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European Research Council
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WIRE 2018
Smart Choices for innovative regional ecosystems
The Power of Connectivity, Entrepreneurship and Science & Research
4 - 6 July, 2018
Innsbruck - Tyrol, Austria

Innovative regions and global connectivity

Riccardo Crescenzi

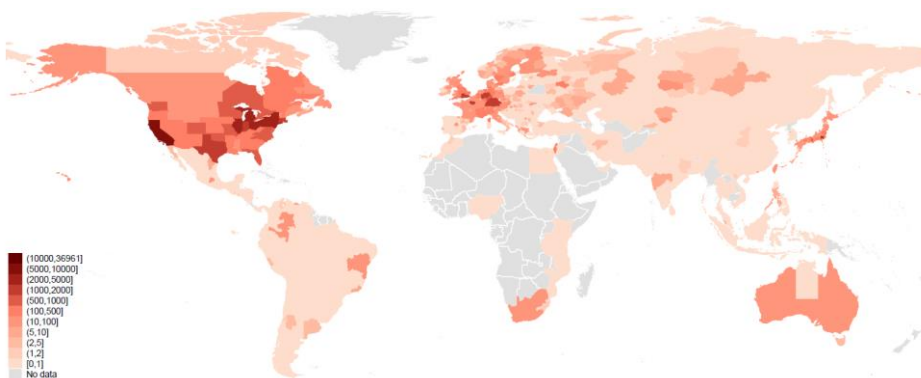
London School of Economics



@crescenzi_r

Inventive activity around the world

