

The Multinational World

How Cities and Regions Win or Lose in the Global Innovation Contest

Riccardo Crescenzi

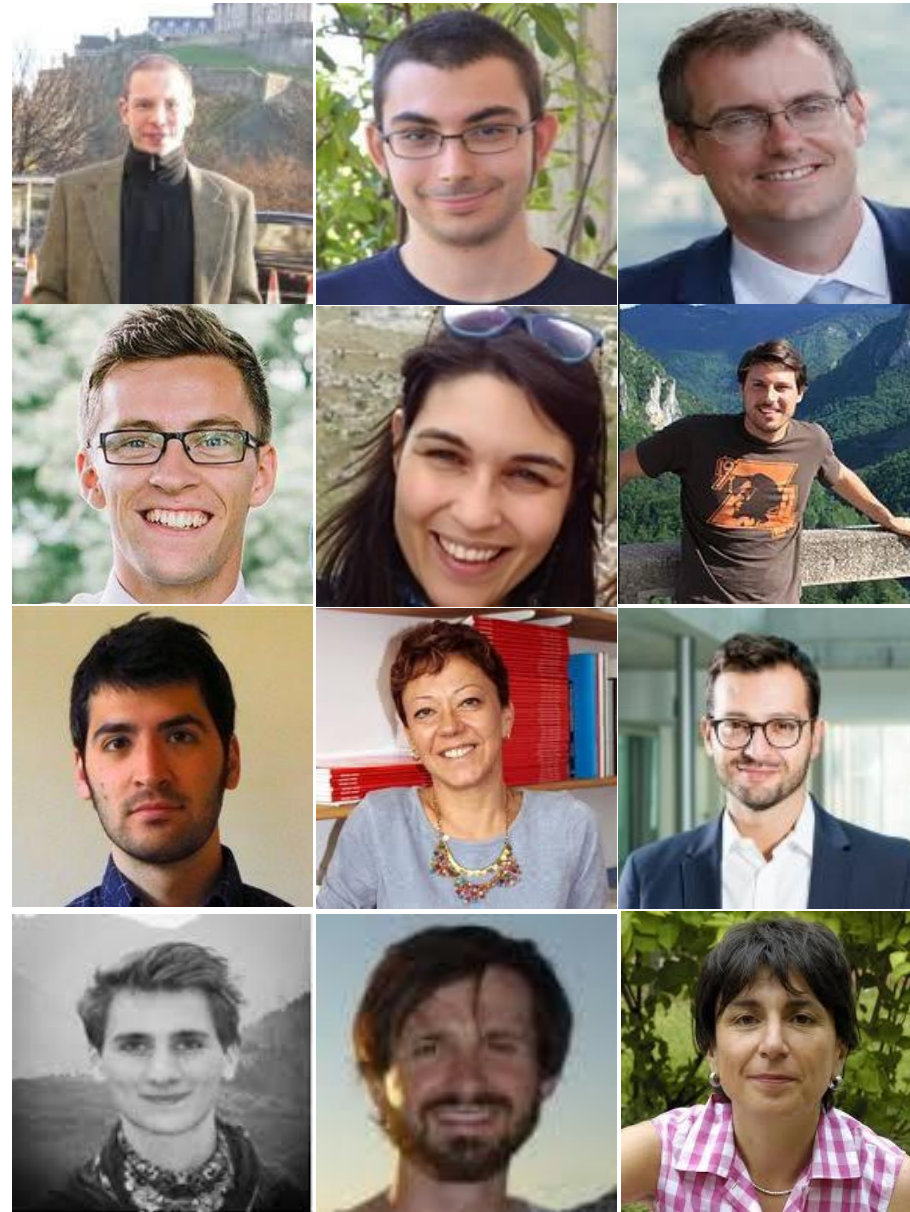
London School of Economics



@crescenzi_r #LSEMultinational

Thank you!

- Vito Amendolagine
- David Arnold
- Marco Di Cataldo
- Arnaud Dyevre
- Roberto Ganau
- Mara Giua
- Simona Iammarino
- Alexander Jaax
- Nicola Limodio
- Frank Neffke
- Sergio Petralia
- Roberta Rabbellotti



The Beginning (1)

- 2003 – During my Masters at the LSE, calling my girlfriend cost me approx. £600
- 2008 – When I joined the LSE as an Assistant Professor, calling the same person cost me nothing ...
- This trend induced some commentators and scholars to conclude that ...

THOMAS FRIEDMAN

THREE TIMES WINNER OF THE PULITZER PRIZE

The World is Flat

A BRIEF HISTORY OF
THE GLOBALIZED WORLD
IN THE 21ST CENTURY

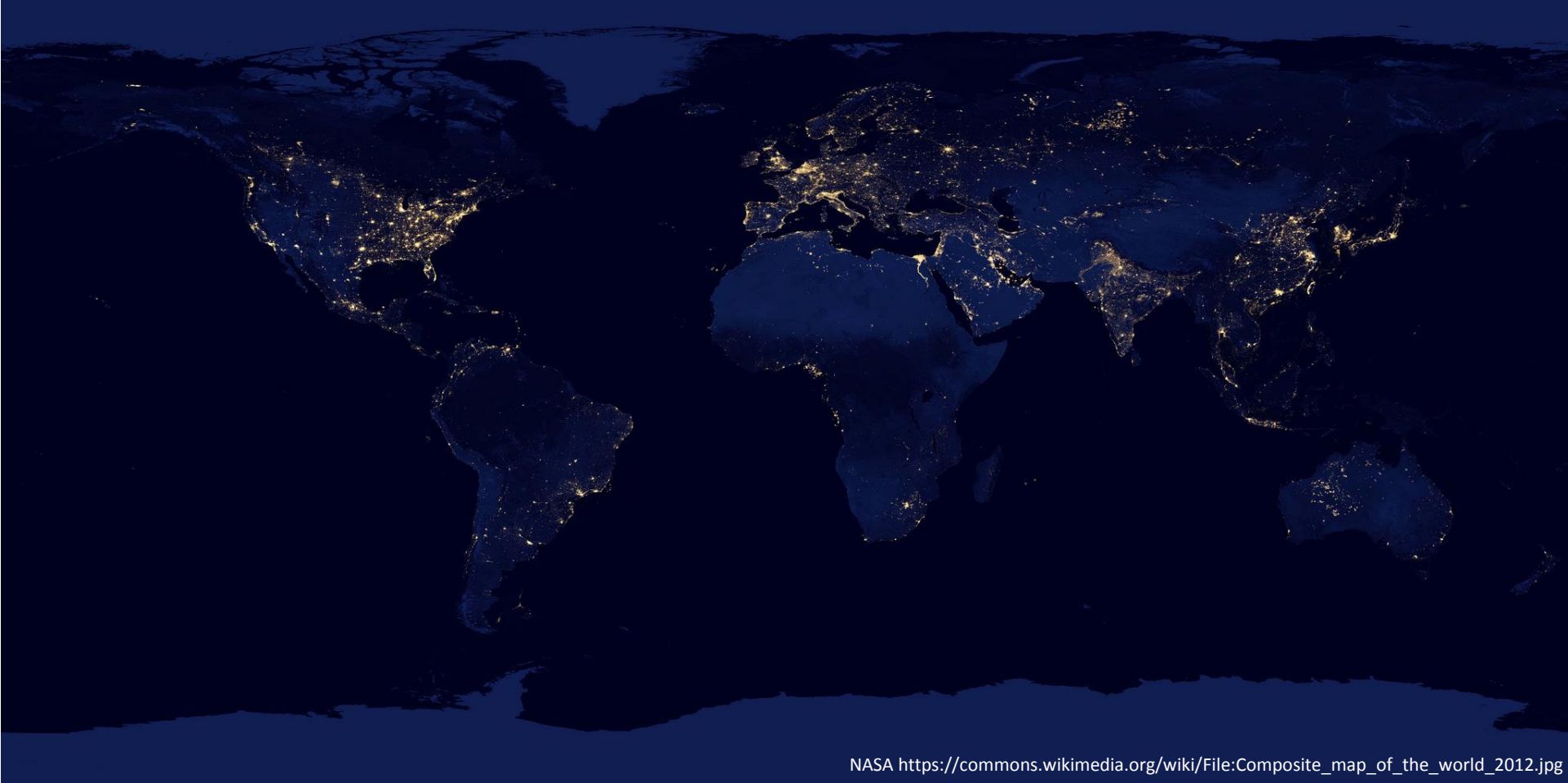


The Beginning (2)

It took me an entire PhD to discover that the world is **not** flat!



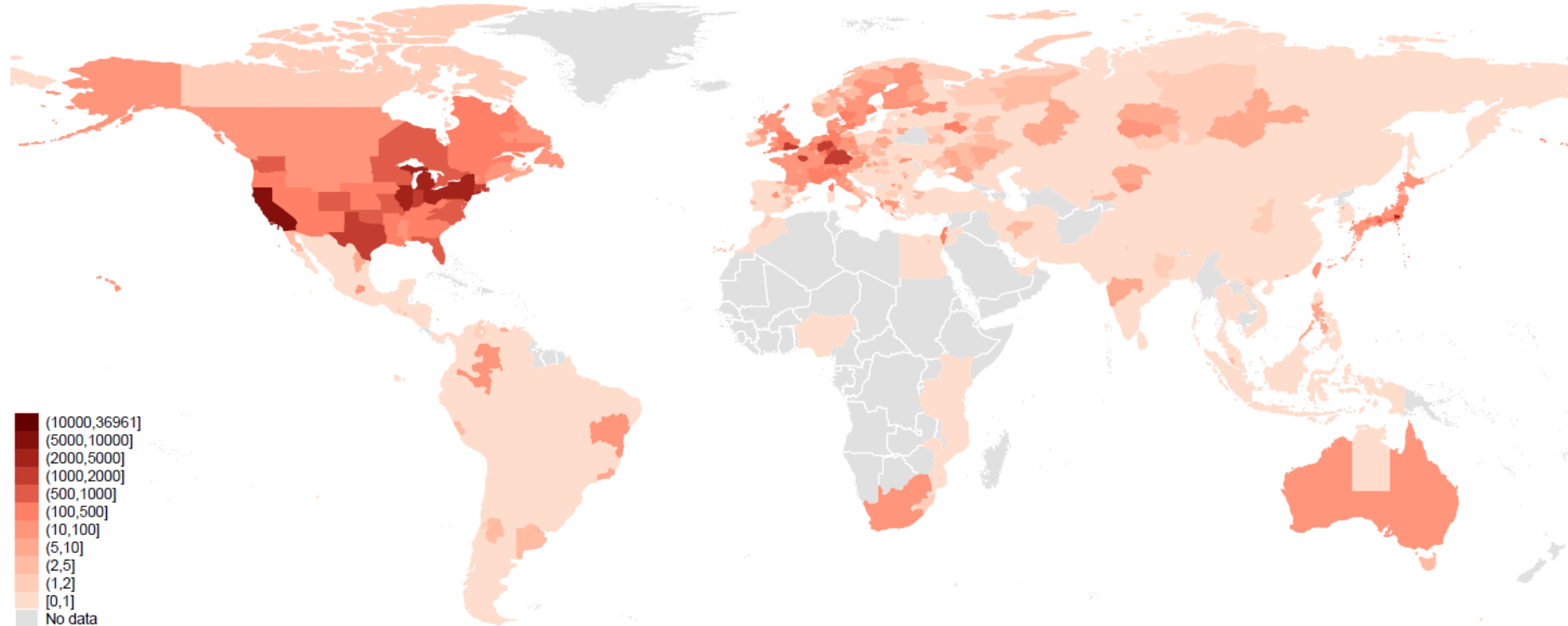
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NASA https://commons.wikimedia.org/wiki/File:Composite_map_of_the_world_2012.jpg

