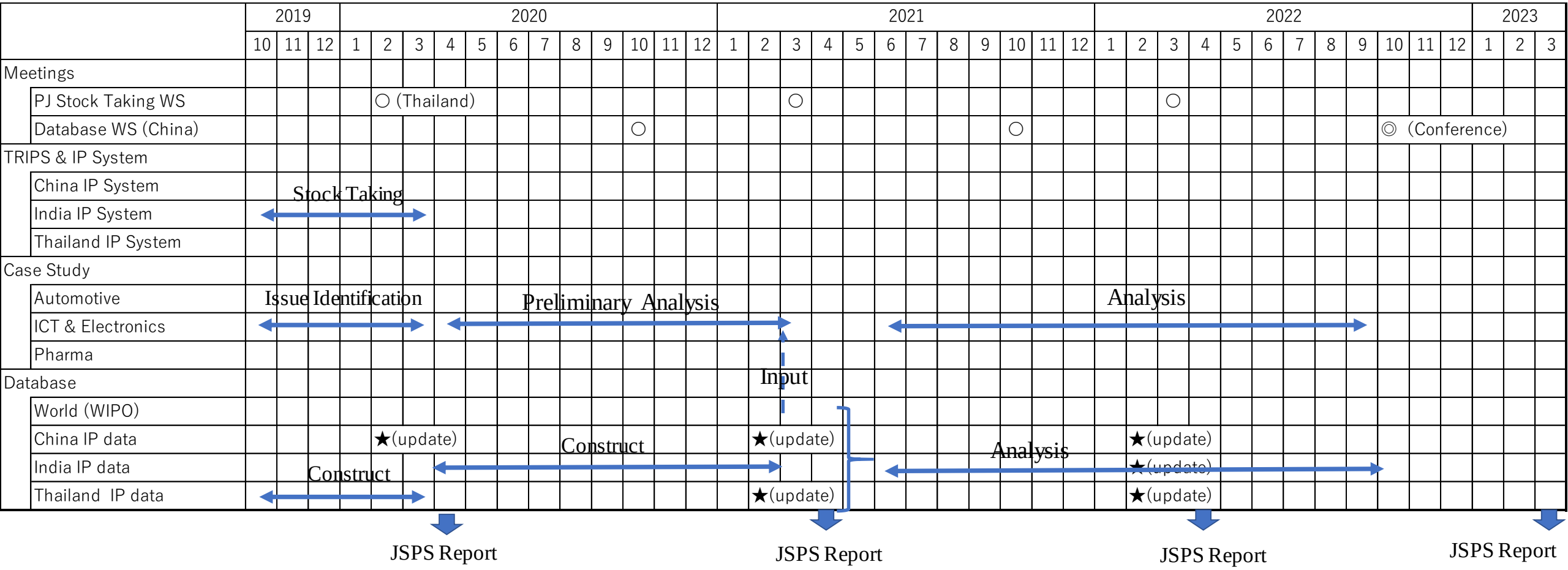
	China (Huang)	**India** (Mani)	**Thailand** (Charoenporn)
Electronics		Kang, Huo	
Pharma		Motohashi, Mani	
Automotive		Intarakumnerd, Charoenporn	

Integration Patent Analysis (Motohashi、Dang)

Sectoral Lead Country

Intl. Joint Researcher

(Tentative) Work Plan



Intermediate plan of 2019FY (until March 2020)