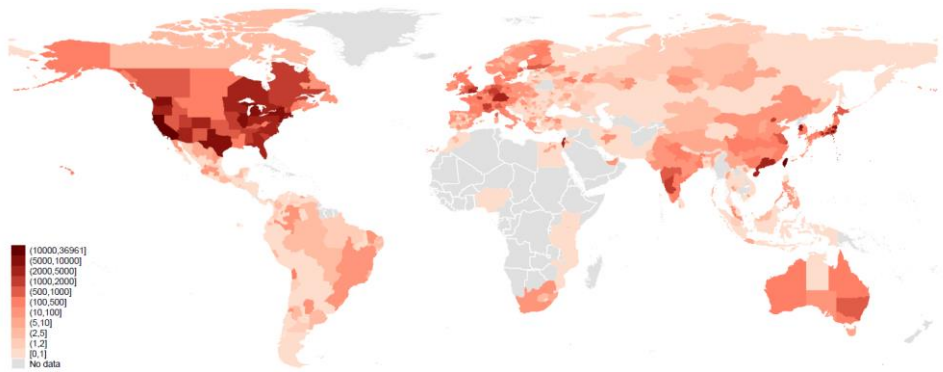
1975



Regional Patent Count – Own Elaboration - USPTO data

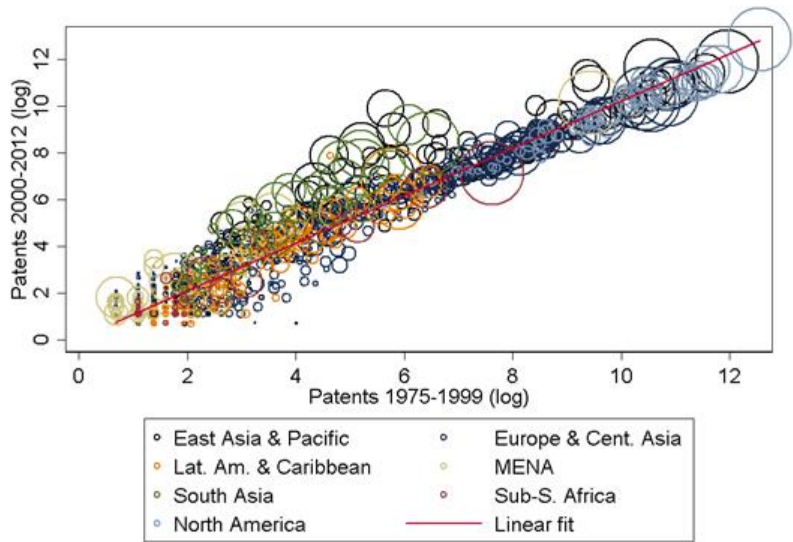
Inventive activity around the world

2012



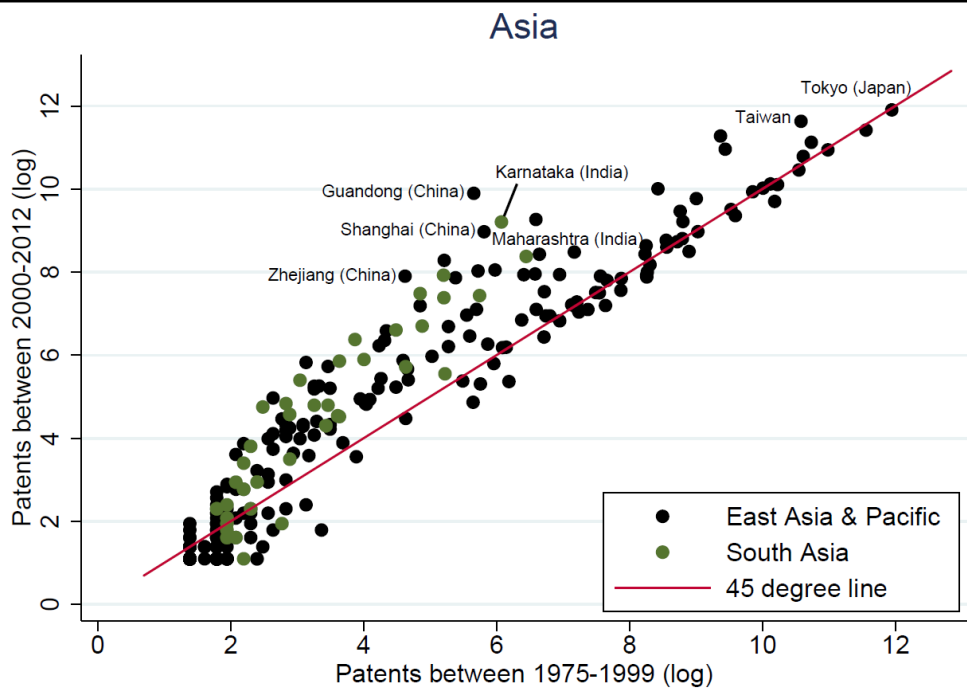
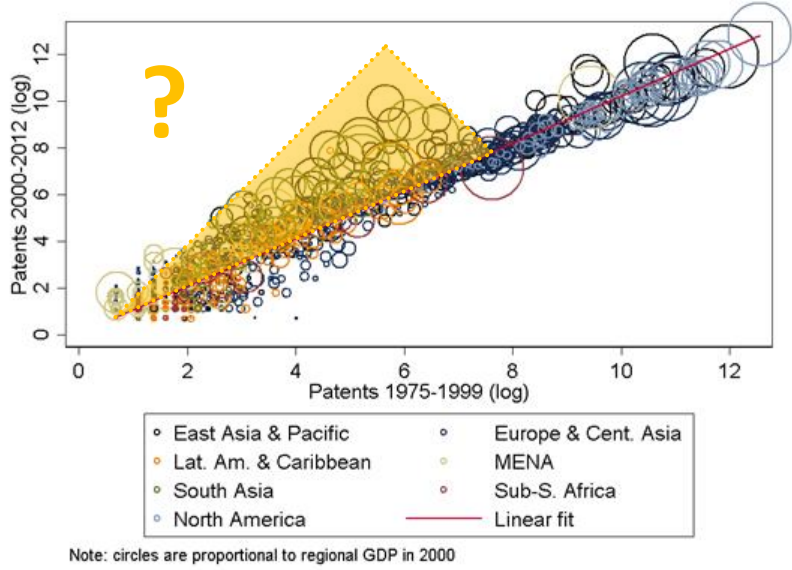
Regional Patent Count – Own Elaboration - USPTO data

Innovation is highly concentrated and stable ...



Note: circles are proportional to regional GDP in 2000

... and yet it moves!