Inventive activity around the world

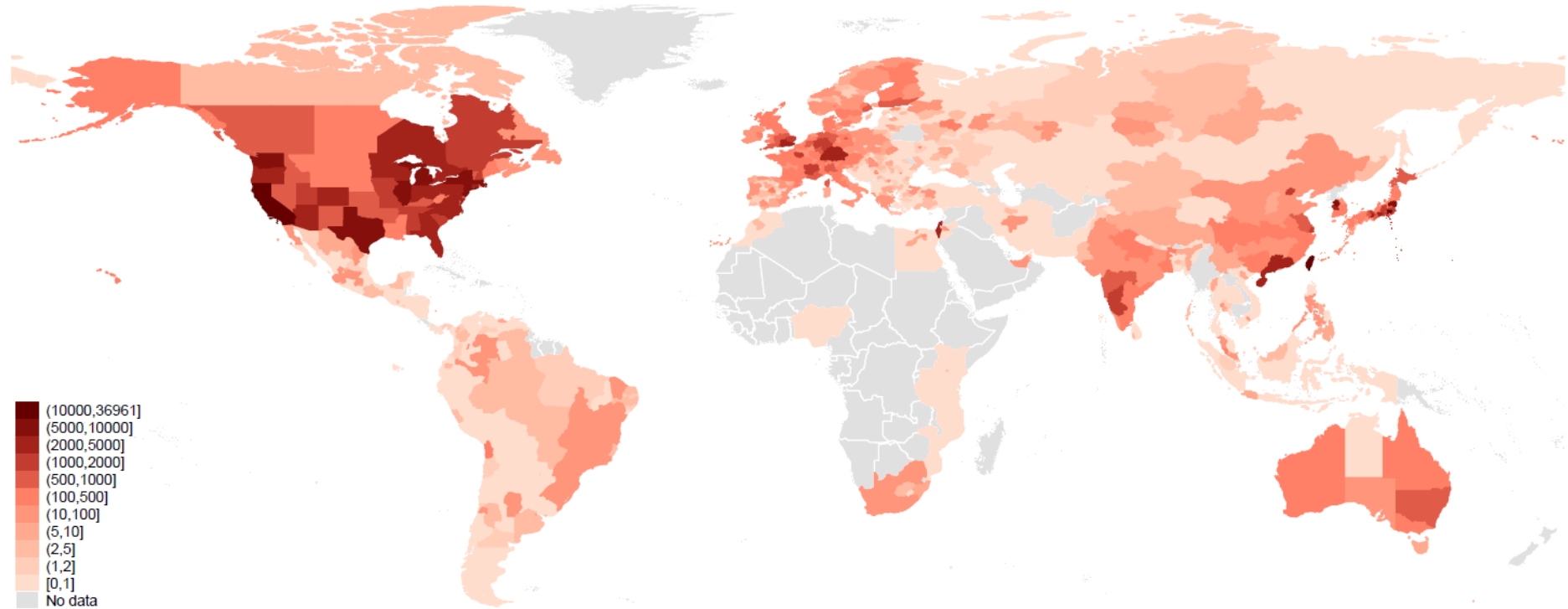
1975



Regional Patent Count – Own Elaboration - USPTO data

Inventive activity around the world

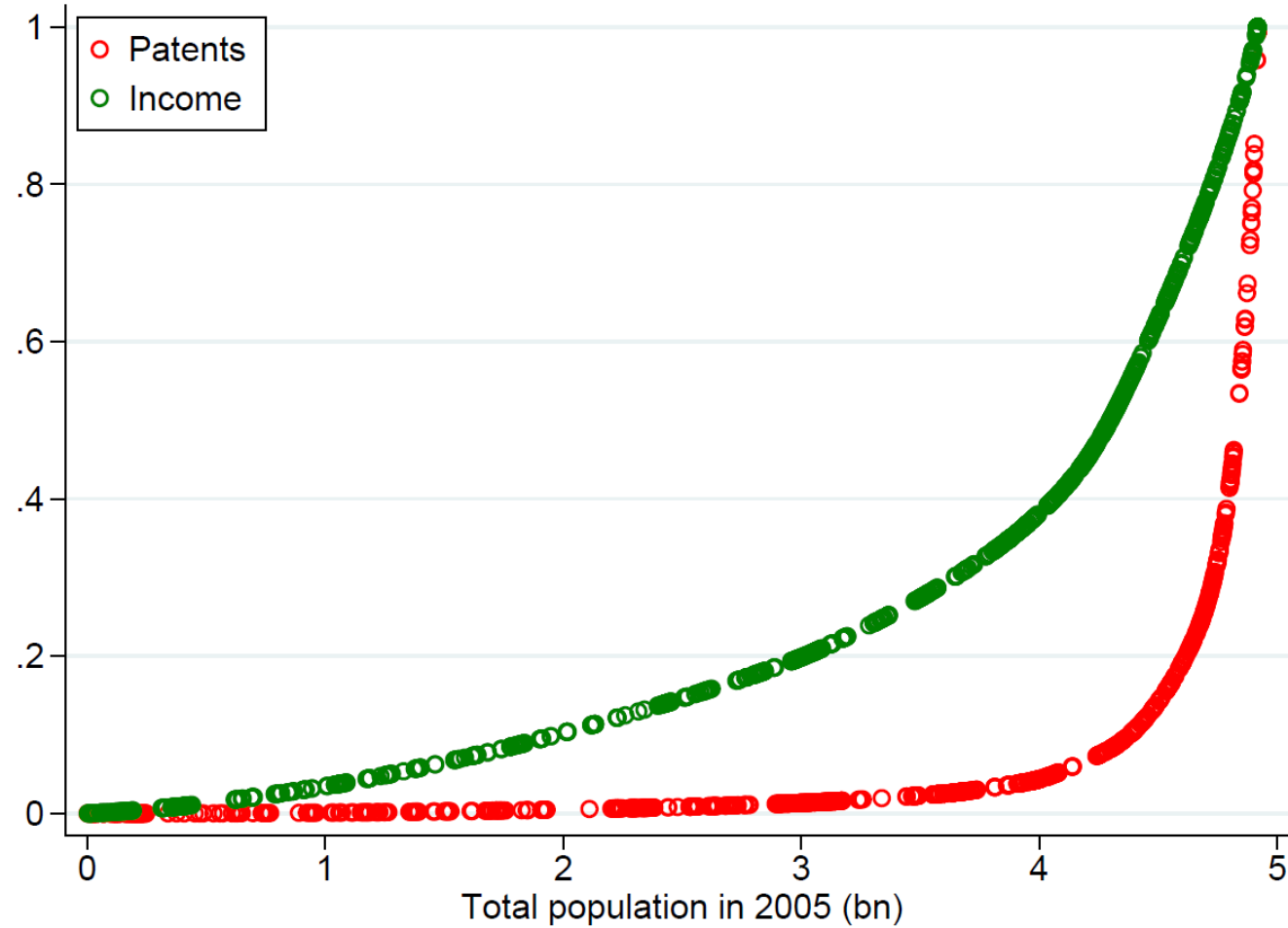
2012



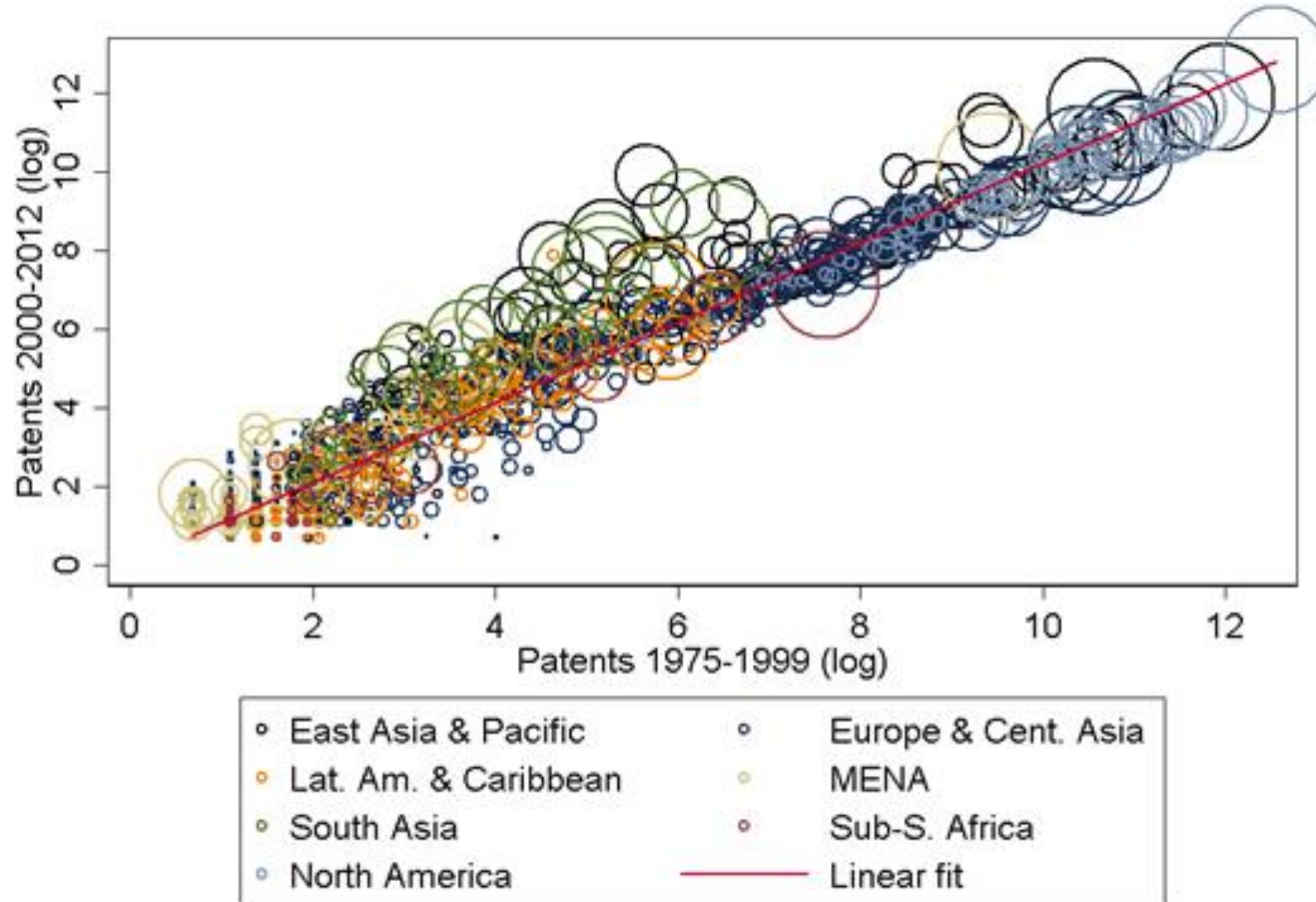
Regional Patent Count – Own Elaboration - USPTO data

Inventive activity around the world:

Regional Income vs. Patents

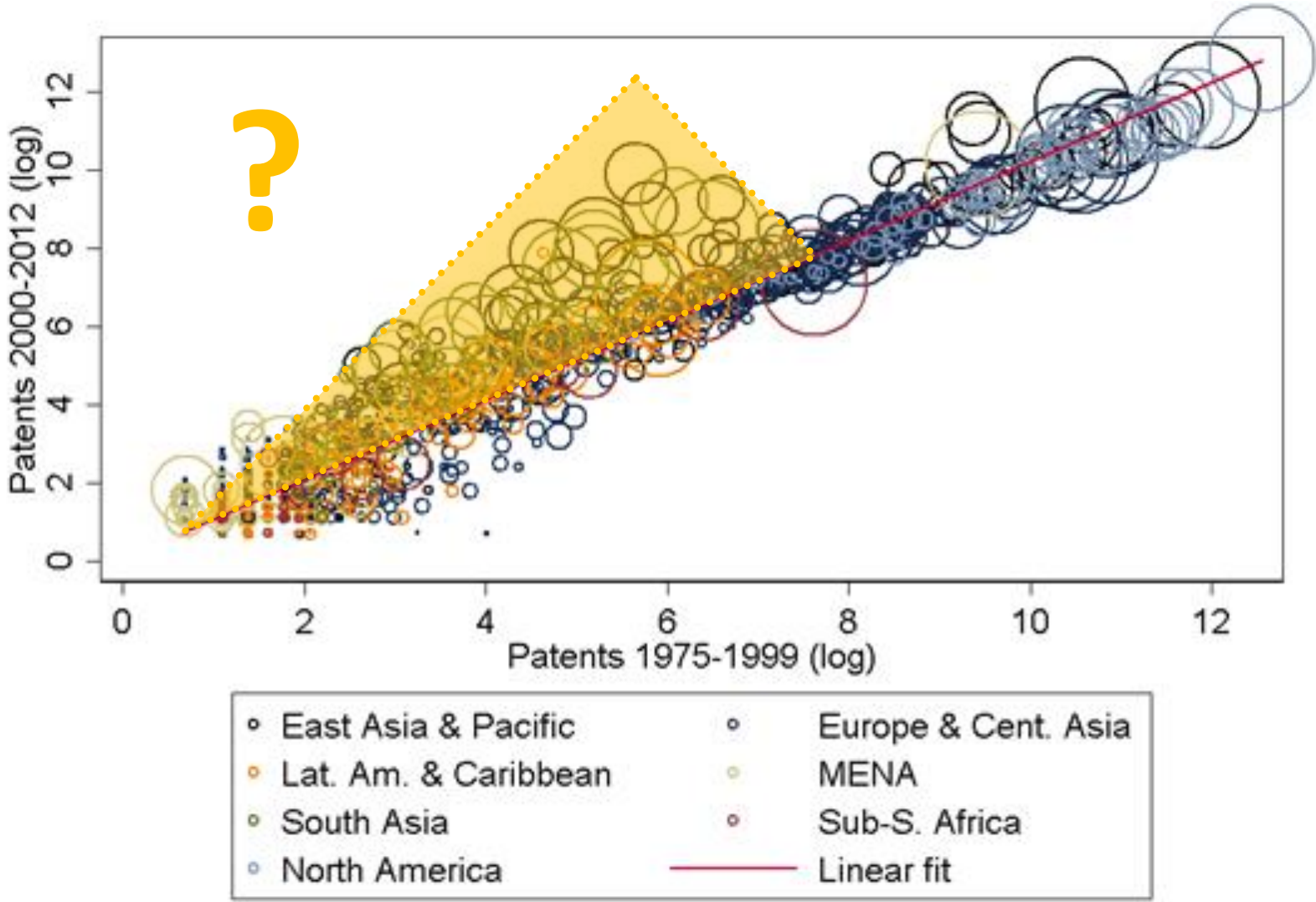


The world is not flat ...



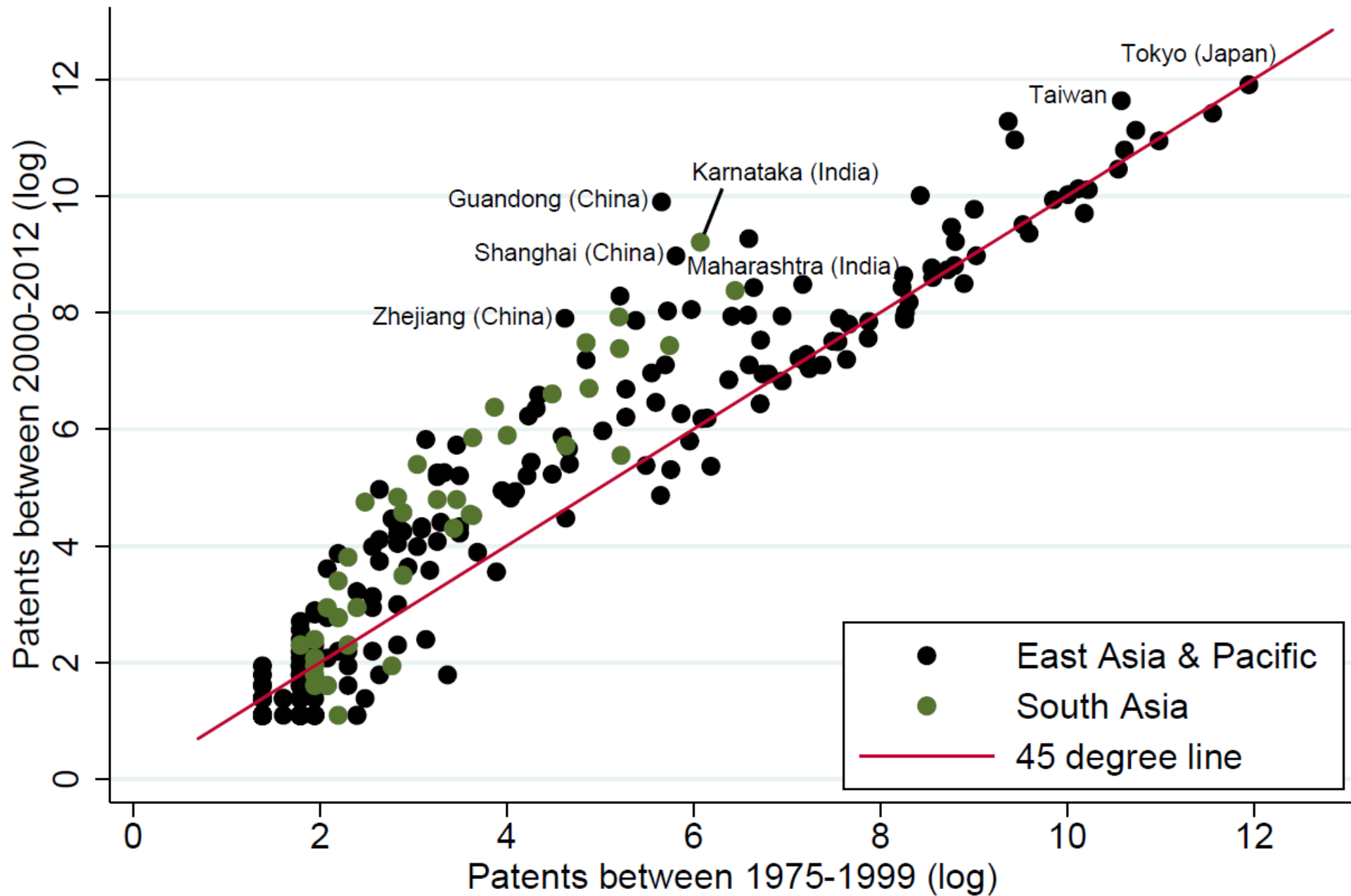
Note: circles are proportional to regional GDP in 2000

... and yet it moves!



Note: circles are proportional to regional GDP in 2000

Asia



Guangzhou 1984



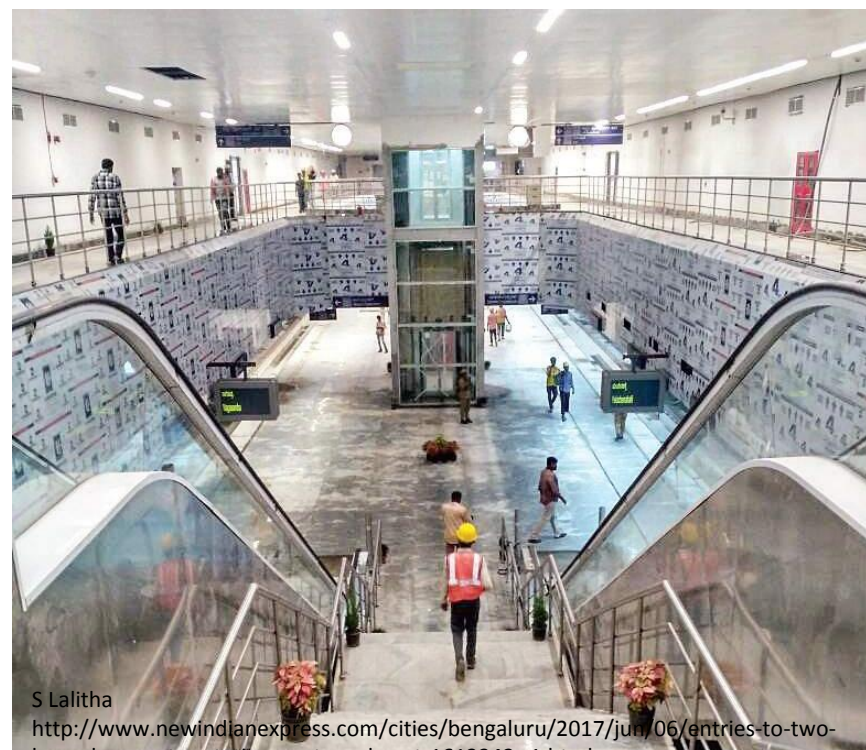
Guangzhou 2017



Bangalore 1999



Bangalore 2017

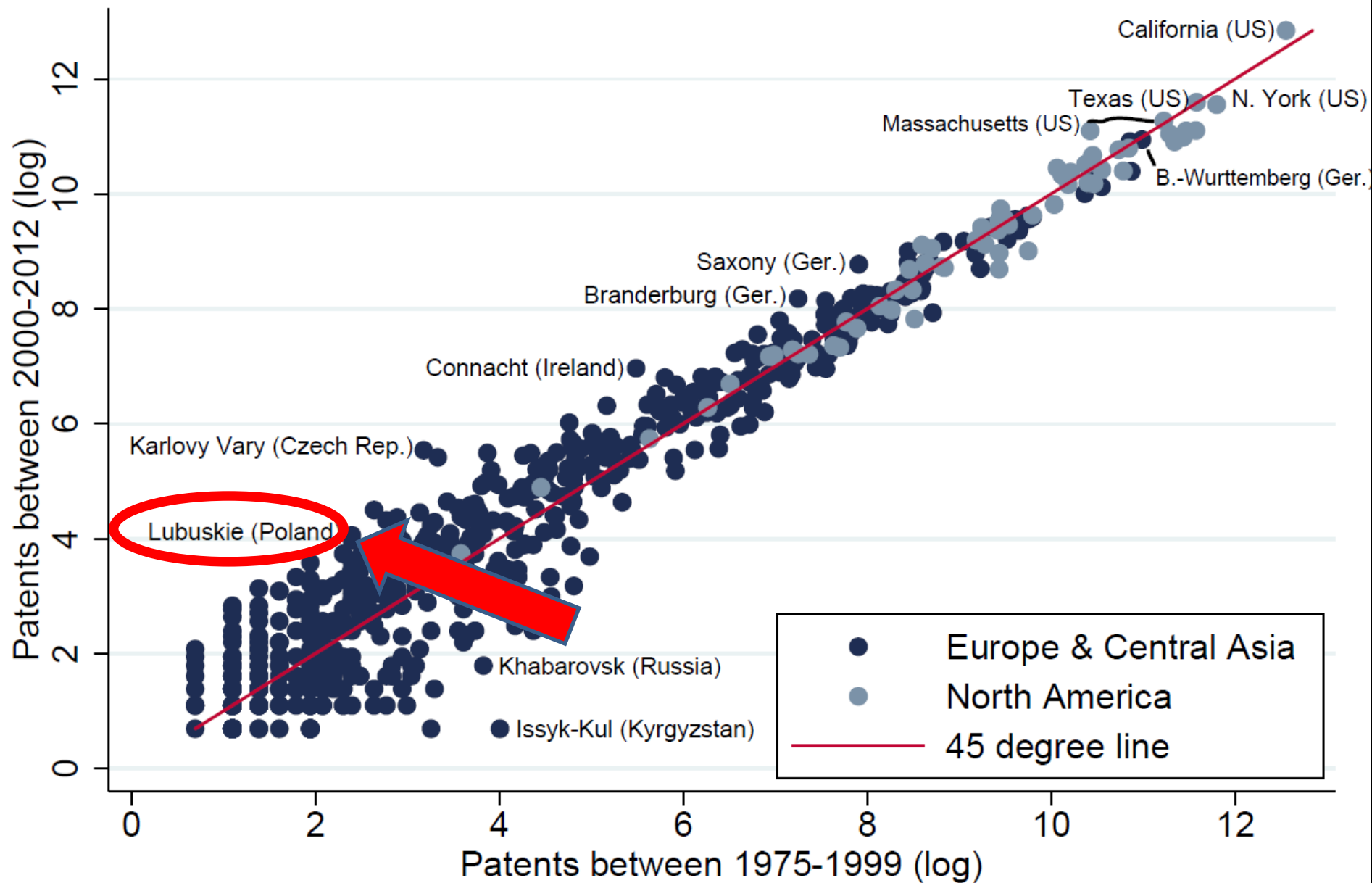


S Lalitha
<http://www.newindianexpress.com/cities/bengaluru/2017/jul/06/entries-to-two-bangalore-metro-stations-not-ready-yet-1398888.html>



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Europe and North America



Lubuskie 1994



Lubuskie 2017



And yet it moves! ... How?

