

On the Location of Knowledge-Intensive Entrepreneurship in Developing Countries: Lessons from São Paulo, Brazil

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Context



InSySPo . Innovation Systems, Strategies and Policy

Research Trajectory
Knowledge Intensive Entrepreneurship



What do we want to know?

- Where is KIE located (in São Paulo)?
- Why some places develop knowledge-intensive entrepreneurial activity while others do not?
- Why some of these places present higher per capita incidence of KIE than others?
 - Do agglomeration economies prevail?
 - Does aggregate educational levels matter?
 - Do universities play a role in these dynamics?
 - What is the relevance of science parks?

Background

- Entrepreneurial activity in Latin America suffers from an innovation gap in comparison with developed economies (World Bank, 2014)
- Institutional environment
 - Compared to other Latin American countries, Brazil performs poorly in terms of starting a business (28th position among 32 nations), tax compliance (30th) and international trade (30th).
 - *Doing Business Report, 2016*

Geographical distribution

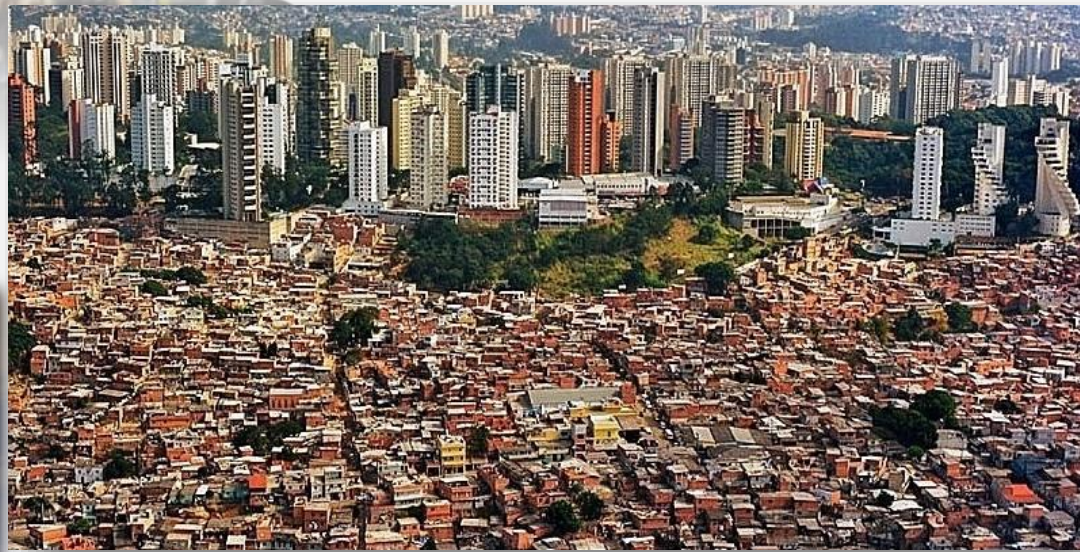


Heatmap 1. Distribution of PIPE projects 1998-2014.

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Insights from Literature

- Agglomeration economies in developing countries?
 - Environmental, social and traffic congestion problems in far greater levels than in big cities located in the developed world (Bairoch, 1988; National Research Council, 1996).
 - Largest metropolitan hubs characterized by decreasing levels of quality of life, social cohesion and industrial competitiveness (Henderson, 2002).
 - Negative association with entrepreneurial activity in the context of developing countries (e.g. Calá et al., 2014).



Insights from Literature

- But economic hubs matter...
 - Importance of location *near* metropolitan hubs seems to create a strategic advantage for companies in terms of capitalizing on the benefits of large agglomerations without incurring in the inherent operational costs (Glaeser et al., 2010; Ghani et al., 2014)

Empirical Approach

- KIE as a function of...
 - *Agglomeration Dynamics*
 - Population density, %Urban Territory, Cars/inhab, Crime
 - *Distance from the Economic Hub*
 - Distance in km from the City of São Paulo
 - *City-Level Infrastructure*
 - Investments, Research-Oriented Universities, Energy consumption, Education
 - *Local Market Conditions*
 - GDP per capita, Patent activity, Business concentration, STEM jobs

Data

- PIPE program (Innovative Research in Small Enterprises)
 - São Paulo Research Foundation (FAPESP).
 - Subsidizes entrepreneurial projects with high levels of knowledge-intensity and innovative potential.
 - Set up in 1997, inspired by the Small Business Innovation Research (SBIR) program in the United States.