Guangzhou 1984



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Guangzhou 2017



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Bangalore 1999



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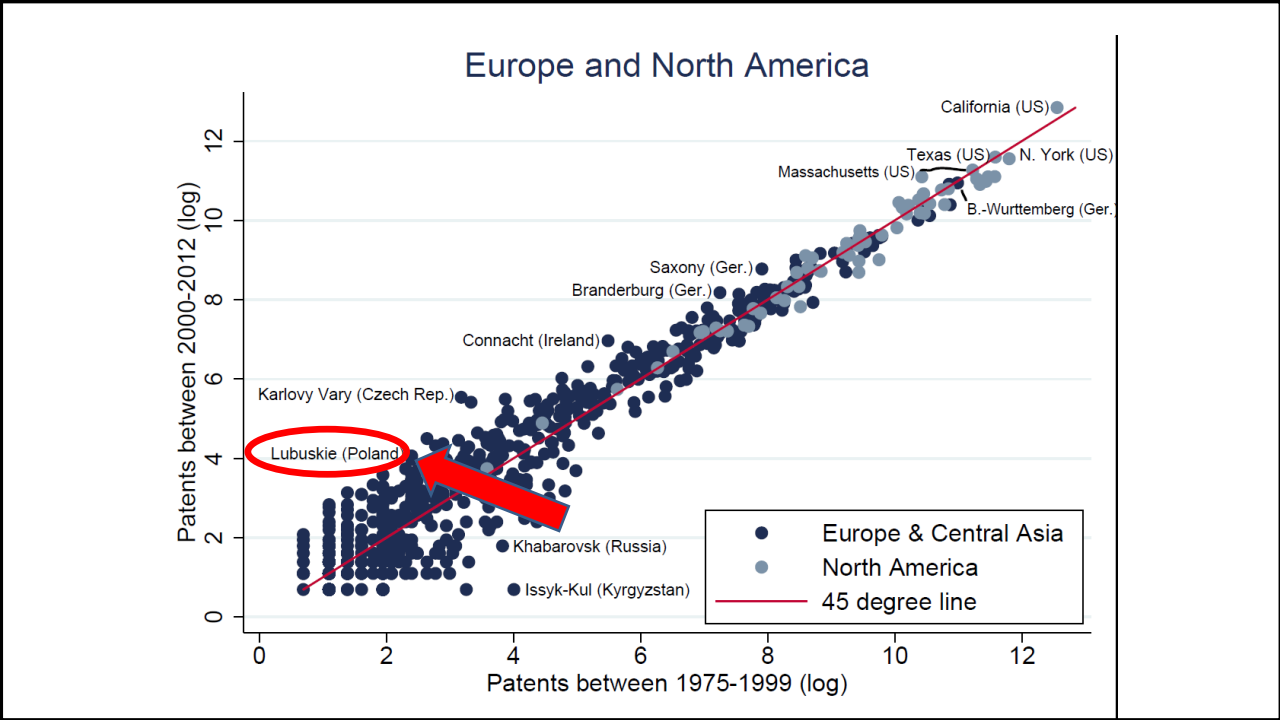
Bangalore 2017



S Lalitha
<http://www.newindianexpress.com/cities/bangaluru/2017/jul/06/entries-to-two->



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Lubuskie 2017

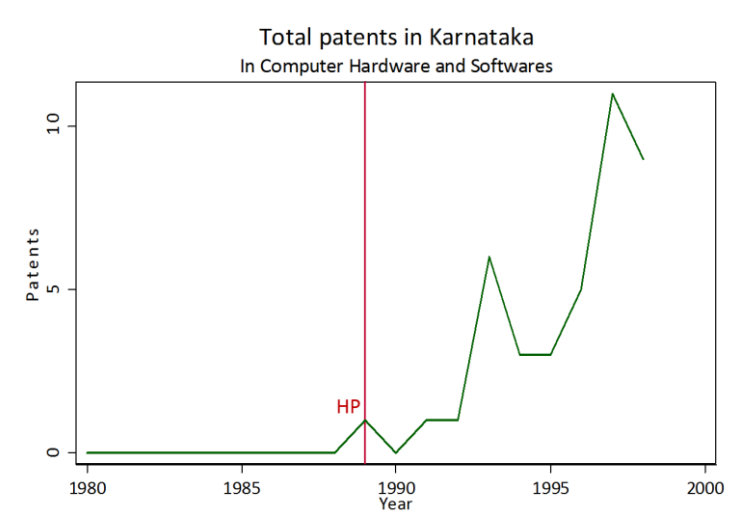


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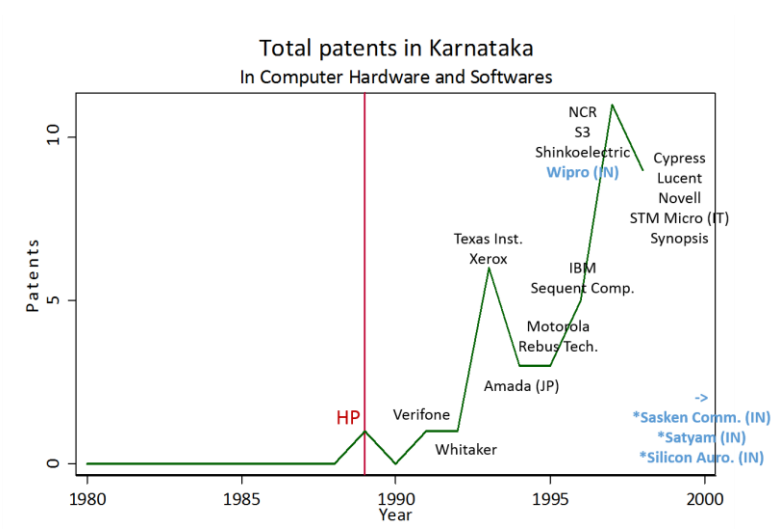
What explains the transitions?