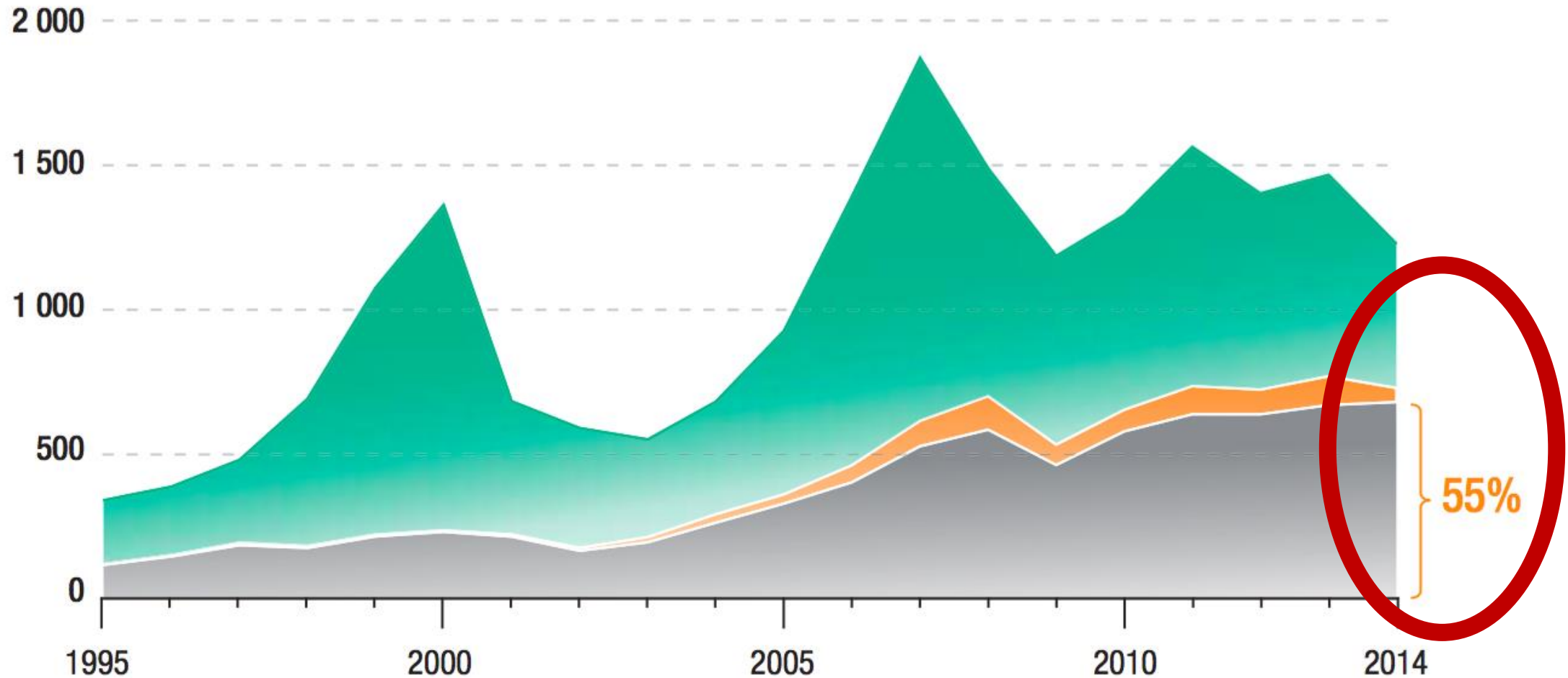
Looked for answers by exploring:

- Data
- Media
- Public policies
- Books

Global inflows of Foreign Direct Investment (FDI)

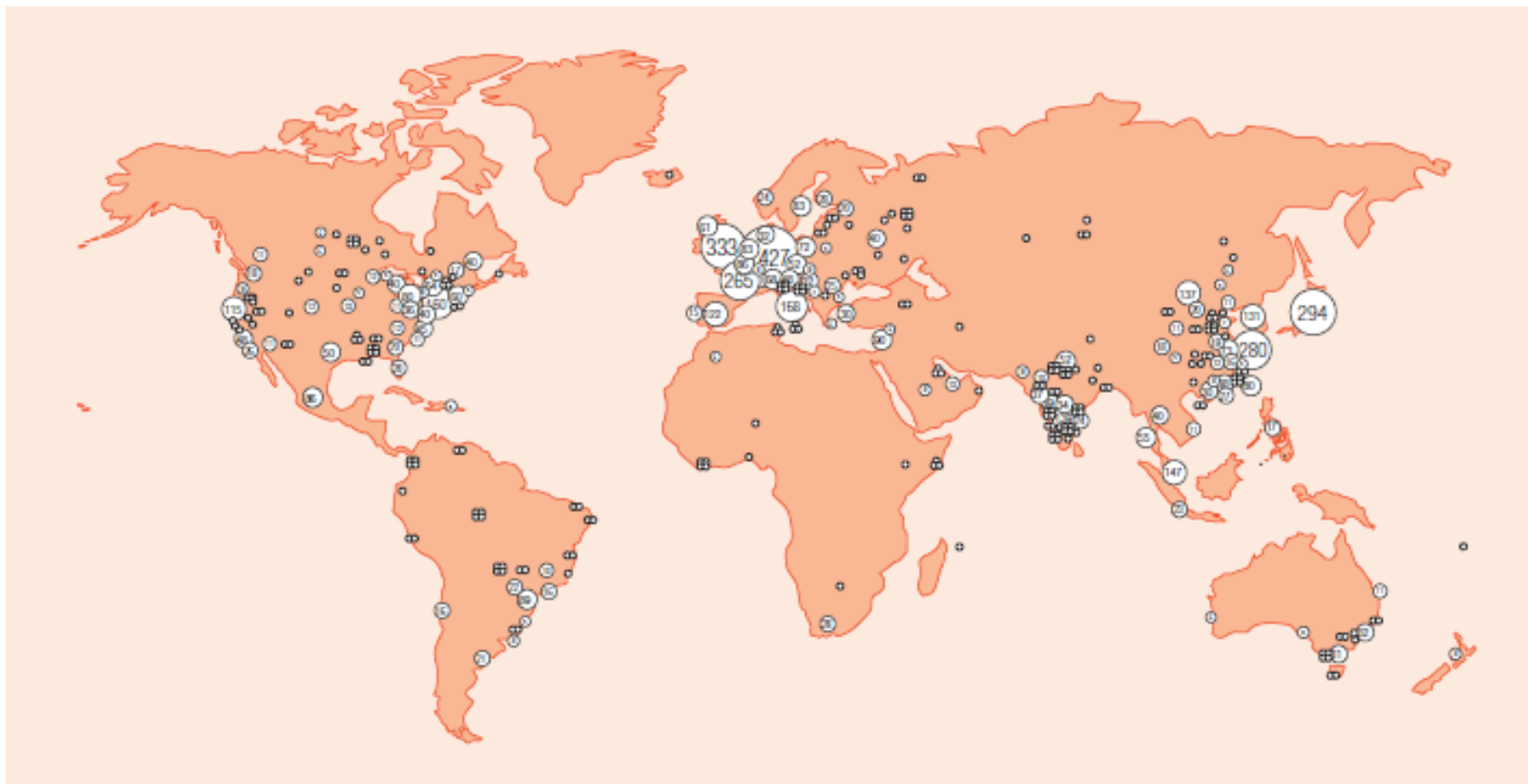
Billions \$ - 1995-2015

Developed economies Transition economies Developing economies World total



Cross-Border R&D Centres

2016



“Between 2000 and 2015 the number of MNE R&D centres in emerging countries grew by a factor of five, while in the Triad countries this number merely doubled”

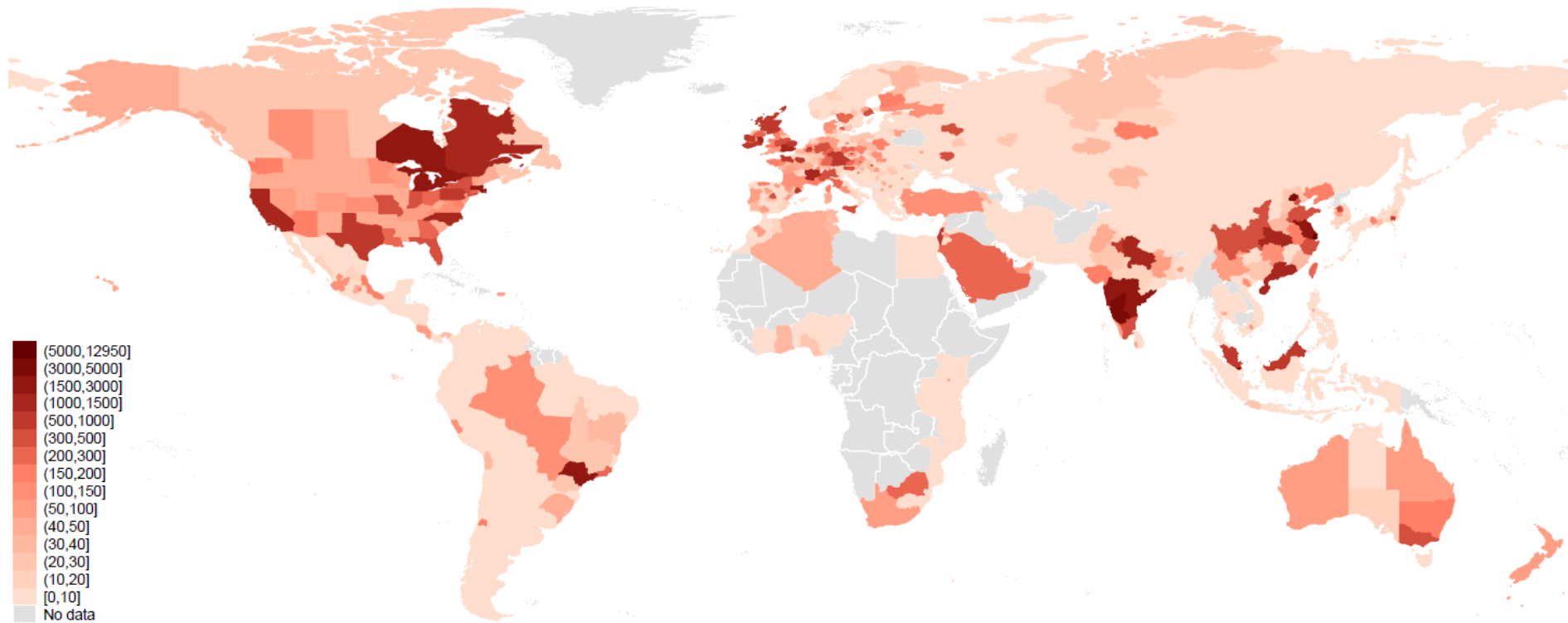
Global Innovation Index Report, 2016

Source: R&D Locations database, accessed 5 March 2016; see <http://www.glorad.org> and von Zedtwitz and Gassmann, 2002.

Note: The figure shows a total of 5,877 cross-border R&D centres.

Foreign Investment in R&D activities

2004-2014

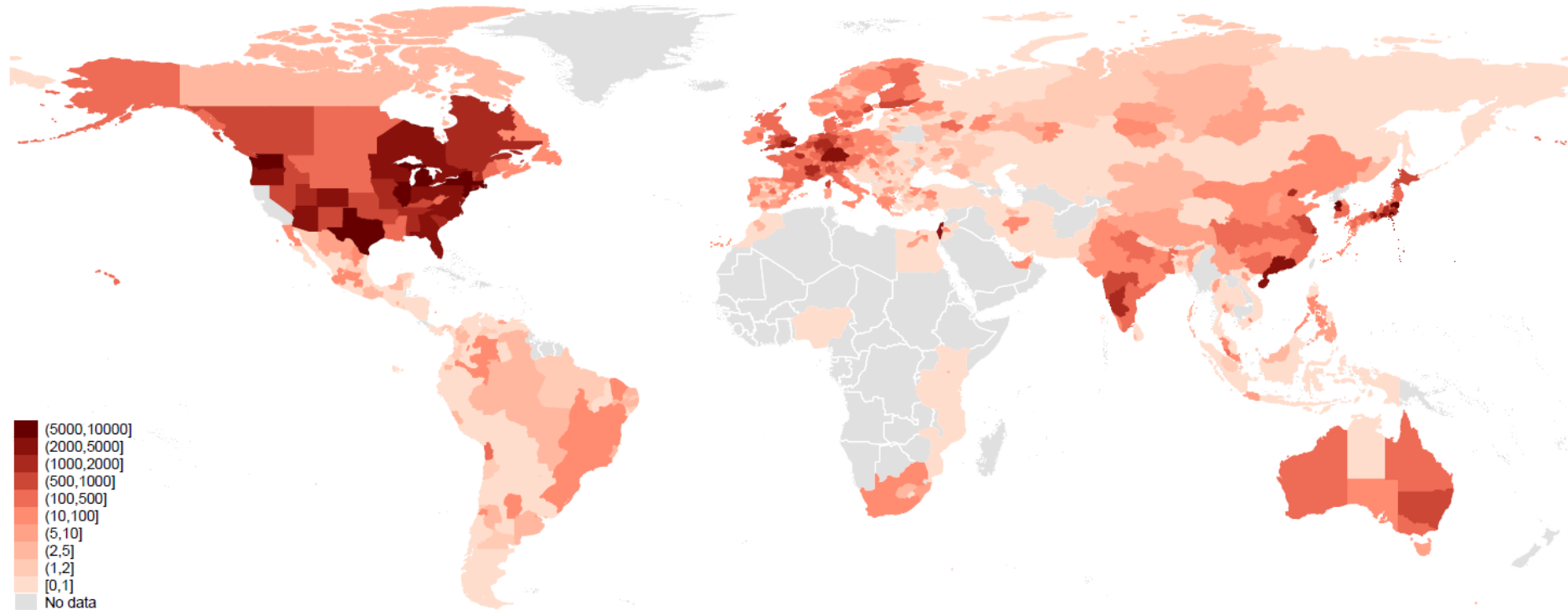


Inward FDI projects, Regional Cumulative Capex, Millions \$ – Own Elaboration – FDI Markets Data

Now spot the difference with
the World **Innovation** map

Inventive activity around the world

2012



Regional Patent Count – Own Elaboration – USPTO data

BBC NEWS, JUNE 2006

http://news.bbc.co.uk/1/hi/world/south_asia/5050884.stm

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IBM plans big India investment

Computer giant IBM has announced plans to invest nearly \$6bn (£3.2bn) in India over three years on the back of strong growth in business outsourcing.



The deal, which is triple the \$2bn that IBM has already invested in India, is the biggest by a multinational corporation in the country recently.

The company has extensive operations in India, most of which are also running business services such as call centres.

IBM's workforce in India is the firm's largest outside the US.

The company has about 43,000 employees in 14 cities in India.

SEE ALSO

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Tata confirms plan to sell UK steel businesses

Blow to manufacturing as Indian group rejects fresh investment in favour of disposal

-
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- Save



Workers facing unemployment put up a protest banner at the main gates of the Tata steelworks in Port Talbot in January © Getty

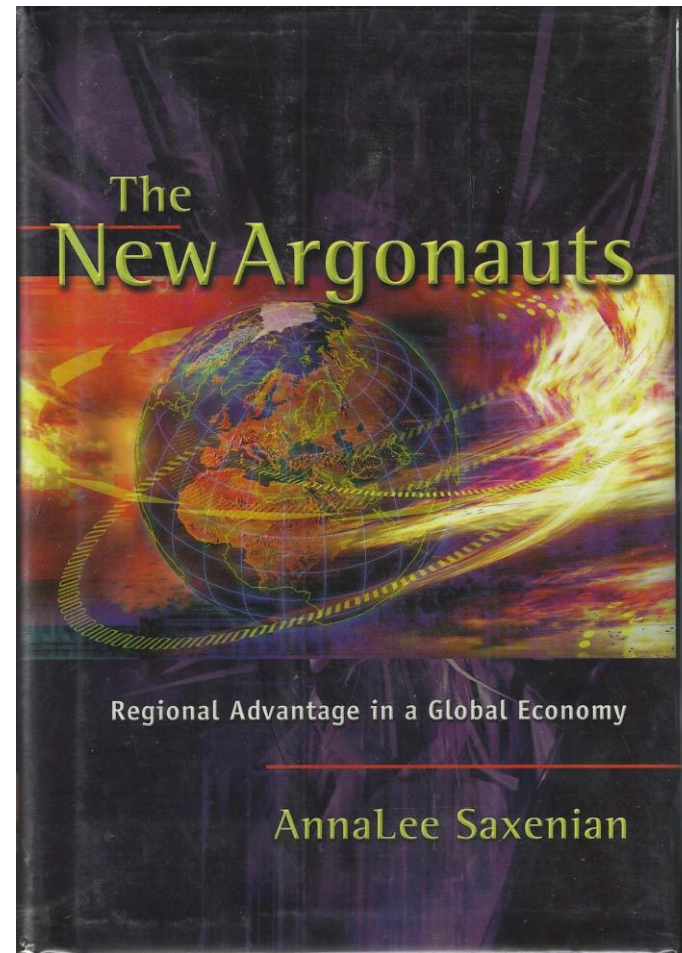
MARCH 29, 2016 Michael Pooler and Jim Fookard

39 comments

British steel industry suffered a severe blow as Tata, the Indian steel giant, confirmed fears that it was about to [put its UK business up for sale](#).