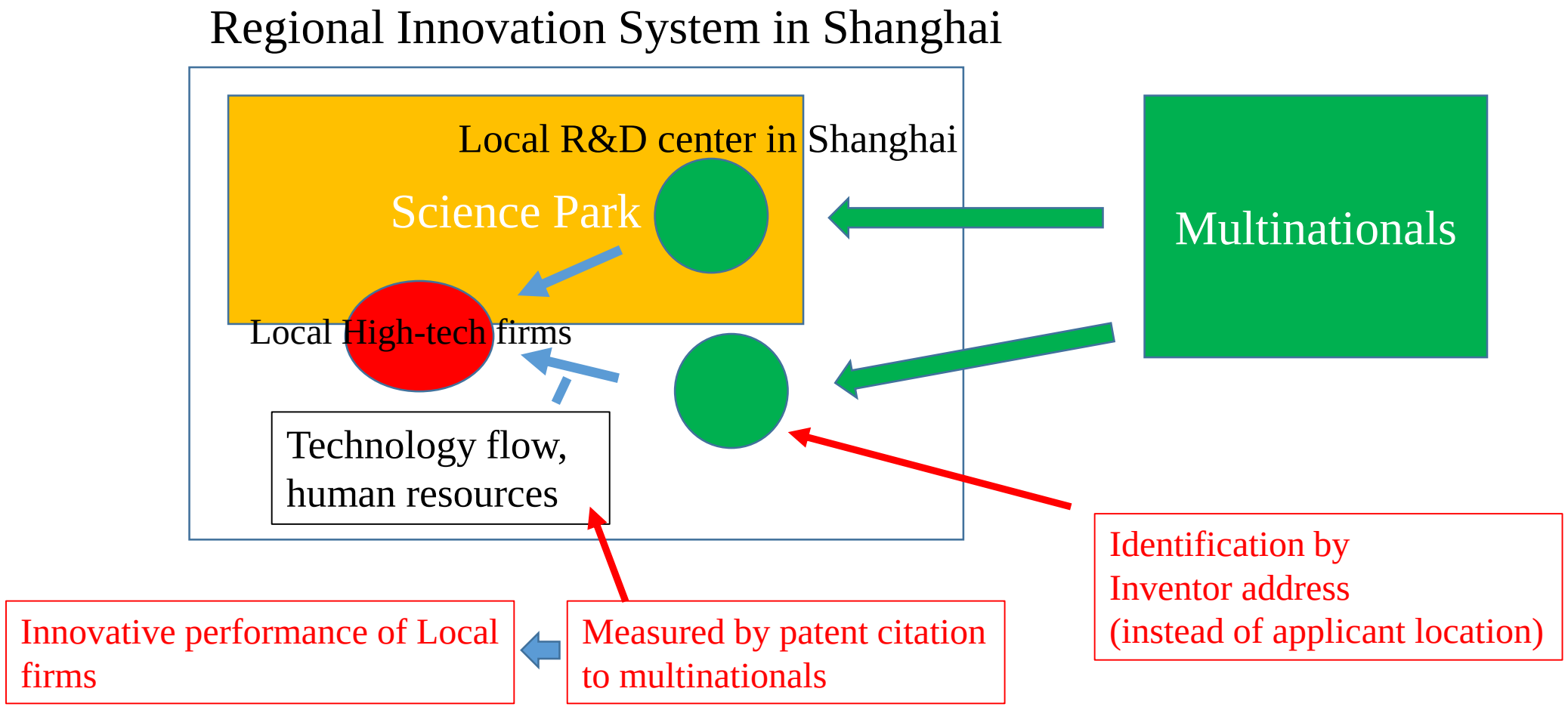
1. Local institutional characteristics for research questions
   - Historical view of IPR system developments (from 1995 or so)
   - What are government policy, informal institutions (IPR enforcement environments) relevant to our research questions?
   - Industrial development characteristics focusing on three industries (or any others if it is important)
   - What are interesting research questions? (ex “Huawei’s competitive edge?”, “Impact of Section 3(d) in India”, “E-car movement drives changes local firms competiveness?”)
   - Detail items for investigations will be released by end of November, 2019
2. Stock taking workshop (Feb-March, 2020 in Bangkok)
   - Develop concrete work plan of country-industry case studies (what, how and by whom)