- Case studies about the internationalization of economic activities (e.g. Saxenian):
 - **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



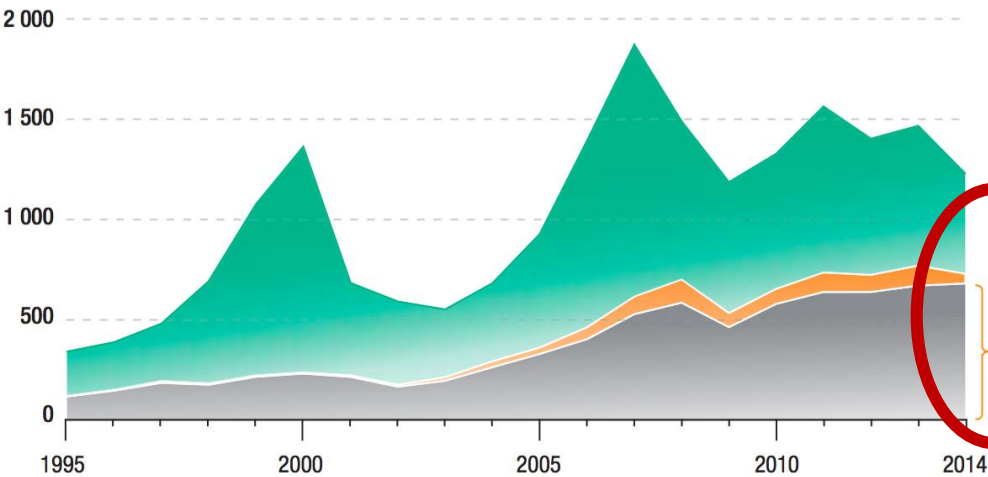
HP in Bangalore



Global inflows of Foreign Direct Investment (FDI)

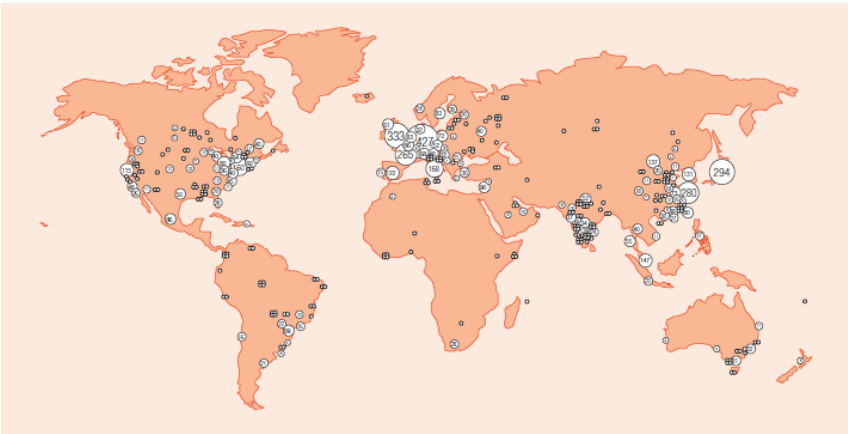
Billions \$ - 1995-2015

Developed economies Transition economies Developing economies World total



Cross-Border R&D Centres

2016



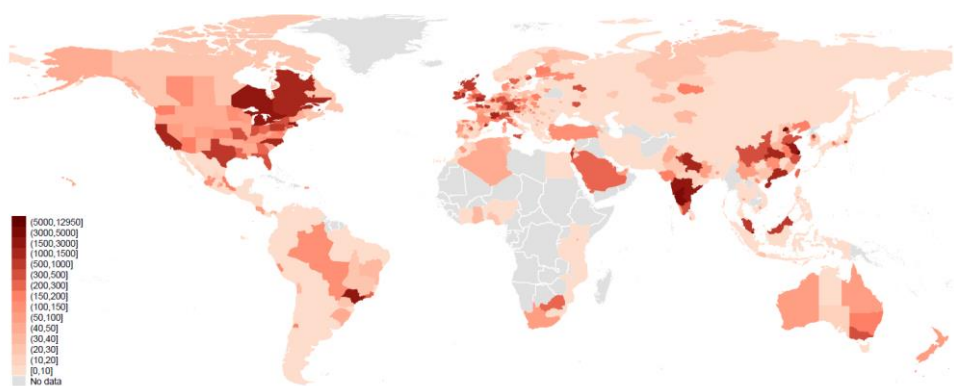
“Between 2000 and 2015 the number of MNE R&D centres in emerging countries grew by a factor of five, while in the Triad countries this number merely doubled”

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.