Late on Tuesday the Indian group said it was “looking at strategic alternatives” to the current ownership “to explore all options for portfolio restructuring,

How new technology clusters emerge

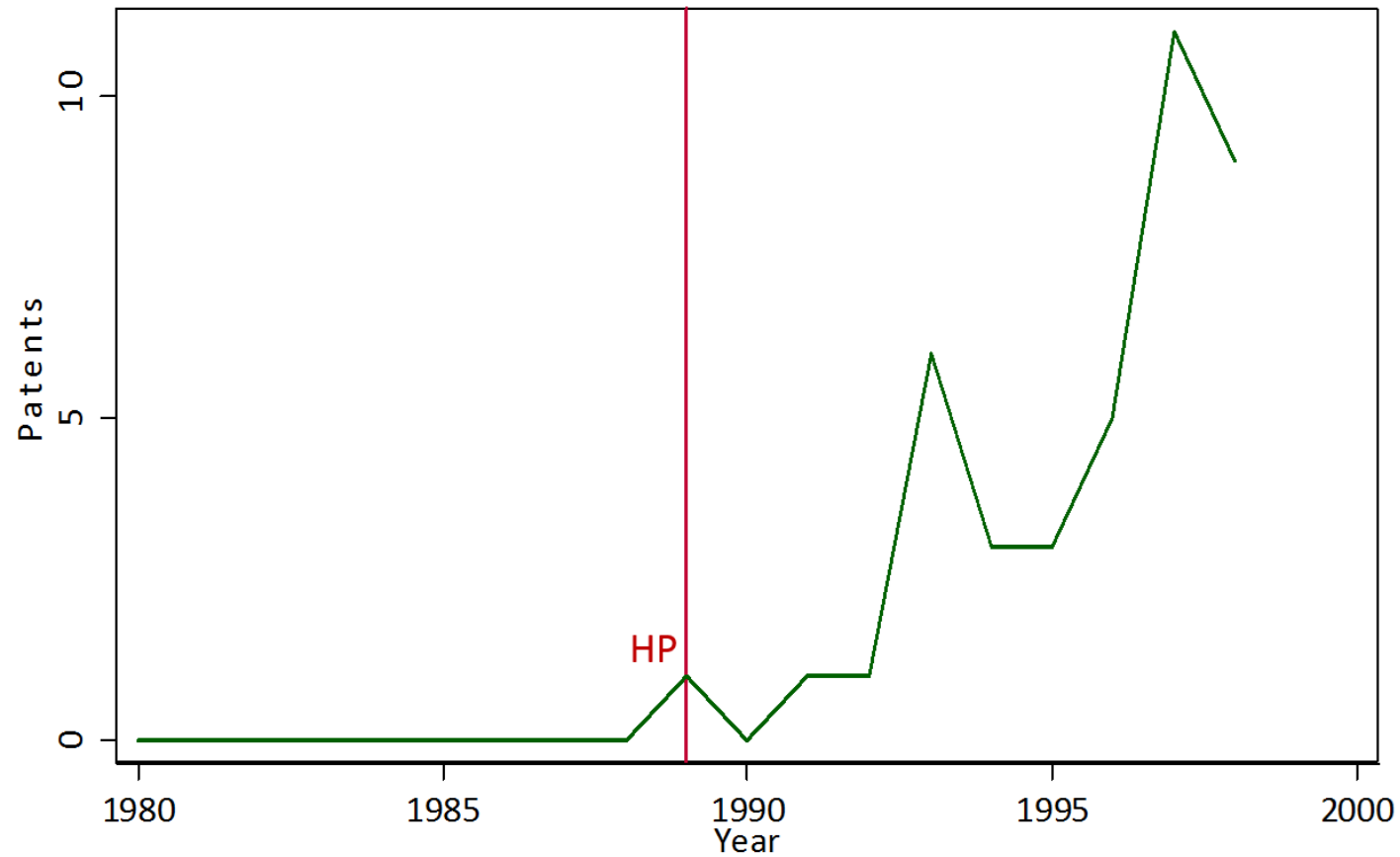


The new Argonauts

- Case studies about the internationalization of economic activities:
 - **Bangalore, India:** Infosys founded in 1981, quickly followed by leading US tech companies including HP (1989) and Texas Instruments (1985). From a virtually absent IT base, the region now accounts for a third of India's IT exports.
- How come?
 - Foreign-born, US educated entrepreneurs brought know-how and entrepreneurial capacity to their home countries
 - Foreign contracts
 - Foreign firms setting up establishments
 - HP and Texas Instruments in Bangalore

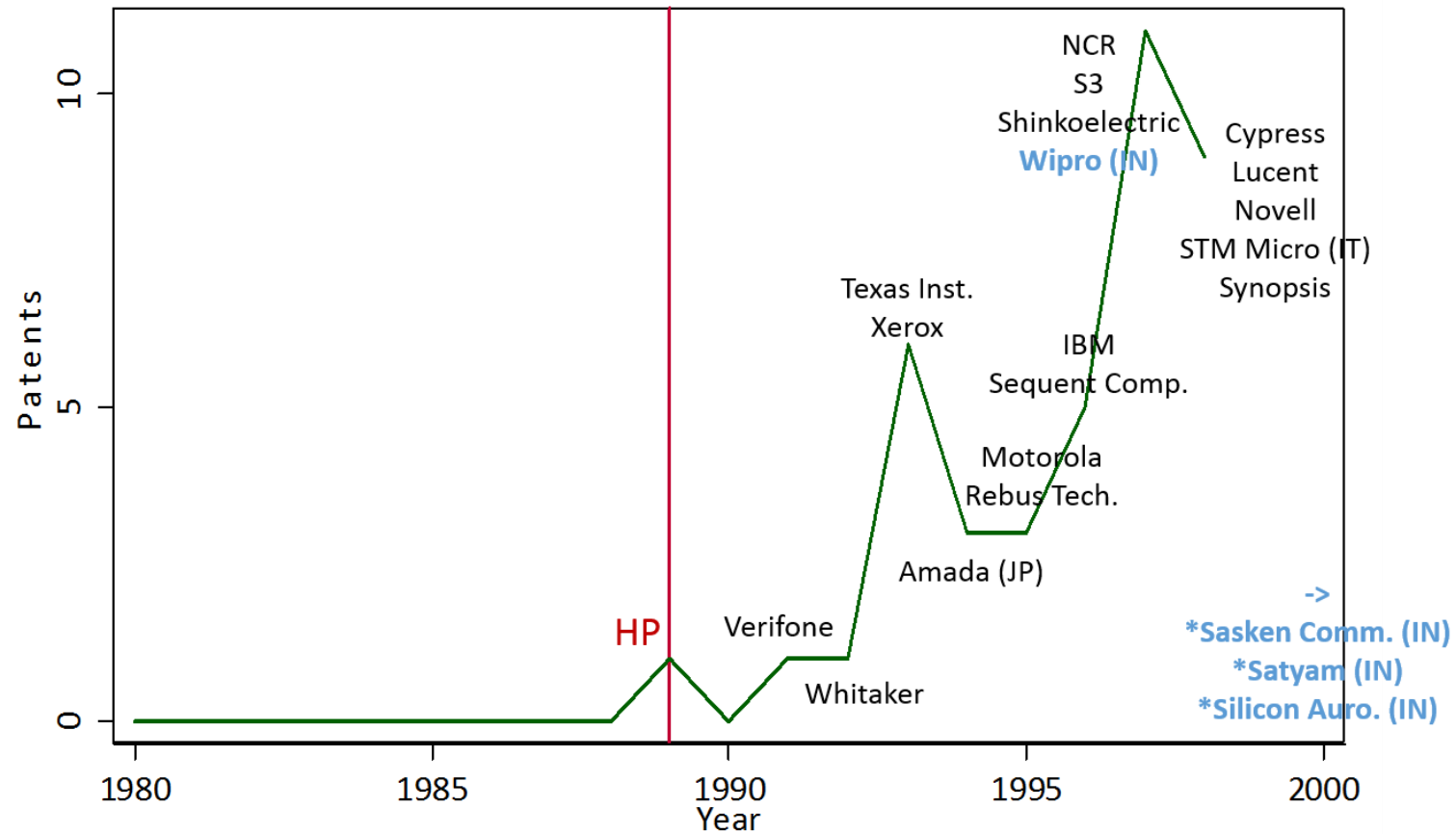
HP in Bangalore

Total patents in Karnataka
In Computer Hardware and Softwares



HP in Bangalore

Total patents in Karnataka
In Computer Hardware and Softwares



Surprisingly little is known about Multinationals...

LOCATION

*Where do multinationals go?
And why?*

*What activities are
(de)localised where?
And how?*

*How do location drivers vary
across MNEs?*

IMPACTS

*Where and how do they have an
impact on local innovation,
employment and wealth?*

*How do they interact with
domestic firms?*

*Which MNEs help with
innovation and development?
And how?*

Research Questions

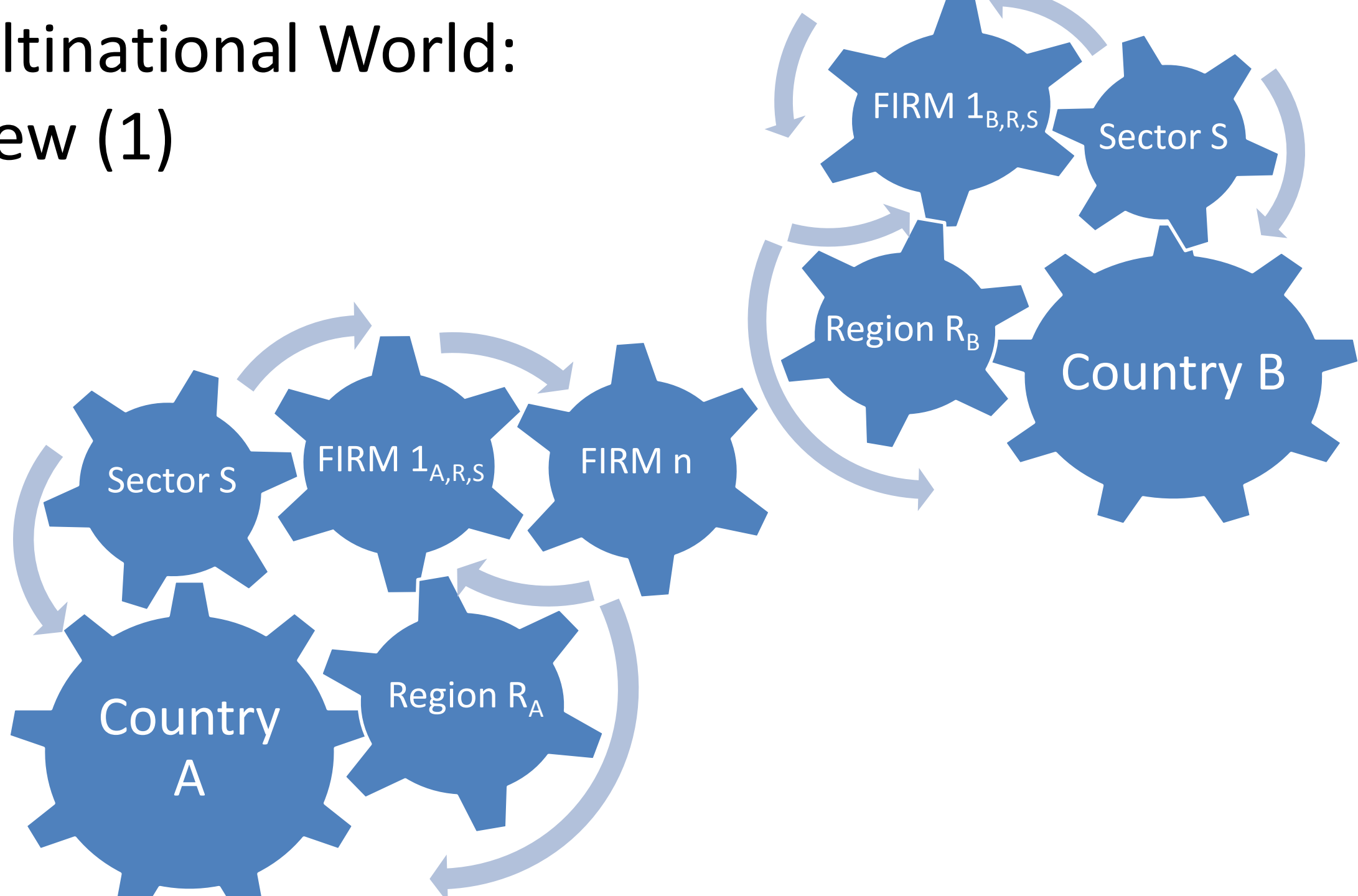
Disciplines

International Economics

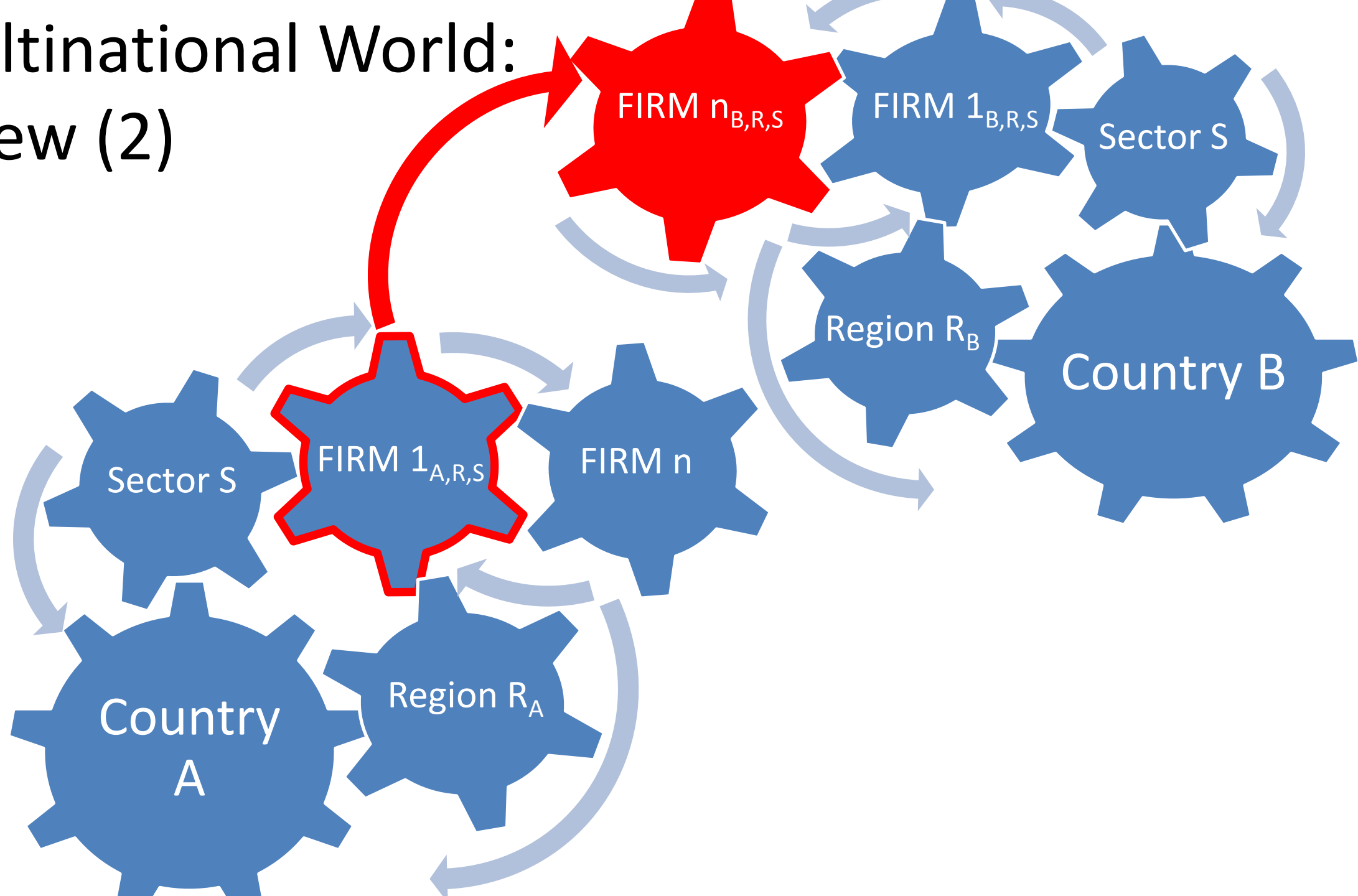
Management / Strategy / IB

Economic Geography / Public Policy

The Multinational World: X-ray view (1)



The Multinational World: X-ray view (2)



The Multinational World: the questions (1)

Do Foreign Firms make world regions more innovative?