Development of patent database for analysis

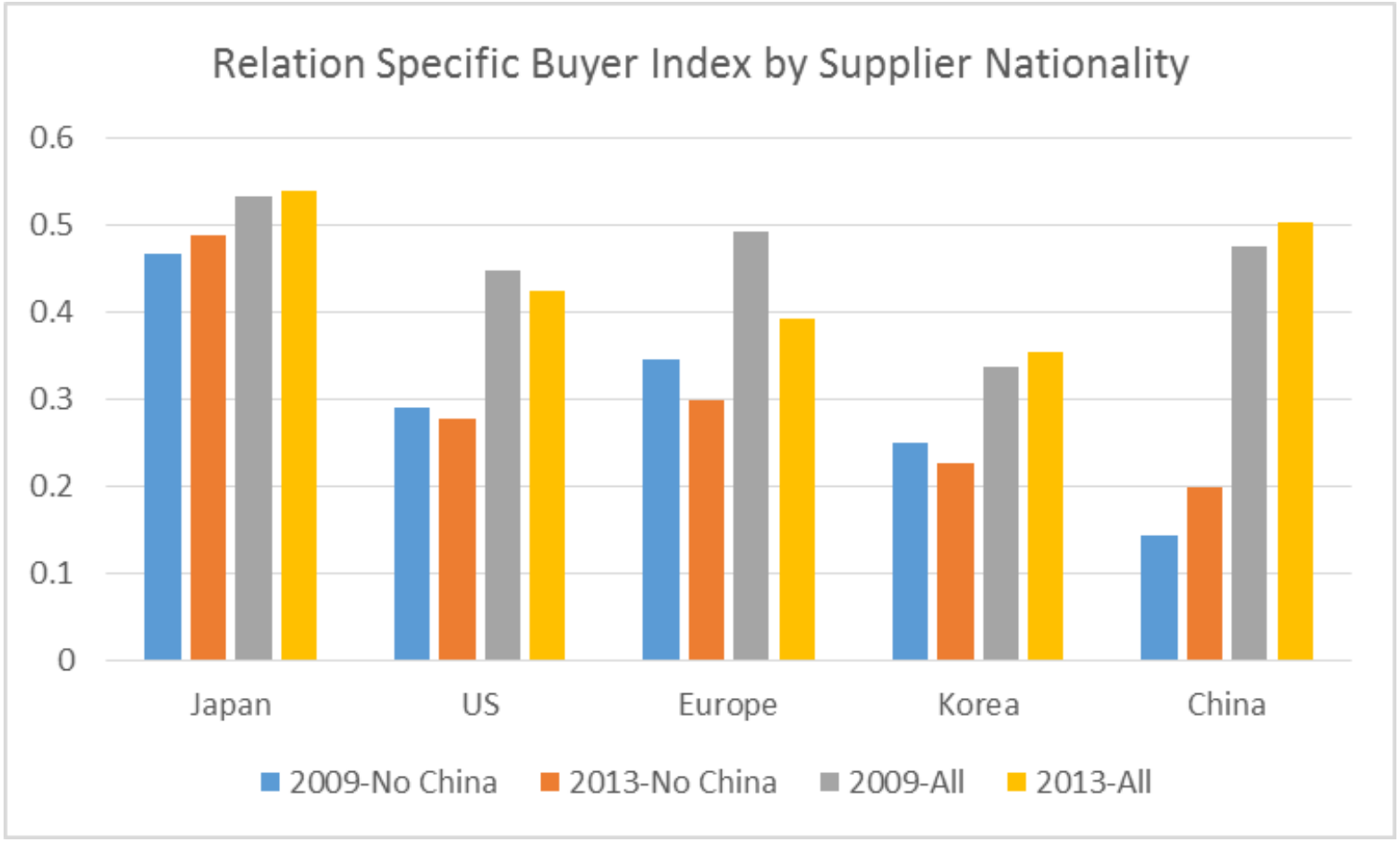
1. Use of patent information
   - International patenting information (such as USPTO, PCT) is not enough (lack of domestic firms capability) -> domestic patent info including utility models (petty patents)
   - Citation information : knowledge flow, patent quality indicators (not available in Thailand and India)
   - International labor mobility by disambiguated inventor info.
   - Use of patent document text information : comparing the patent contents between multinationals and domestic firms

2. Other types of firm level data
   - Financial accounts (business performance) : Orbis, domestic sources (like firm register data, Qichacha (China), DBD (Thailand)
   - Other data : OEM-supplier, VC investment data …

Technology spillover from multinationals to local (Dang, Mao and Motohashi, mimeo)



OEM-Supplier relationship and supplier competitiveness in China auto industry (Motohashi, 2019)