- 1130 Projects
- 114 Cities
- 1998-2014

Estimations

- Heckman two-step selection model (Heckit)
 - Sample bias
 - 114 cities with PIPE Projects/185 without
 - 1st Step: *“why some places develop knowledge-intensive entrepreneurial activity while others do not”?*
 - 2nd Step: *“why some places present higher per capita incidence of KIE than others”?*

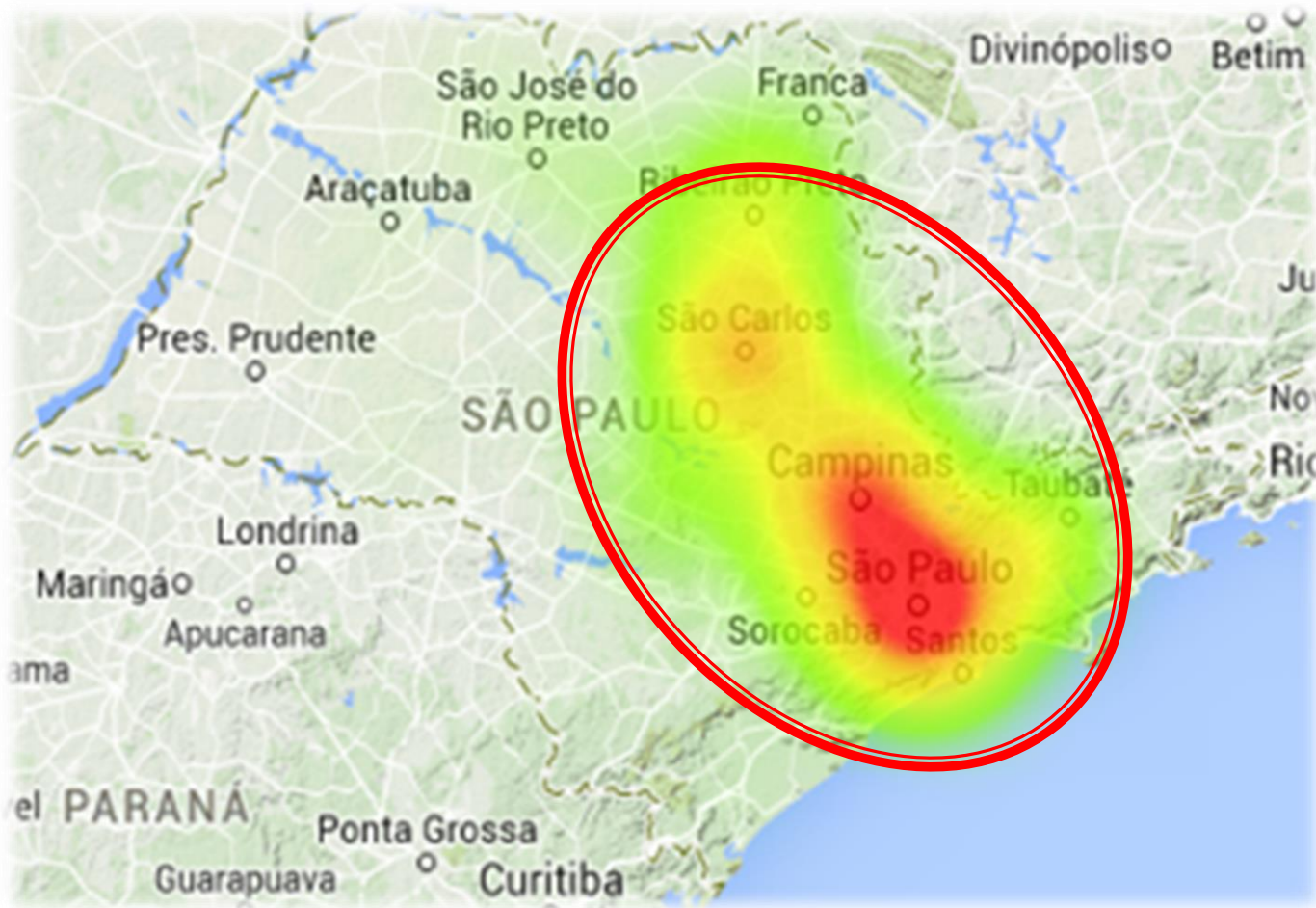
Findings & Implications

- The role of the knowledge infrastructure
 - **Universities** - Skilled labor, experienced researchers, and are actively engaged in technological transfer activities of various forms, also including the creation of knowledge-intensive startups
- Negative impact of Crime
 - Potential implications for the role of public security policies as a relevant vector of knowledge-intensive entrepreneurship.

Findings & Implications

- Importance of economic centers as hosts of innovation-driven entrepreneurial activity
 - **However**, indications of agglomeration diseconomies affecting the levels of knowledge-intensive entrepreneurship per capita (cohort 24-54 y/o)
- The need for a transport network that connects cities more easily
 - Particularly those along the São Paulo-Ribeirão Preto axis).

City-level Ecosystems or One Regional Ecosystem?



Next Steps

- Very fruitful conversation with Prof. Malerba
 - Knowledge background of entrepreneurs
 - Sectoral disaggregation
 - (Eco)systemic networks
 - Counterfactual analysis
 - PIPE/FAPESP grants vs. rejected proposals

Next Steps

- Ecosystems' Configurations
 - Fuzzy-Set QCA
 - Heterogeneous Patterns
- Student Entrepreneurship
- The role of Research-Oriented Universities
 - 9% of Brazilian patents concentrated in the top 12 institutions
 - 6 out of the 10 most active patent applicants in the country

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