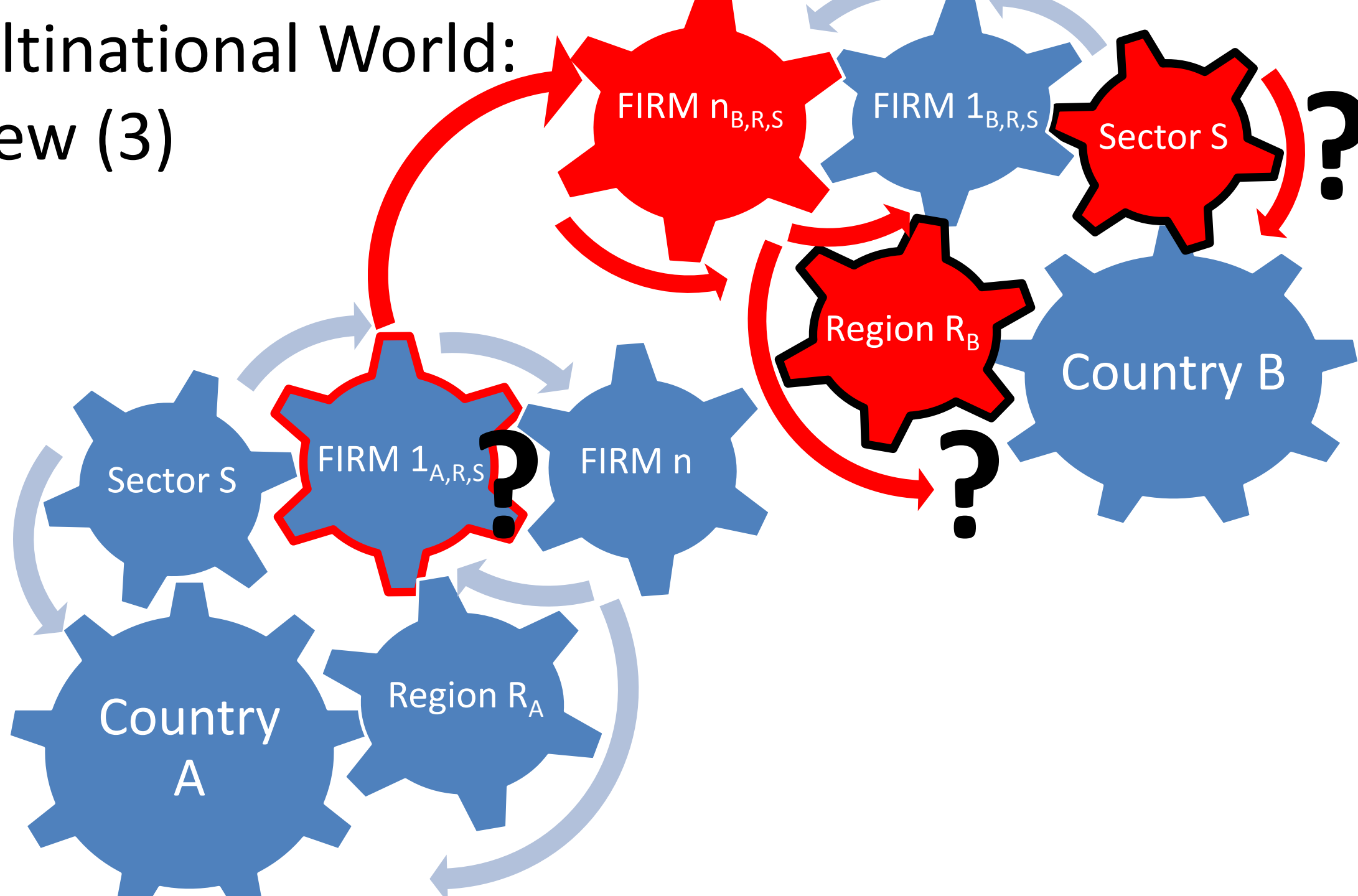
What types of firms?



Vs.

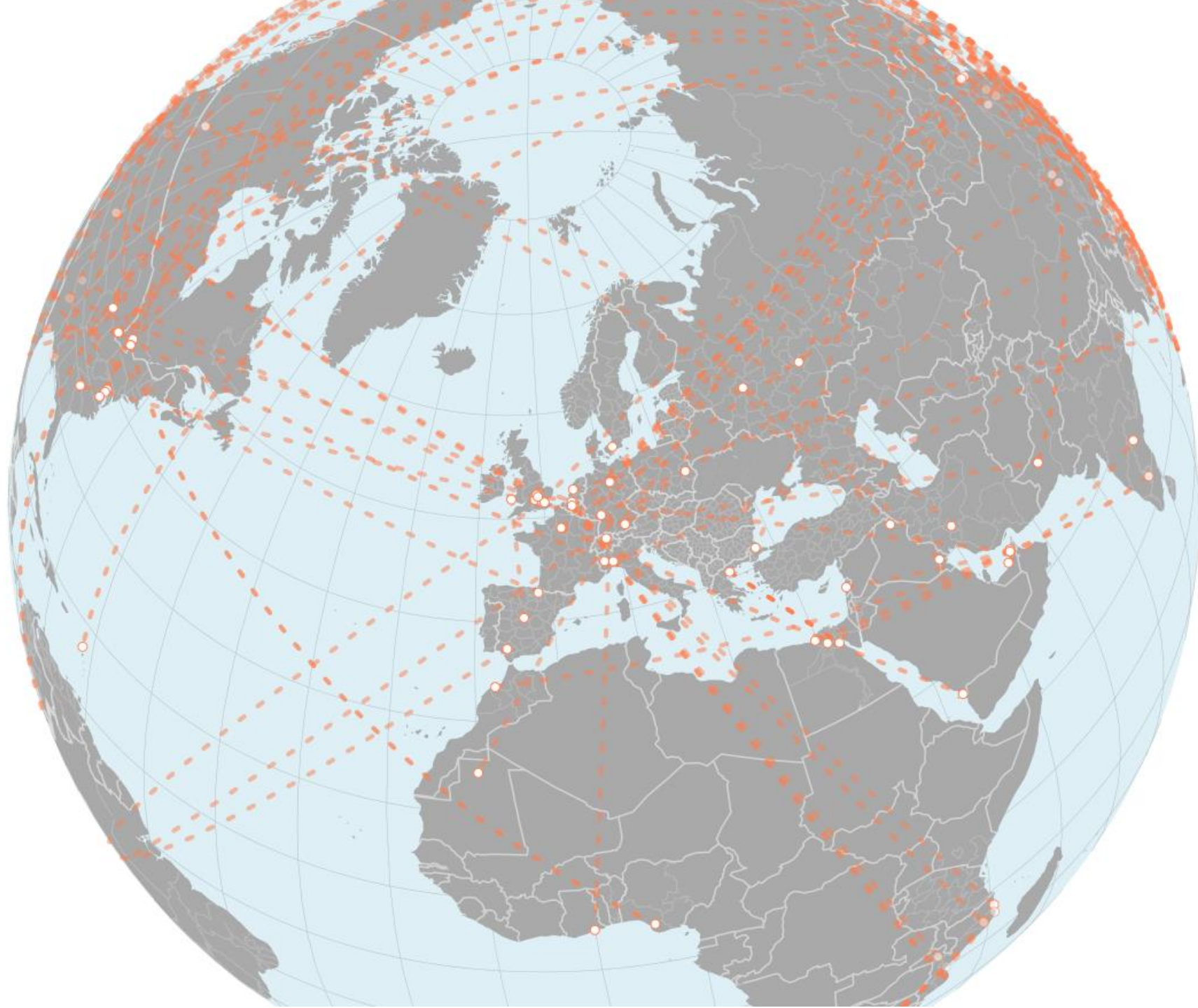


The Multinational World: X-ray view (3)



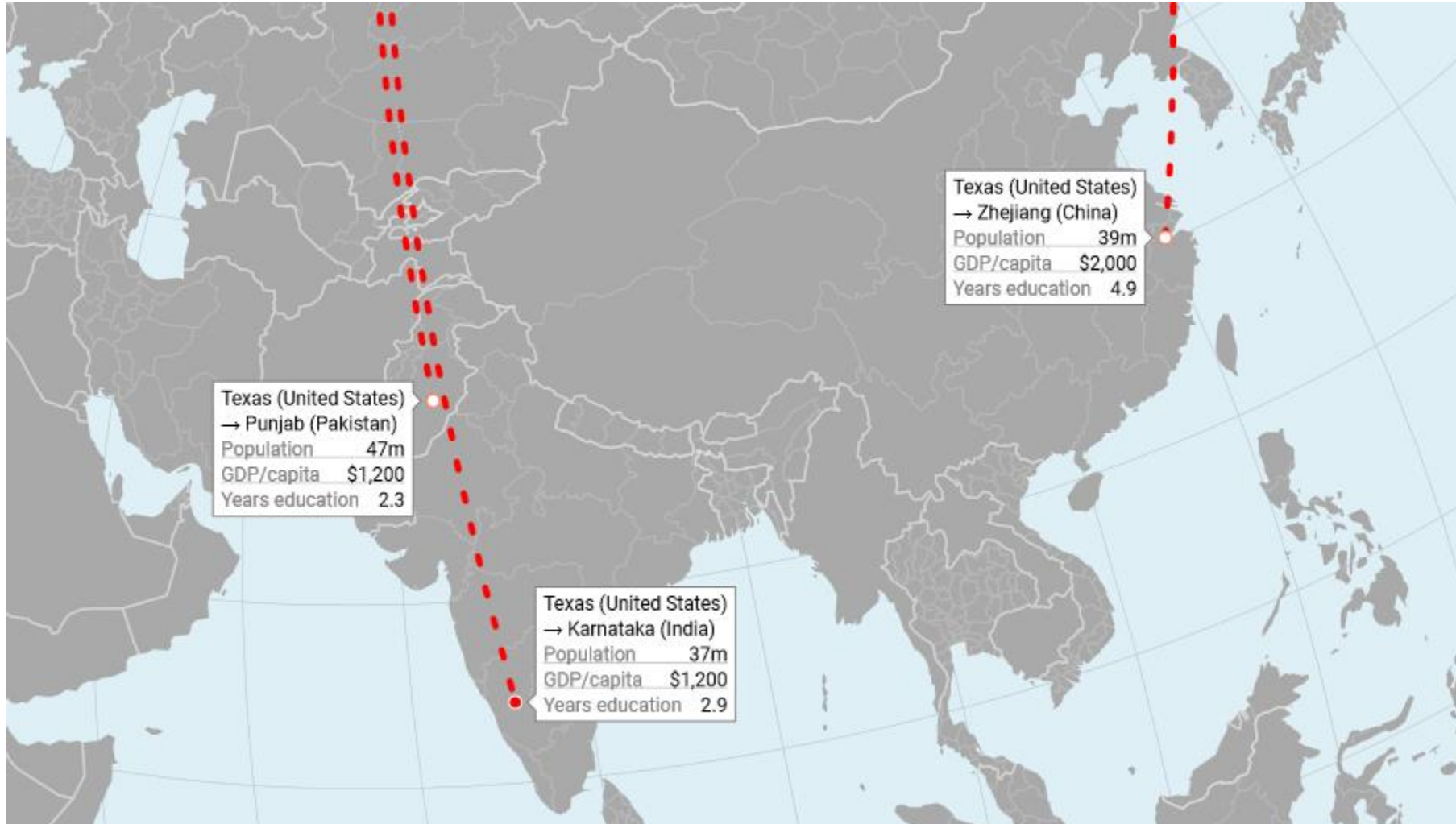
How to answer?

- **Crescenzi, Dyevre & Neffke** looked into the innovation performance of 1,528 regions, from 83 countries between 1975 and 2012
- We relied on **US Patent and Trademark Office data** on 3.6 million distinct inventors, 6.0 million patents from all over the world
- Patents in 1,240 3-digit patent classes
- ‘Matched’ regions receiving for the very first time a foreign firm pursuing innovative activities in their economy with a region very similar in terms of its observable characteristics and economic pre-trends but that did NOT receive any foreign investment leading to innovation



