

Systemic approaches for measuring national and regional entrepreneurship: the case of the Global and Regional Entrepreneurship Indexes (GEI/REDI)



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Structure

- Background: Entrepreneurship, entrepreneurial (eco)systems, elements, and metrics
- The GEI and REDI
 - Methodology
 - Applications in Spain, Hungary, Colombia-Ecuador-Uruguay
- Conclusions

Key definitions

Entrepreneurship, Productive entrepreneurship (Baumol, 1996) → Economic development

Entrepreneurship is a complex phenomenon, which results from the **interaction** of several **interlinked constituents and actors**.

(Entrepreneurial "eco"systems)

- "...diversity of **actors, roles, and environmental factors** that interact to determine the entrepreneurial performance of a region or locality" (Spilling, 1996.p.1)
- "Those **economic, social, institutional** and all other important **factors** that **interactively** influence the creation, discovery and exploitation of **entrepreneurial opportunities**" (Qian, Ács, and Stough, 2013, p. 561)
- "The entrepreneurial ecosystem as a **set of interdependent actors and factors** coordinated in such a way that they enable **productive entrepreneurship** within a particular territory (Stam, 2015 p.1765)

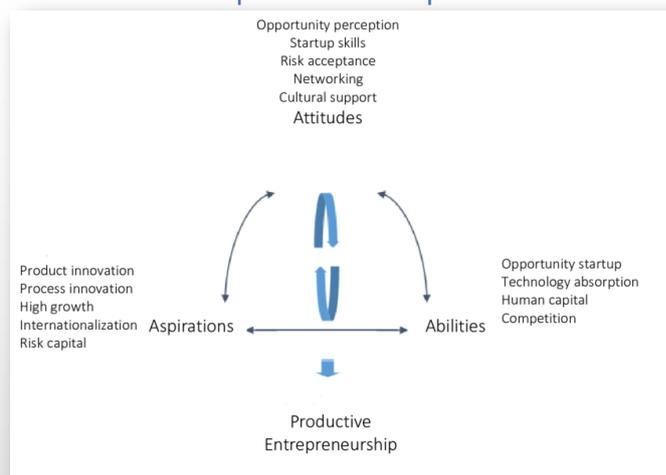
National systems of Entrepreneurship concept

- "A **dynamic**, institutionally embedded interaction **between entrepreneurial attitudes, abilities, and aspirations**, by **individuals** which drives the allocation of resources through the creation and operation of new ventures" (Ács, Autio, and Szerb, 2014, , p.479)



Several definitions, several metrics.

National Systems of Entrepreneurship



Dynamic of National Systems of Entrepreneurship (Ács, Szerb, Autio, 2014)

- * **Individual** attitudes, abilities and aspirations are regulated by a country's **institutional** context
- * Systemic nature: "stable and efficient configurations are those that are balanced". Pillars are only partially substitutable with one another. "Bottleneck factors" may held back the systems performance.

The GEI and REDI

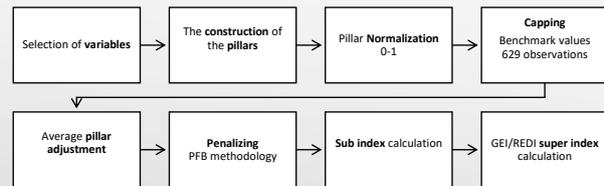
Sub-indices	Pillars (14)	Variables (ind./inst.) (28)	
GLOBAL ENTREPRENEURSHIP INDEX	ATTITUDES SUB-INDEX	OPPORTUNITY PERCEPTION	Opportunity recognition Freedom
		START-UP SKILLS	Skill perception Education
		RISK ACCEPTANCE	Risk perception Country risk
		NETWORKING	Know entrepreneurs Agglomeration (urbanization*infrastructure)
		CULTURAL SUPPORT	Career status Corruption
	ABILITIES SUB-INDEX	OPPORTUNITY START-UP	Opportunity motivation Governance
		TECHNOLOGY ABSORPTION	Technology level Technology absorption Educational level Labour market
		HUMAN CAPITAL	Competitors Competitiveness
		COMPETITION	Competitors Competitiveness
	ASPIRATIONS SUB-INDEX	PRODUCT INNOVATION	New product Technology transfer
PROCESS INNOVATION		New technology Science	
HIGH GROWTH		Gazelle Finance and strategy	
INTERNATIONALISATION		Export Economic complexity	
RISK CAPITAL		Informal investment Depth of capital market	

Four-level index : variables, pillars, sub-indices, the super-index.