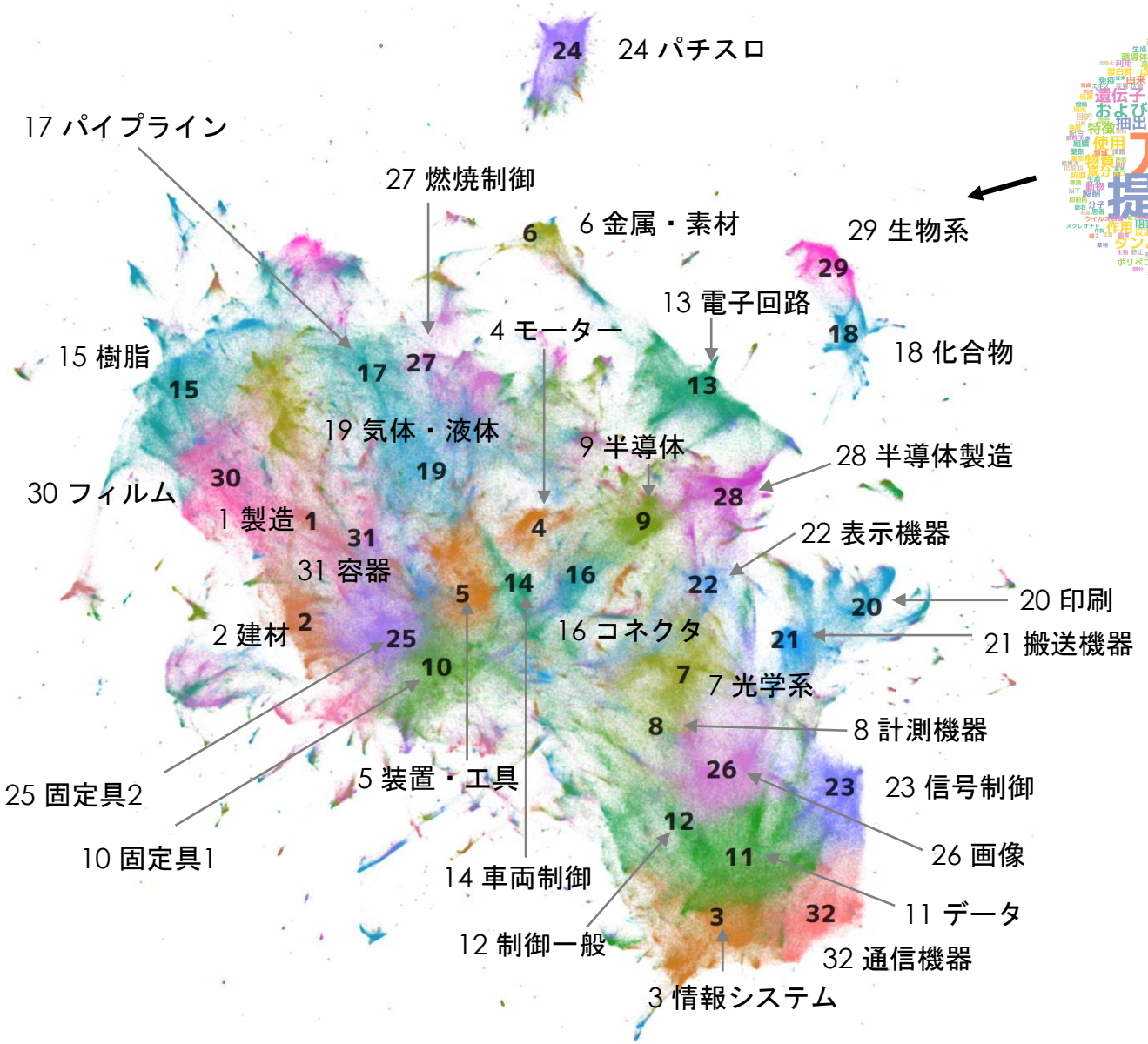


- Measuring OEM-supplier relation specificity (instead of within arms length)
- Technology spillover from OEM does matter for supplier

Using patent text info for technology competitiveness analysis (Koshiba, Ikeuchi and Motohashi, 2019)

1. Process of patent text
   - Titles and abstracts of JPO patents, 2015-2019 (about 5 million)
   - Word embedding (distributed expression) -> vector space model of patent contents
   - Clustering and visualizing patent based technology spaces
   - Find nearest 200 patents by cosign similarity of content vectors (NGT)
2. Similar works for CNIPR patents
   - BAT (Baidu, Alibaba, Tencent) are compared to GAFA (on-going)

Clustering and Visualization



Characterization of university patents (base on top 200 nearest patent info.)