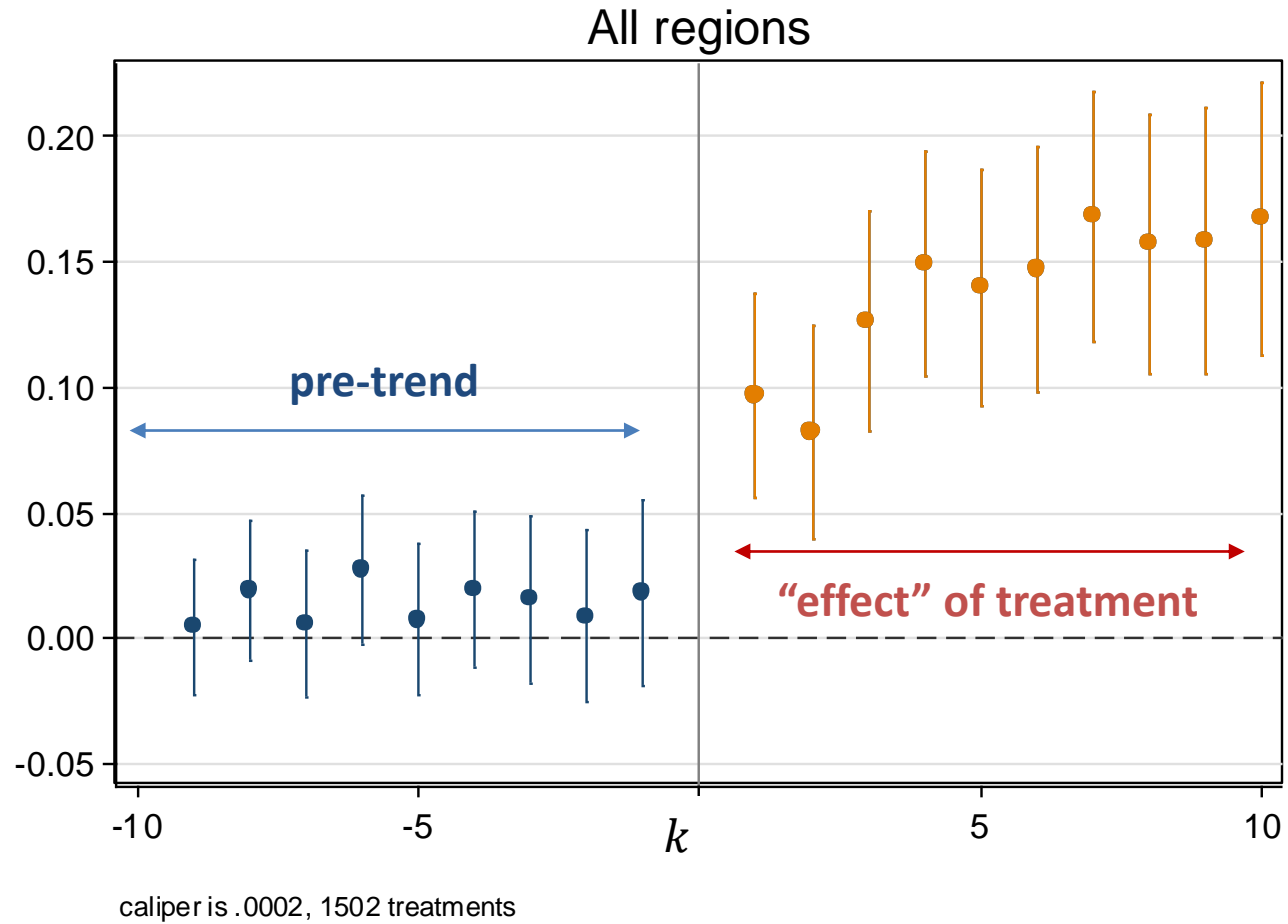


Remember Texas Instruments in Bangalore



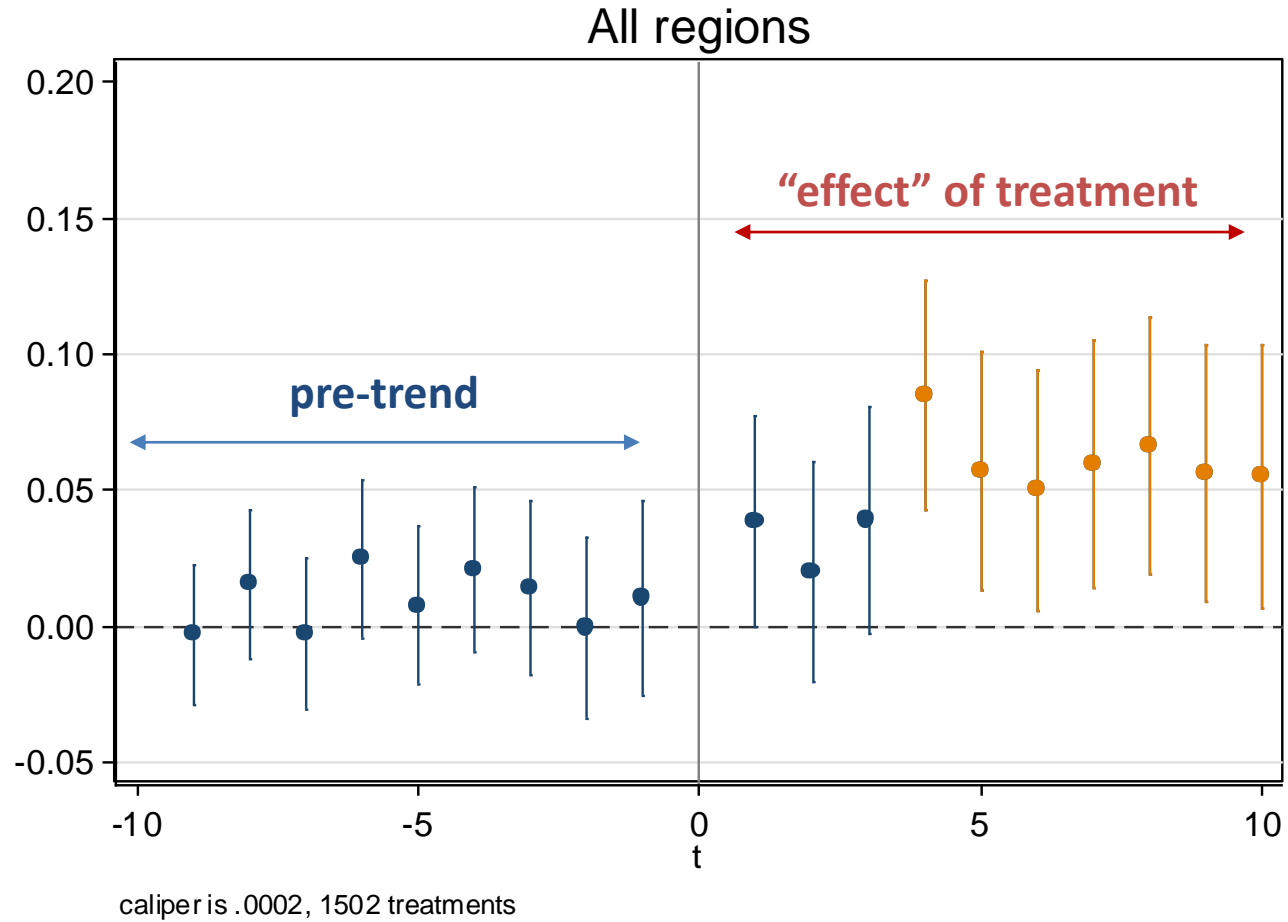
Difference-in-Differences

Patents by all firms



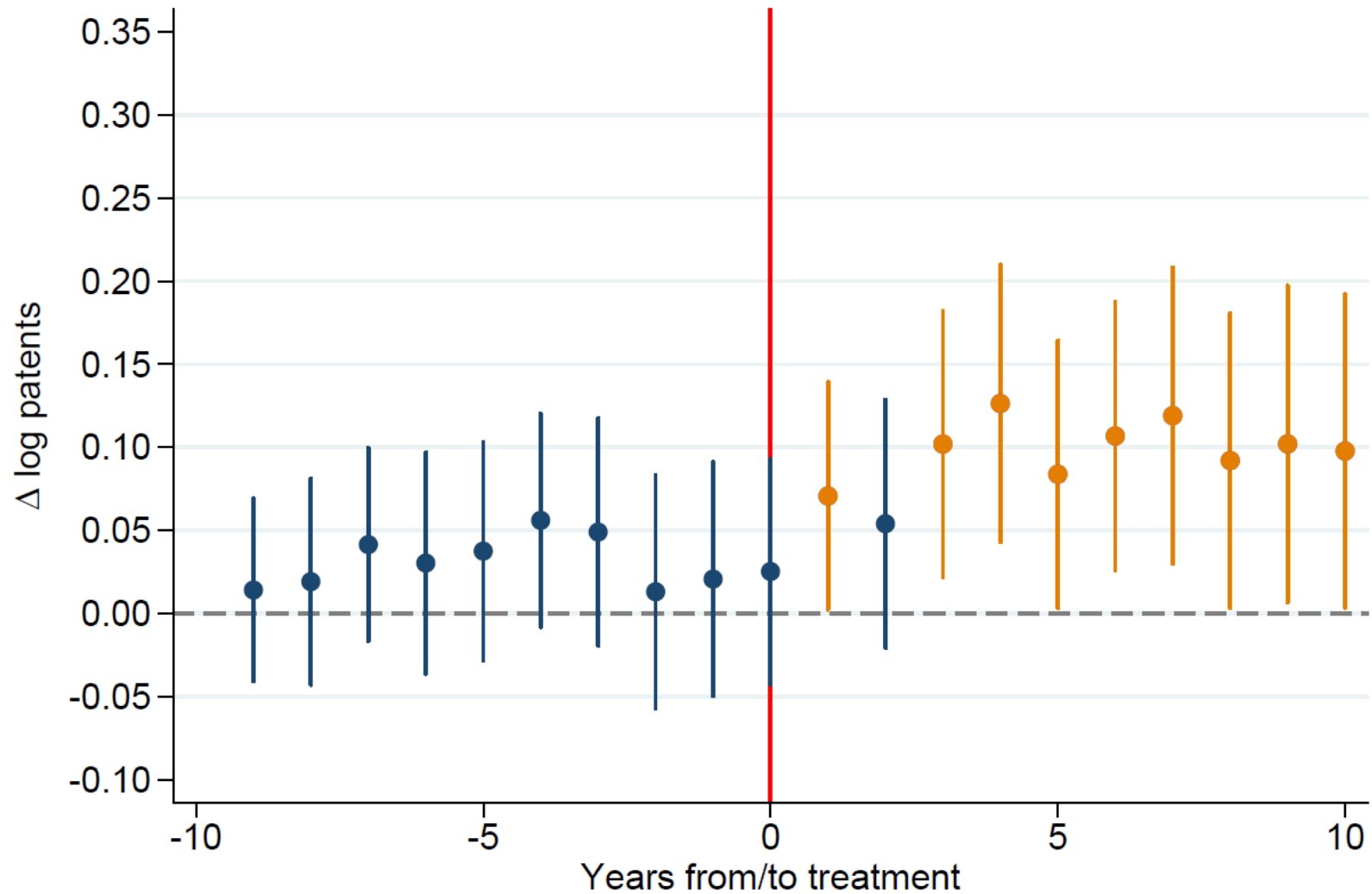
Difference-in-Differences

Patents by *domestic* firms



Difference-in-Differences

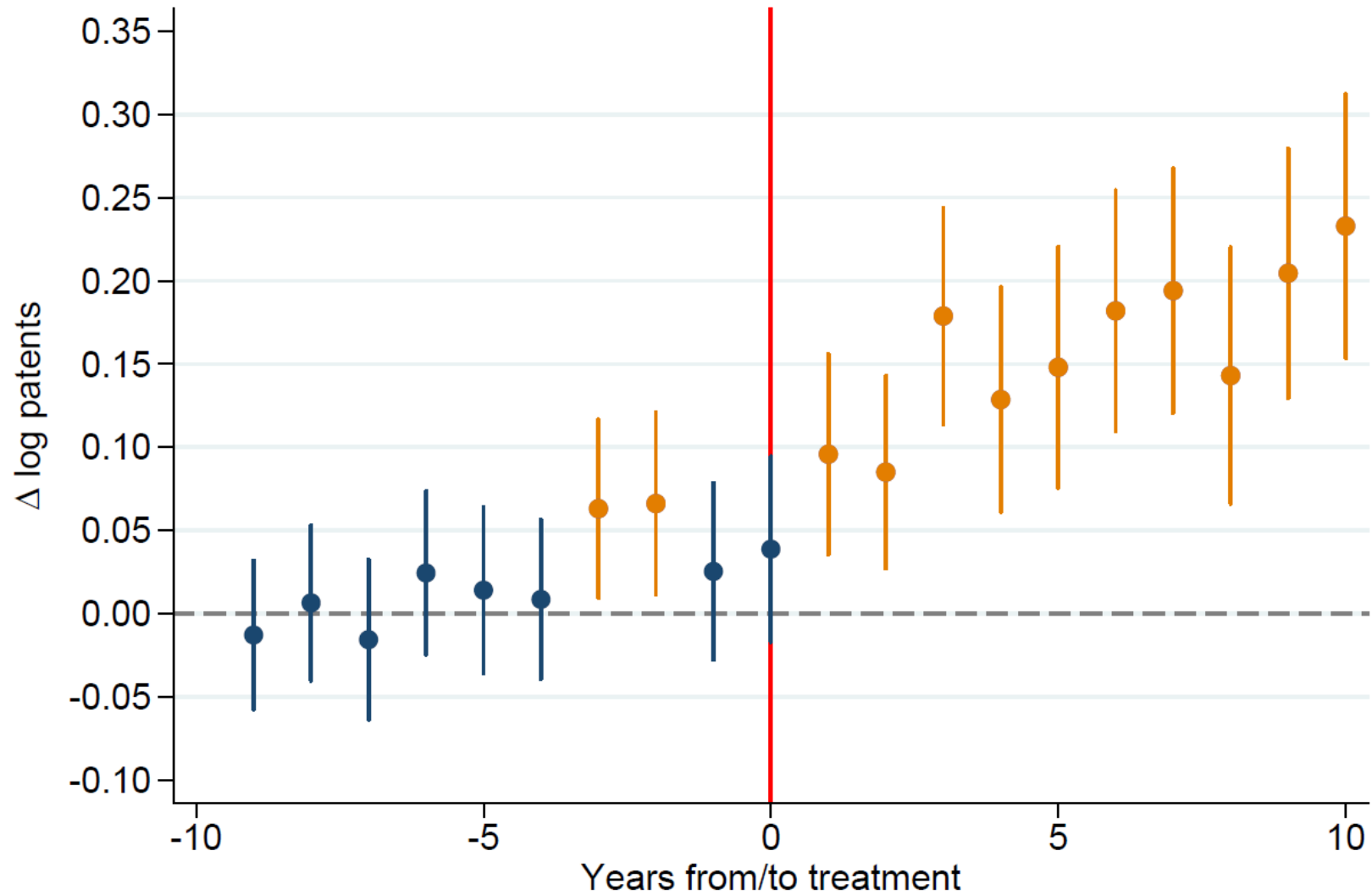
Patents by *all firms* – **Top 5% MOST INNOVATIVE Foreign Investing Companies**



caliper: 0.0002

Difference-in-Differences

Patents by *all firms* – **Bottom 80% Foreign Investing Companies**



caliper: 0.0002

Not all Foreign Firms are good partners

- It's not the usual suspects that matter!
- The top tech giants – that all countries and regions fight to attract (at a huge cost) – are less likely to generate local innovation
- Why?
 - We showed that they are more effective in retaining their staff and less likely to hire local workers (less circulation on the labour market)
 - New ideas generated by the 'giants' are less likely to be used and absorbed by local firms (technological distance)

The Multinational World: the questions (2)

- Do Foreign Firms makes **ALL** regions more innovative?
- What **types** of investments?

... reactions to different TYPES of investments are often mixed

theguardian

world opinion sports soccer tech arts lifestyle fashion business travel environment
americas asia middle east africa australia cities development UK

France opposes General Electric's €12.4bn offer for Alstom energy arm

French president backs minister who wrote to US firm saying offer not good enough despite sale approval from Alstom board



■ In his letter, Arnaud Montebourg said Alstom's energy interests - the firm makes turbines for the nuclear industry - were "of strategic importance" Photograph: Pierre Andrieu/AP/Getty Images

France's government has dismissed General Electric's €12.4bn (£10.2bn) offer for the energy division of Alstom as "not good enough".

Its economy minister Arnaud Montebourg wrote to the US industrial group and

<https://www.theguardian.com/world/2014/may/06/france-opposes-general-electric-offer-alstom-energy>

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In mani straniere sempre più marchi italiani storici

In the hands of foreigners more and more Italian flagship brands

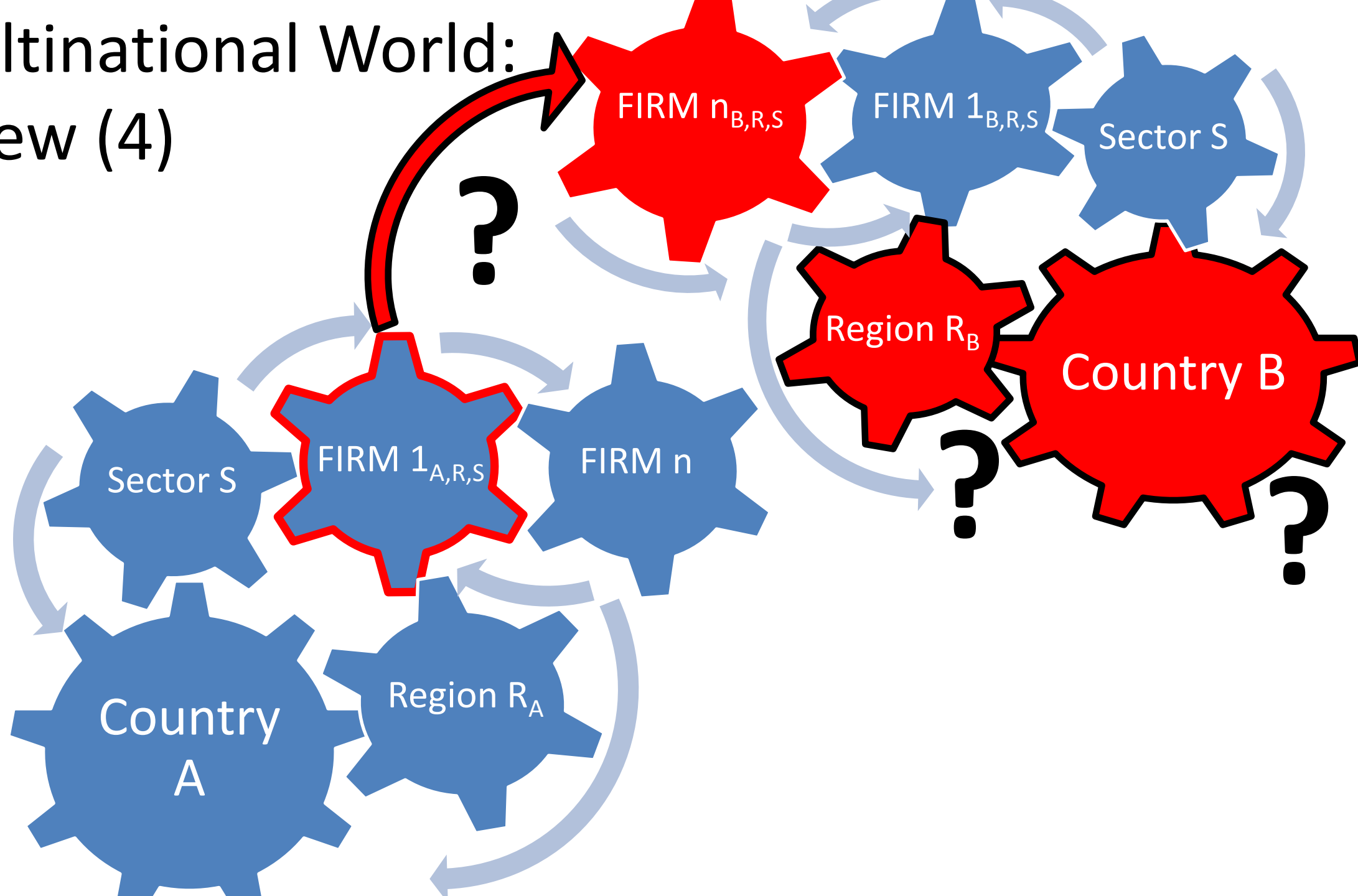


(Teleborsa) - L'Italia continua a perdere i suoi marchi storici, dalla moda all'industria alimentare, restando preda degli stranieri.

Con l'ultima della lista, ossia Indesit che ha ceduto oltre il 60% del proprio capitale a Whirpool, si è arrivati a parlare di investimenti stimati nel 2014 pari a circa 2 miliardi di euro. Dall'inizio della crisi, invece, sono passati in mani straniere marchi storici dell'agroalimentare italiano per un fatturato di almeno 10 miliardi di euro.

http://www.ilmessaggero.it/home/in_mani_straniere_sempre_pi_ugrave_marchi_italiani_storici-494348.html

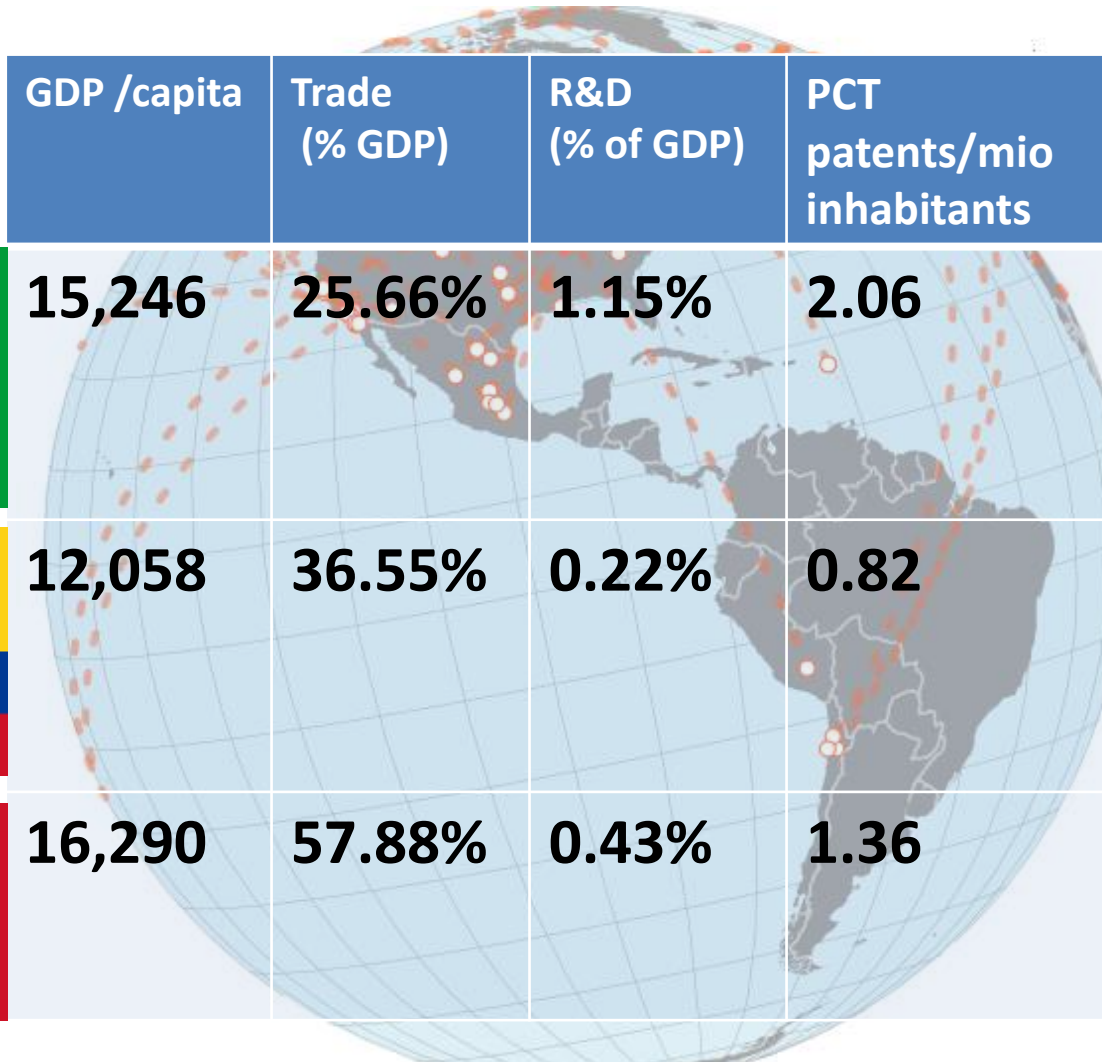
The Multinational World: X-ray view (4)






How to answer in practice?