Individual data: GEM Global Entrepreneurship Monitor, APS survey.

Institutional data: International databases (UN, WEF, The World Bank, EUROSTAT...)

• Index building steps



Source: GEI 2018: Technical Annex

GEI as an adaptable instrument for measuring Entrepreneurship Systems

	The Regional Entrepreneurship and Development Index (REDI): The Case of Spain (2012)	Regional Entrepreneurship in Hungary based on the Regional Entrepreneurship and Development Index (REDI) methodology (2013)	Regional systems of entrepreneurship in 2017–2018: An empirical study in selected regions of South America (2021)
Aim	17 Spanish regions	7 NUTS-2 level regions	22 regions in Colombia, Ecuador, and Uruguay
Data employed	GEM APS 2007-2008, n=30000 observations Institutional data: different data sources (OECD, Eurostat, national data sources)	GEM APS 2008-2012, n= 10 000 observations Institutional data: different data sources	GEM APS 2010-2018, n= 75 000 observations Institutional data: different data sources
Adaptation	Individual variables: fully available. 4 variables available regional data, 6 variables a proxy variable replacing the original, 5 variables national level data.	Individual variables: fully available. 9 variables available regional data, 1 variable a proxy variable replacing the original, 4 variables national level data.	Individual variables: was fully available. 3 variables available regional data, 4 variables a proxy variable replacing the original, 7 variables national level data.
Results	- Reduced levels of internationalization , innovation and export activity. - Entrepreneurs lack start-up skills , negative attitude towards the potential economic or business opportunities due to a high fear of failure.	- Entrepreneurial disparities amongst Hungarian regions - Country level, multi-level and single-level public policy are necessary to improve the level of entrepreneurship and optimize resource allocation over the 14 pillars of entrepreneurship in the seven Hungarian regions.	- South American regions high average scores in entrepreneurial attitudes . - Weaknesses: in 'process innovation ', 'internationalisation', and ' technology absorption ' - Differences in individual entrepreneurial attitudes, abilities, and aspirations among urban and rural populations.

Constraints for Latin countries: Colombia, Ecuador, Uruguay

INDIVIDUAL DATA: denied access for raw/recent GEM datasets.

INSTITUTIONAL DATA

a) Lack of “regional development” perspective among development stakeholders

Few institutions collecting and publishing regional data

- EUROSTAT/OECD
- Continental institutions: MERCOSUR/UNASUR/Community of Latin American And Caribbean States (CELAC)

b) Focus in national level statistics

- No regional reports/data available at the National Statistics Institutes
- Lack of variables containing geographical information in raw databases for own calculations

Advances in entrepreneurship measurement

Key issue: access to GEM databases

Kazakhstan GEM national reports 2014 - 2017, 2020

GEI 2018 approach

GEM non-members, employ data from member countries called “nearby and similar” countries

Kyrgyz Republic and Tajikistan → Average of Kazakhstan and Russia*

Aim: efforts to generate local/regional institutional data related to Entrepreneurial systems

Employ available data

✓ ‘Life in Kyrgyzstan’ Study (LiK Study), education, labour market, aspirations, social life.

✓ National Statistical Committee of the Kyrgyz Republic: “open data” “regional statistics”

Conclusions

- Entrepreneurship is a *complex* phenomenon, it can only be understood from a comprehensive, systemic perspective.
- GEI and REDI indices have been validated by the academia as well as policymakers.
- GEI methodology can be adapted for application in context where perfect data is not available, leading to sound results and valid interpretations.

QUESTIONS AND COMMENTS

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Data sources

Global entrepreneurship index, <https://thegedi.org/>

The regional entrepreneurship and development index: Structure, data, methodology and policy applications
http://www.projectfires.eu/wp-content/uploads/2018/07/d4.4-the-regional-entrepreneurship-and-development-index_-structure-data-methodology-and-policy-applications.pdf

https://thegedi.org/wp-content/uploads/dlm_uploads/2017/12/2018-GEI-Technical-Annex.pdf