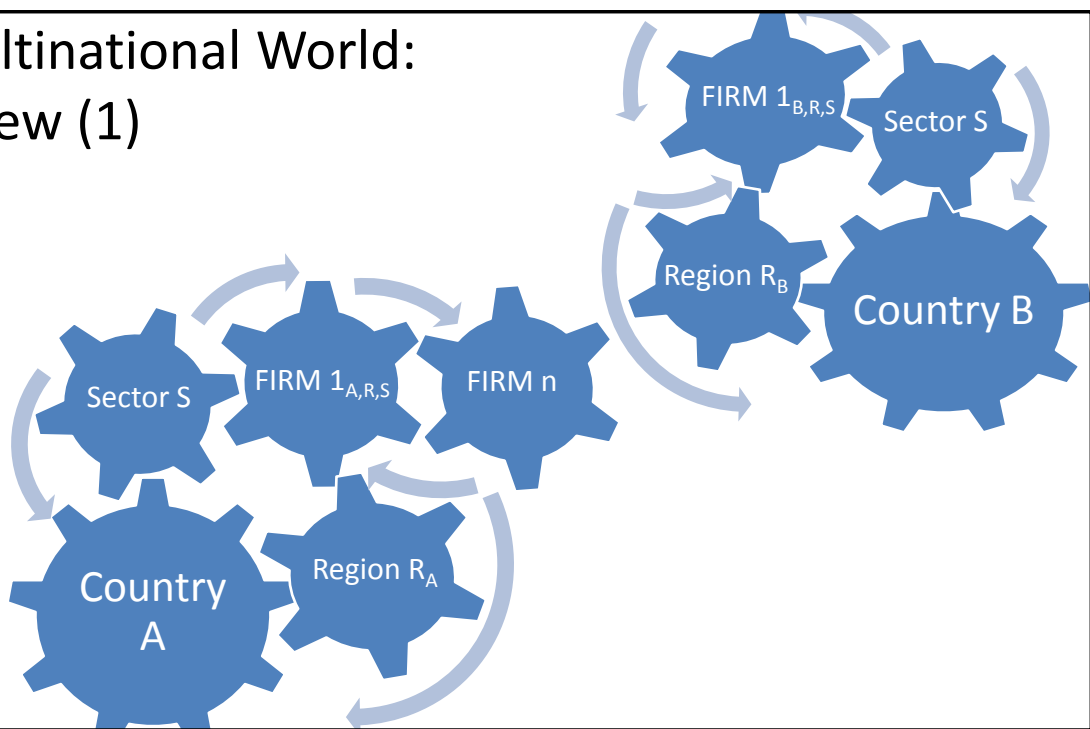
Foreign Investment in R&D activities

2004-2014

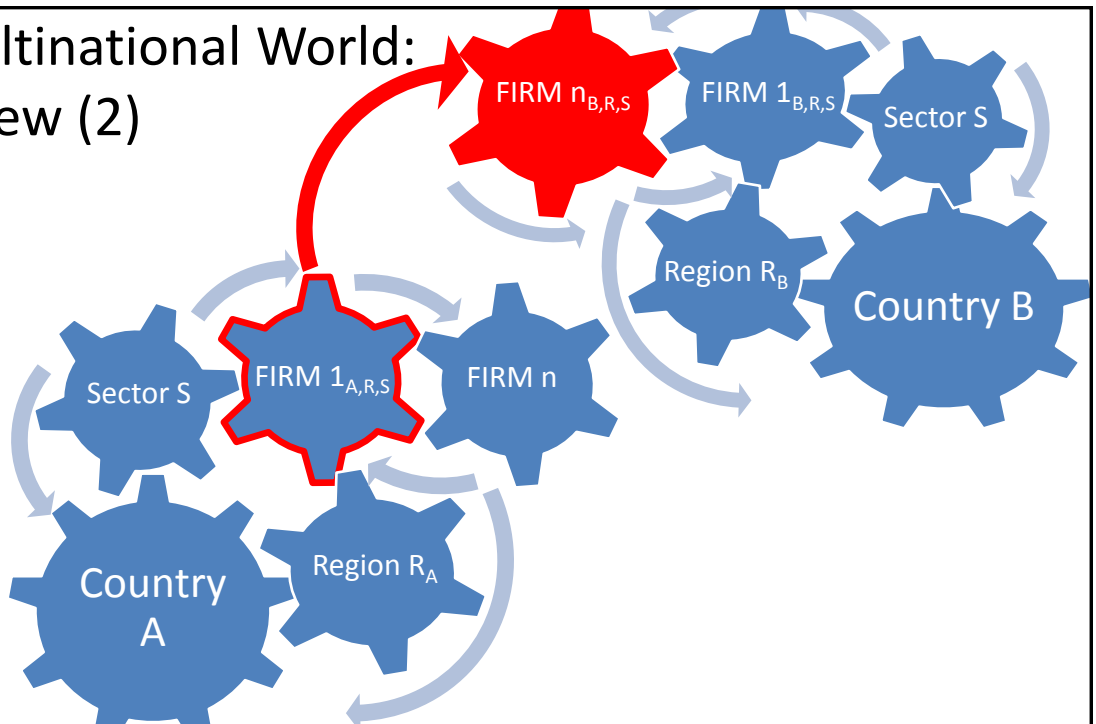


Inward FDI projects, Regional Cumulative Capex, Millions \$ – Own Elaboration – FDI Markets Data