Recent evidence from Latin America

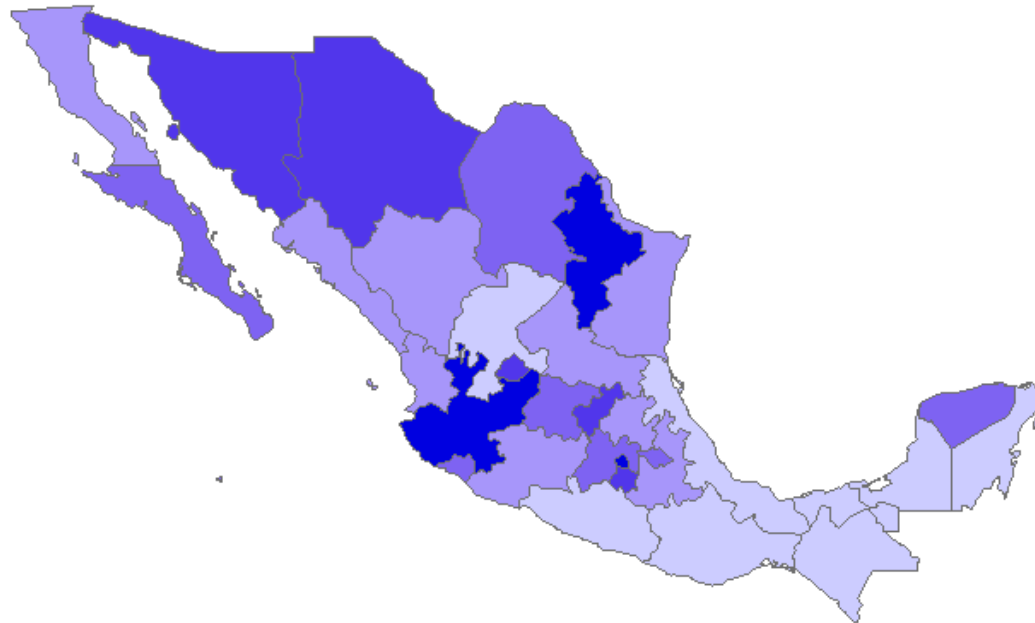


	GDP /capita	Trade (% GDP)	R&D (% of GDP)	PCT patents/mio inhabitants
	15,246	25.66%	1.15%	2.06
	12,058	36.55%	0.22%	0.82
	16,290	57.88%	0.43%	1.36

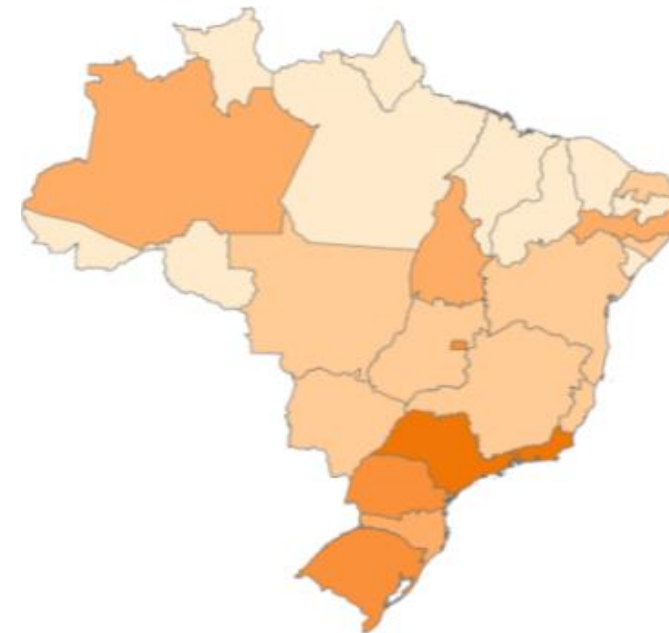
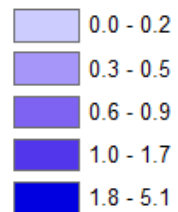
What we have done

- **Crescenzi & Jaax (2017)** looked into the innovation performance of regions in Brazil, Colombia, and Mexico during 2003-2012
- These countries account for large shares of Latin America's population (60%), GDP (65%), FDI inflows (56%), and patenting (83%)
- We used data from the **Financial Times and Bureau van Dijk** on 1,423 mergers and acquisitions (M&A) and 5,087 greenfield FDI projects
- Created an innovative count of **patents invented and owned by domestic agents**
- Regional patenting as a function of a) heterogeneous FDI projects and b) heterogeneous regional conditions across heterogeneous national systems

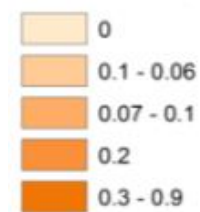
Local patenting and different types of investments



Patent applications (domestic inventors only), per mio. inhabitants



HQ&INNO greenfield projects per 1mio. inhabitants



Key new insights

- **The business function of the subsidiary matters:** investments dedicated to R&D and activities are most likely to boost local innovation capabilities
- **A country's position in Global Value Chains matters:** production-focused FDI is strongly linked with innovation in Mexican regions, less so in Brazil and Colombia
- **It is too simplistic to argue that “greenfield is good, M&A is bad”:** Mergers and Acquisitions (M&A) seem to provide a more direct channel for knowledge diffusion
- **Local conditions and efforts matter:** regions with a highly educated workforce and high R&D spending are more likely to reap technological benefits

Beyond innovation ... (1)

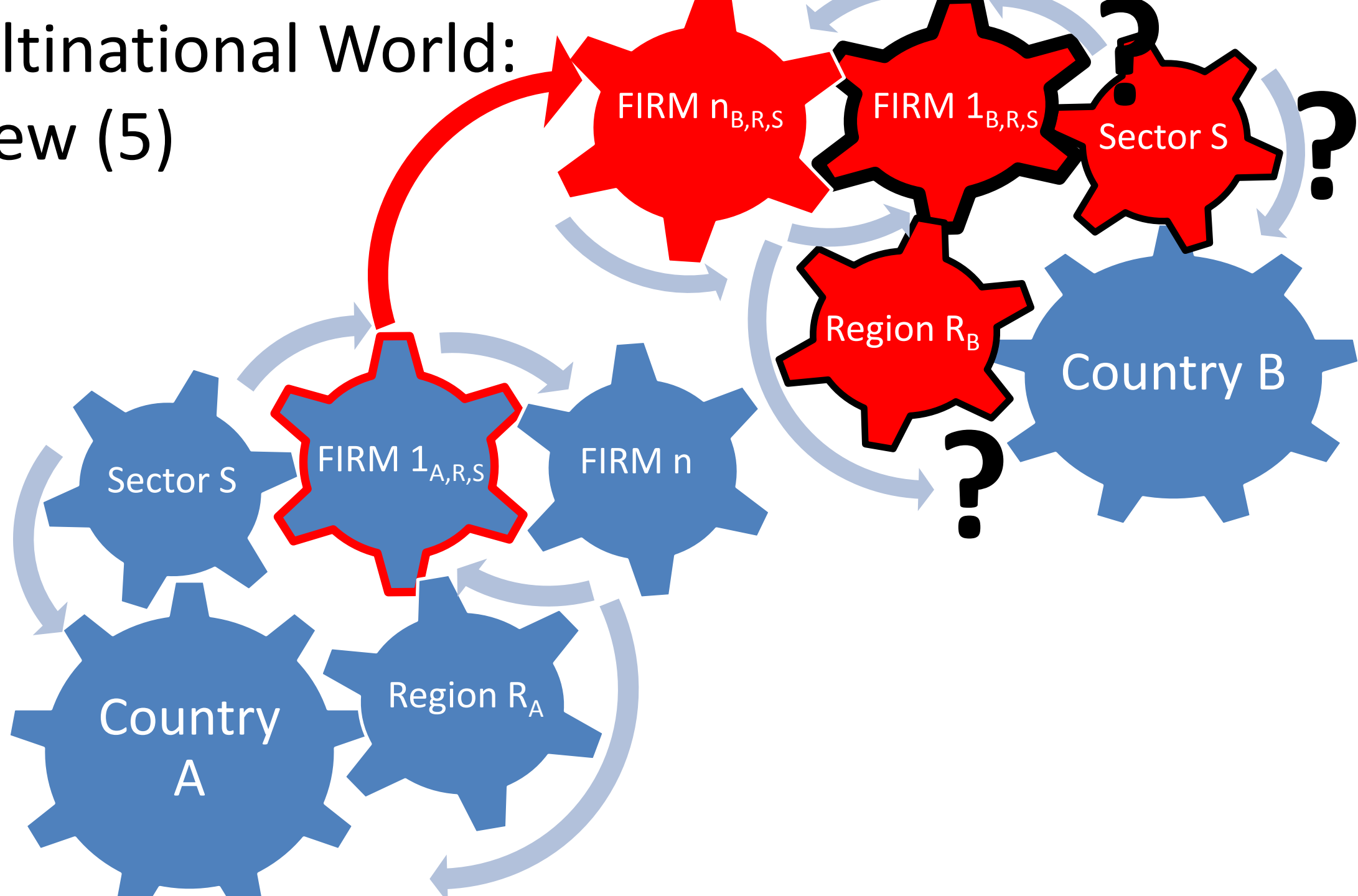
Jinka (Southern Ethiopia), 2014



Beyond innovation ... (2)

- How does FDI impact domestic firms in terms of their investments, production and employment?
- How do local conditions shape the link between FDI and domestic firms?
- What is the role of the local availability of credit?

The Multinational World: X-ray view (5)



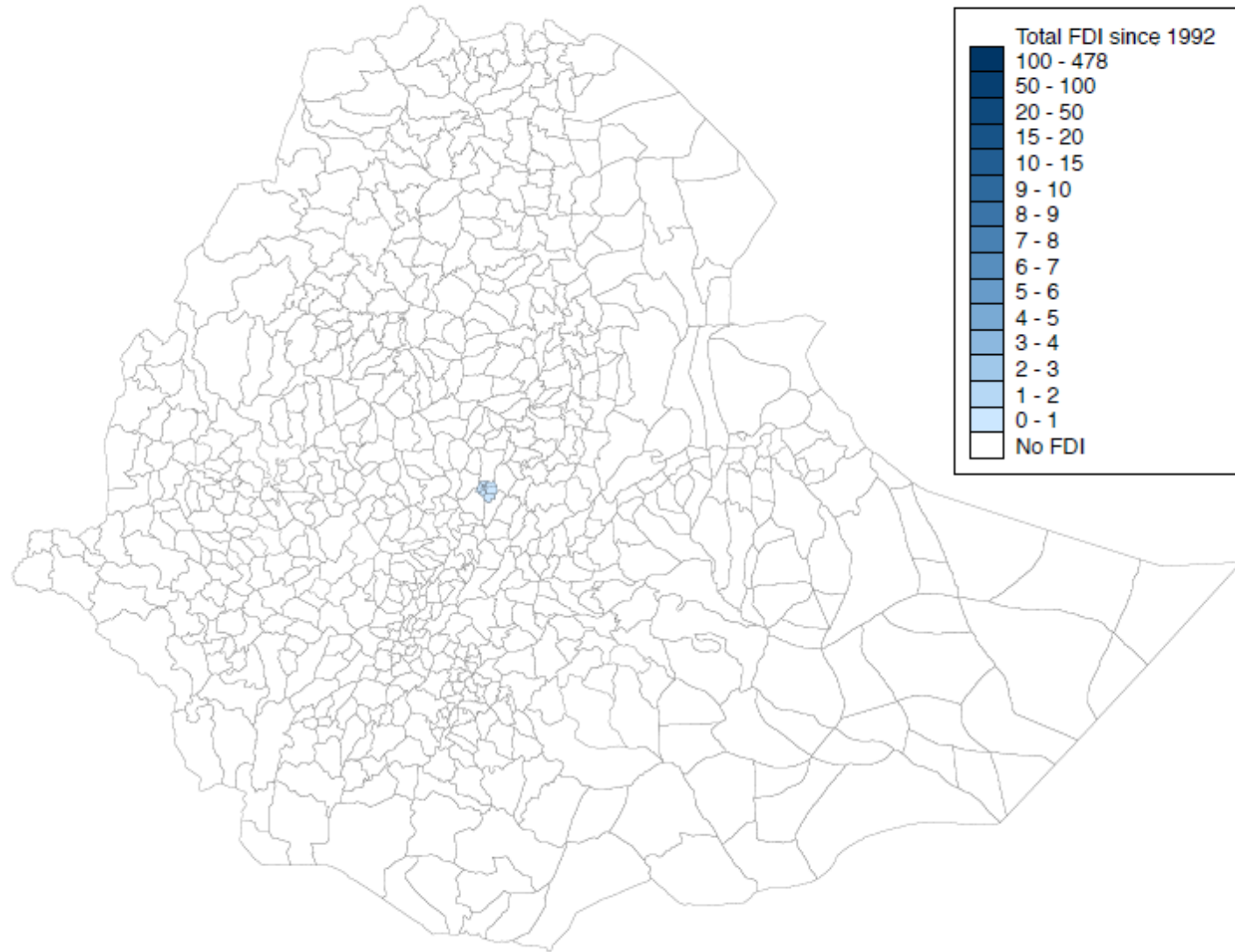
How to answer in practice?



Domestic Investment, Production and Employment in Ethiopia

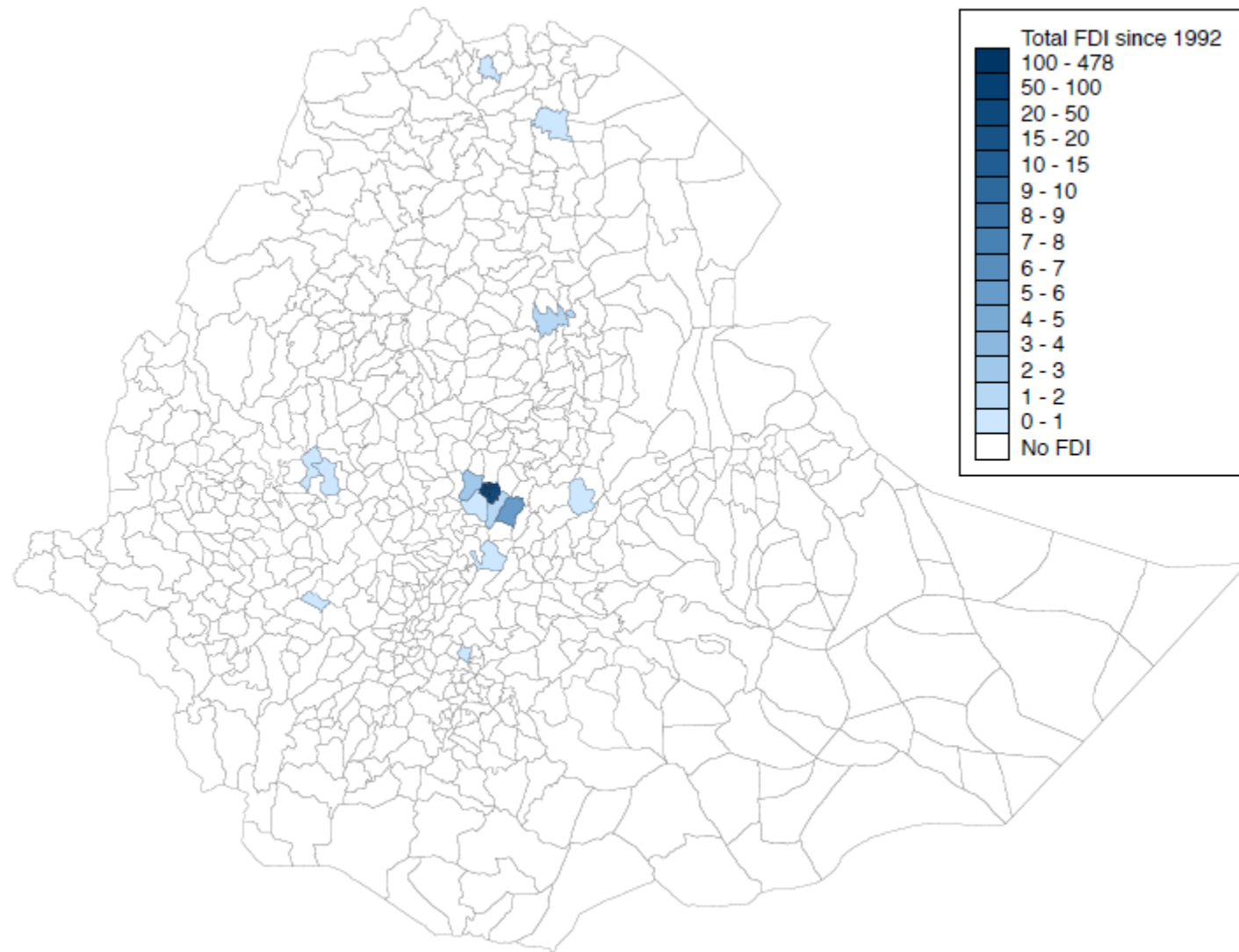
- Crescenzi, Dyevre and & Limodio look at Ethiopia opening to FDI in 1990s, possibility to follow entire geographical evolution of FDI location, rapidly evolving local credit market
- Unique dataset on three key dimensions of the economy:
 - All FDI projects from 1992 onwards with detailed location and sector of activity
 - Detailed data on the Census of Large and Medium-Sized firms
 - Universe of Bank Branches in Ethiopia
- Domestic firms are ‘shocked’ by FDI in their city and sector of activity
- City-level availability of credit as factor conditioning impacts

1992



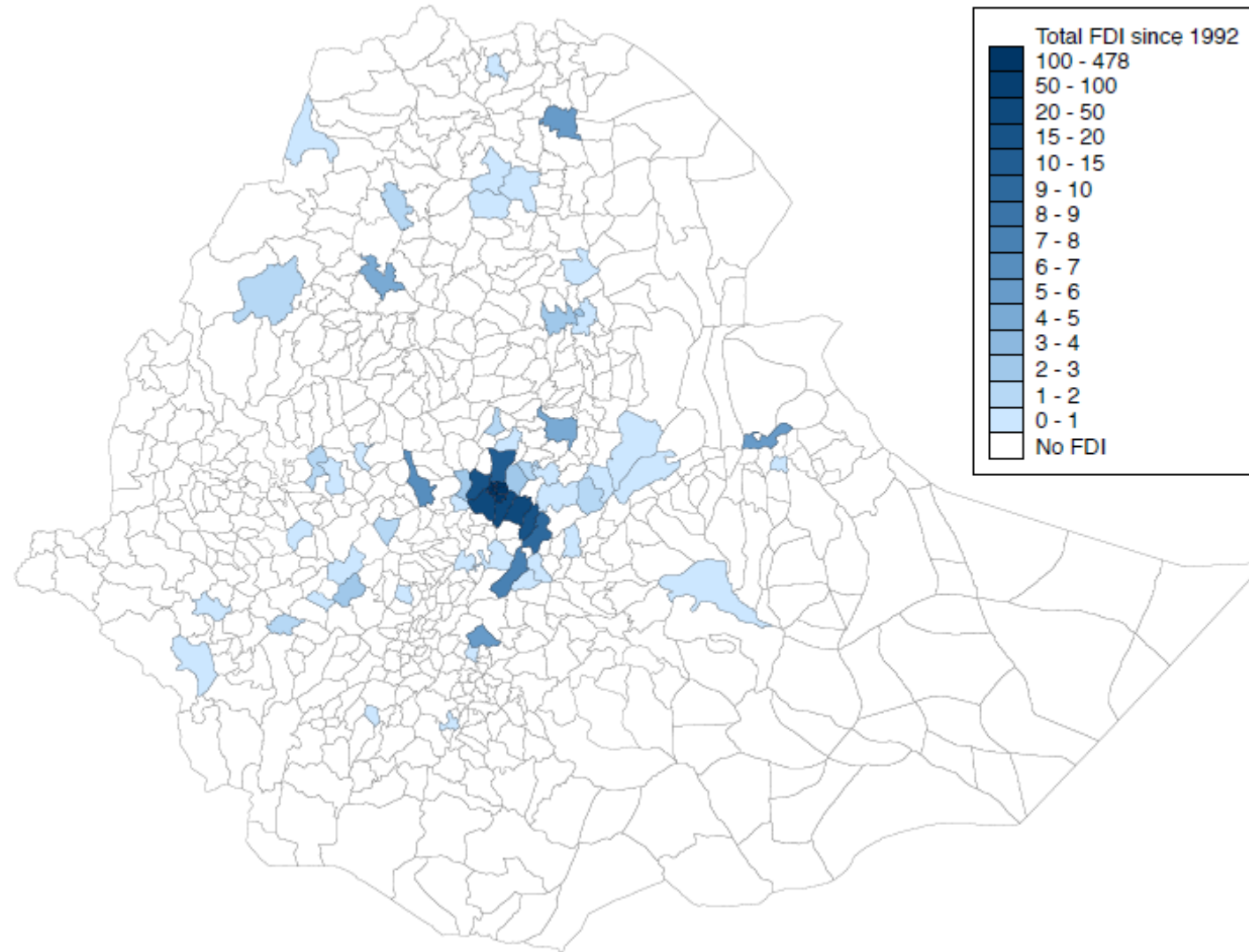
Total FDI since 1992: 2

2002



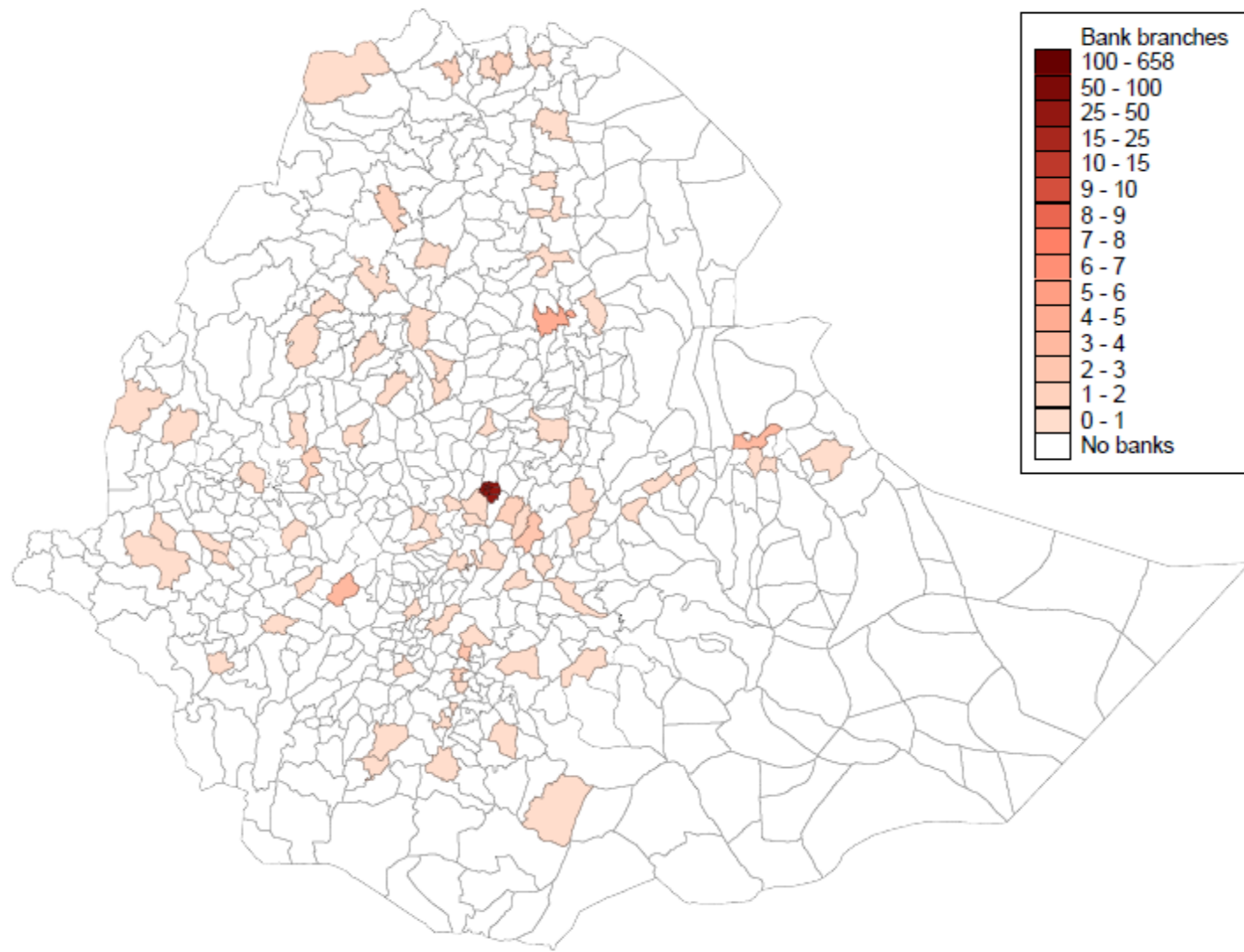
Total FDI since 1992: 66

2016



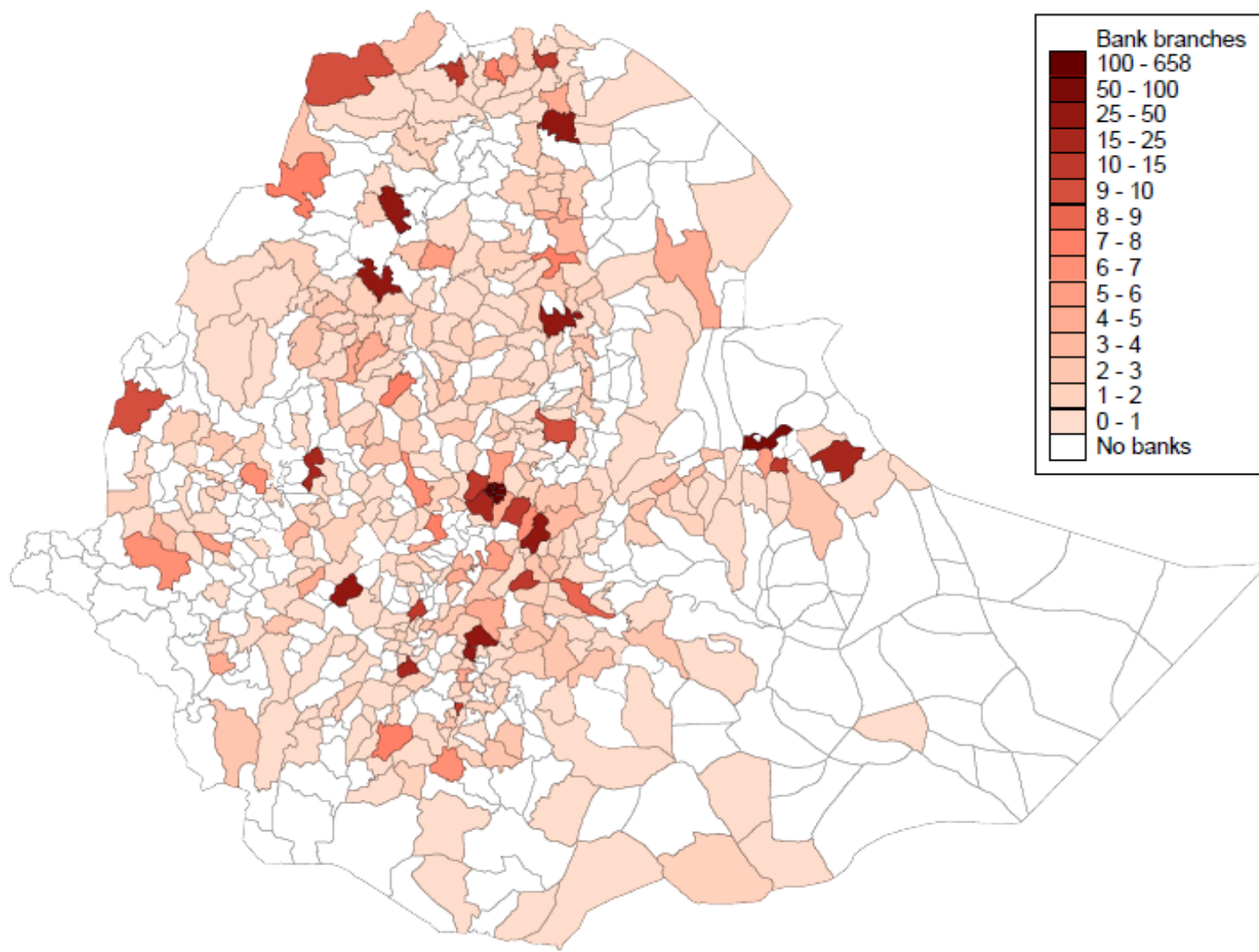
Total FDI since 1992: 1203

1980



Banks: 129

2015



Banks: 1892

Key new insights

- FDI increases the demand for bank loans by domestic firms
- The credit boost induces more investments in capital equipment and production but lower employment levels
- More polarisation in local employment structure: decline in low-wage employment & increase in high-wage jobs
- In **more financially developed areas** (lower credit constraint), stronger effects on domestic investment and production but ALSO on employment!
- In financially developed areas firms employ more workers, both low-wage and high-wage
- Spillovers from FDI are highly complementary to credit availability that makes expansion of domestic firms possible, reducing displacement effects

SOME GENERAL CONCLUSIONS

Conclusions (1)

- Exciting field of research
- Constantly improving data availability at the sub-national and firm level for advanced, emerging and developing economies makes new insights easier to achieve
- MNE preferences and strategies are highly differentiated in terms of sectors, GVC stages, innovation intensity, entry mode that result in complex sub-national geographies of internationalisation
- Internationalisation and global connectivity are key to regional innovation and development but not necessarily in the forms and via the channels presented by the existing literature
- Towards more cautious regional development policies?

Conclusions (2)

- The world is not flat
- But some regions and cities make it to the top
- It is hard to make it alone
- There is no alternative to openness and internationalisation
- Walls are not going to make regions better off. No matter how big and rich they are
- Regions and cities should embrace globalisation with a critical attitude and make evidence-based decisions on their future

Now a small test for you ...

Who said this?

- “Yet, globalization is not something we can hold off or turn off. It is the economic equivalent of a force of nature, like wind or water. [...] We can work to maximize its benefits and minimize its risks, but we cannot ignore it, and it is not going away.”
- [Globalisation] is an “irreversible historical trend” and free trade needs to be “more open, more balanced, more equitable and more beneficial to all”.
- “Globalization has [...] left millions of our workers with nothing but poverty and heartache.” “Free trade had cost millions of [...] jobs”.

... little help



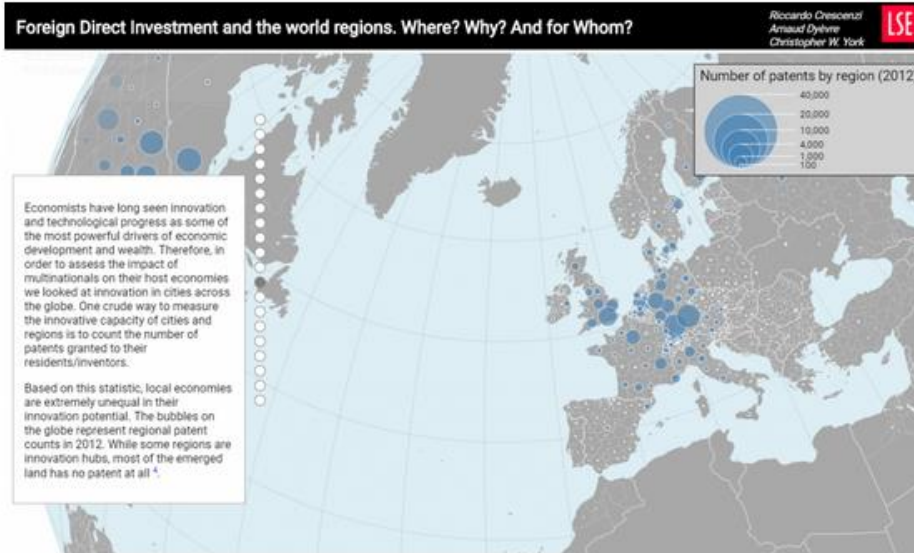
A small test – Solutions

- “Yet, globalization is not something we can hold off or turn off. It is the economic equivalent of a force of nature, like wind or water.”
 - Bill Clinton – Hanoi (Vietnam), November 17th 2000
- [Globalisation] is an “irreversible historical trend” and free trade needs to be “more open, more balanced, more equitable and more beneficial to all”.
 - Xi Jinping – Vietnam, November 10th 2017
- “Globalization has [...] left millions of our workers with nothing but poverty and heartache.” “Free trade had cost millions of [...] jobs”.
 - Donald Trump – Monessen, (Pennsylvania), 28th June 2016 & Vietnam, November 10th 2017

The Economist

“China [...] needed American technology to upgrade its industries and American markets for its exports. That view has become far less strongly held as China’s economy shifts away from exports and towards home-grown innovation.”

The Economist – November 11th 2017



Click on the image above to visualise global economic flows and their impacts on regions (opens a new tab).

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Recent trends in the internationalisation of Business R&D



What do we know about FDI?
September 25th, 2017



Connect or Perish! FDI and the resilience of EU regions
September 23rd, 2017



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All errors and omissions are our own





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