The Multinational World: X-ray view (1)



The Multinational World: X-ray view (2)



Foreign Investment and Regional Innovation

FDI and Regional Innovation

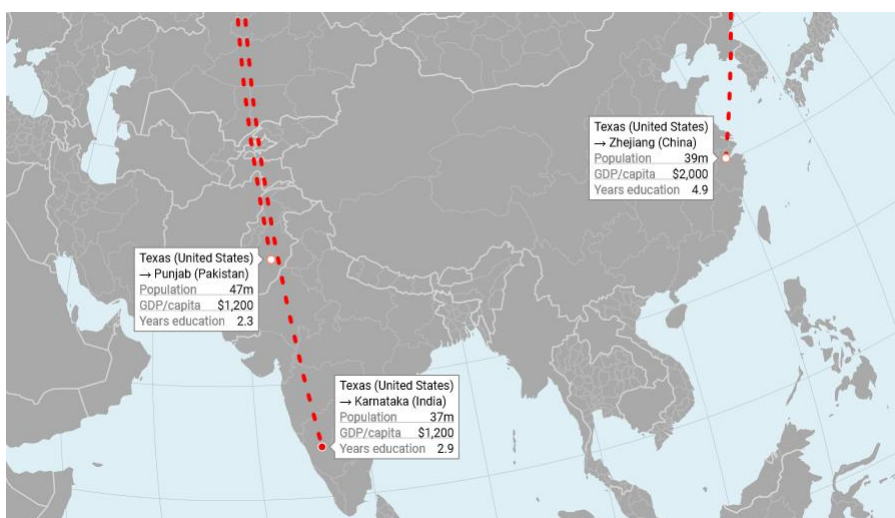
Crescenzi, Dyevre & Neffke (2018) looked into the innovation performance of 1,528 regions, from 83 countries between 1975 and 2012

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

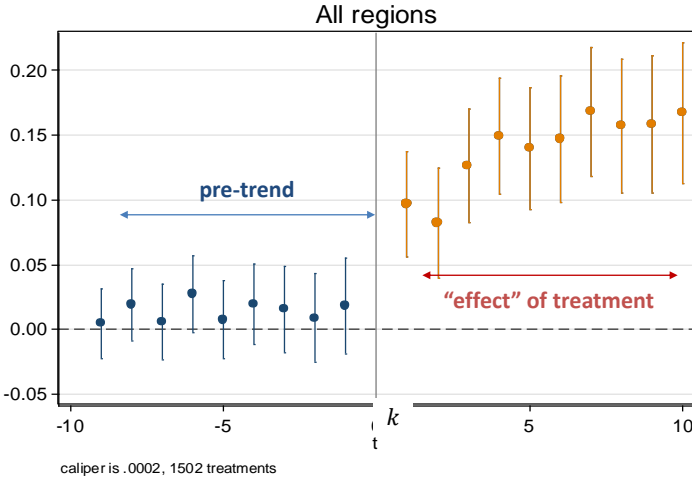
‘Matched’ regions receiving for the very first time a foreign firm pursuing innovative activities in their economy with a region very similar in terms of its observable characteristics and economic pre-trends but that did NOT receive any foreign investment leading to innovation

Remember Texas Instruments in Bangalore



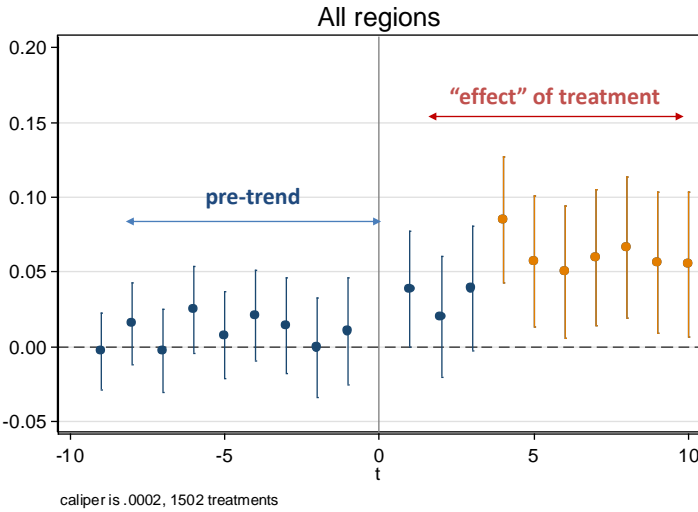
Difference-in-Differences

Patents by all firms



Difference-in-Differences

Patents by *domestic* firms

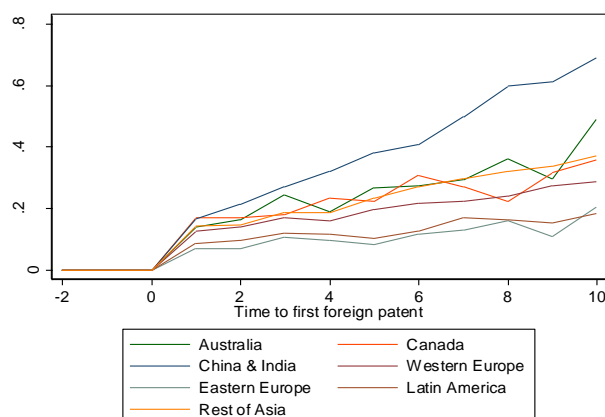


New firm entries

Imitation by foreign firms

- The first foreign firm to innovate in a region is rapidly joined by other foreign firms

New OECD firms by year after the first entry



What type of foreign firms?

- Local embeddedness and knowledge management strategies are highly heterogeneous:
 - Countries and regions compete for the attraction of highly innovative MNEs.



To 'central' cities: PARIS



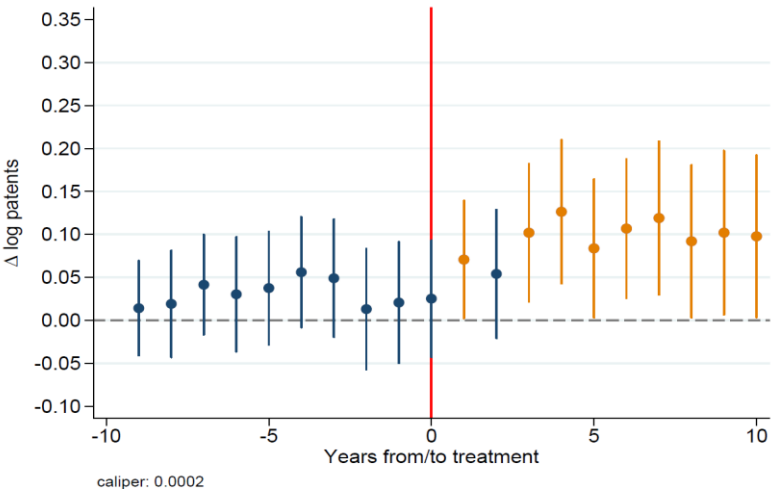
Or 'peripheral' cities: NAPLES

What type of foreign firms?

- Local embeddedness and knowledge management strategies are highly heterogeneous:
 - Countries and regions compete for attracting highly innovative MNEs.
 - **However, top-innovators might have lower incentives to interact with local firms in order to minimise knowledge leakages while leveraging internal (intra-firm) knowledge sources;**
 - **Less established 'innovative companies' might actively search for localised knowledge flows.**

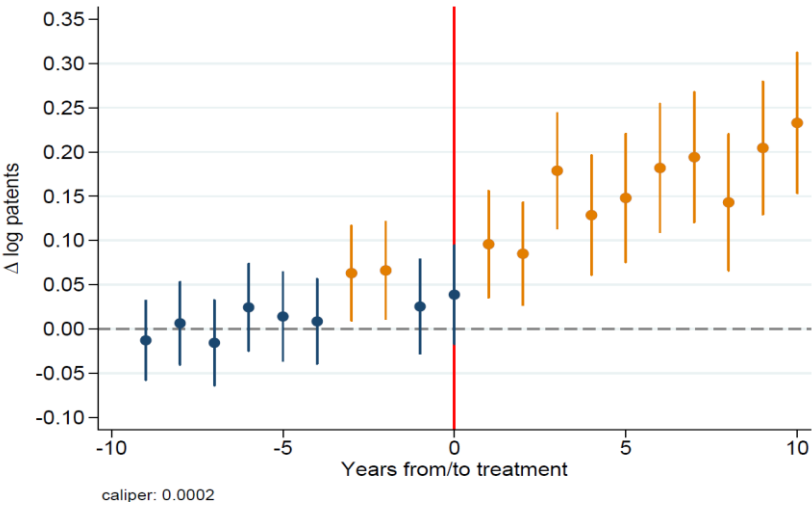
Difference-in-Differences

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



Difference-in-Differences

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



Not all Foreign Firms are good for innovation

- 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?
 - Our results show 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)
 - Tech giants less likely to collaborate with domestic firms

Take home message (1)

These results call for a re-consideration of many local and regional policies in the fields of innovation and FDI attraction.

- Internationalisation is central to local innovation.
- Key 'innovation hubs' did not build their success in isolation
- Internationalisation takes different forms. Targeting 'tech giants' to boost local innovation is not the best strategy
- Challenge for public policies: hard to 'read' the features and the 'value added' of tech MNEs and identify best match

What works to embed Foreign Investment into regional innovation eco-systems?

Innovation Policies to leverage Global Investments (1)

Crescenzi, De Blasio & Giua (2018) **evaluate the impact of a scheme** (Collaborative Industrial Research - CIR) supporting **innovative activities of firms located in less developed regions** in Italy (1 billion euros)

Co-financed by the EU Cohesion Policy in 2007-2013 and it **anticipates some key features of Smart Specialisation** Strategy Programmes

Makes it possible to draw insights on :

- **What features of Innovation Programmes (such as S-3 in the European Union) work best** in the most disadvantaged areas of the EU?
- **What is the impact and 'value added'** when innovation programmes try and leverage foreign firms in order to boost the innovative performance of local firms?

Innovation Policies to leverage Global Investments (2)

Unique collection of **detailed programme-level and firm-level data**

Information on **applicants, selection scores and beneficiaries** with actual payments and firm characteristics and performance (5 different datasets)

RDD approach using the evaluation score of the applications as the forcing variable (some projects are eligible but not funded due to limited resources)

Focus **on project-level heterogeneity**

Heterogeneous Impact (H-ATE) Results

		Investments	Value Added	Employment
Z1: Public research (presence of a University in the project partnership)	Treatment*Z1	-1.1480 (0.8926)	0.4142 (0.7503)	1.0767* (0.4205)
Z2: Collaboration (project partnership involving large number of firms)	Treatment*Z2	-0.5514 (0.5438)	-1.9874*** (0.5263)	-1.9942*** (0.4992)
Z3: Advanced Activities (activity of the project classified as advanced)	Treatment*Z3	-0.4083 (0.4439)	-0.2672 (0.4907)	-1.4622* (0.5910)
Z4: Low tech (firms operating in low tech sectors)	Treatment*Z4	1.2951** (0.4333)	0.1203 (0.4162)	1.3514** (0.4749)
Z5: Patenting (firms with a high capacity of patenting)	Treatment*Z5	-0.1697*** (0.0477)	0.2223*** (0.0596)	0.1248 (0.0876)
Z6: Internationalisation (multinational corporations)	Treatment*Z6	-0.7148 (0.6535)	-0.9529* (0.3698)	-1.7699* (0.7928)

Source: Crescenzi, De Blasio & Giua (2018)

Innovation Policies to leverage Global Investments (3)

Z5 - Firms with more **consolidated innovative capabilities** reduce investments (crowding-out) and focus on value added

Z6 - No direct benefit for large **internationalised firms when given incentives to collaborate with domestic firms and other local actors**

Take home message (2) & Conclusions

The mobilization of large and internationalised firms remains a challenge for current and future regional innovation policies

Managerial strategies of highly innovative firms might go in unexpected directions

MNEs (both domestic and foreign) are difficult to mobilise and embed in regional innovation eco-systems and strategies

Overall this is a complex challenge for regional innovation strategies (in particular in less developed regions):

- MNEs (but not all of them) are key to local innovation
- It is hard to design policies that facilitate the alignment of firm-level incentives with local innovation targets.

More research **is needed on tools that work in practice.**

If you want to know more ...

- Watch our video series on-line:
 - <http://blogs.lse.ac.uk/gild/coming-soon/>
- Read some of our Blog Posts on this topic (and follow the links to the full papers if you wish!)
 - <http://blogs.lse.ac.uk/gild/2017/10/12/innovation-and-the-city-the-quest-for-membership-of-an-exclusive-club/>
 - <http://blogs.lse.ac.uk/gild/2017/07/17/mind-the-gap-how-european-cities-and-regions-can-unlock-new-investments-by-cutting-their-distance-with-emerging-economies/>
 - On Smart Specialisation from VoxEU:
 - <https://voxeu.org/article/smart-specialisation-strategies-italy-s-mezzogiorno>

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Foreign Direct Investment and the world regions. Where? Why? And for Whom?

Economists have long seen innovation and technological progress as some of the most powerful drivers of economic development and growth. Therefore, in order to assess the impact of institutionalisation on their host economies we looked at innovation in cities across the globe. One crude way to measure the innovative capacity of cities and regions is to count the number of patents granted to their resident/inventors.

Based on this statistic, local economies are extremely unequal in their innovative potential. The leading on the globe represent regional patent leaders in 2012. While some regions are innovation hubs, most of the emerging land has no patent at all.

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

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Acknowledgements



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The research leading to these results has received funding from the European Research Council under the European Union's Horizon 2020 Programme H2020/2014-2020 (Grant Agreement n 639633-MASSIVE-ERC-2014-STG).

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