

# A meta-analysis on the role of institutions in Entrepreneurial Ecosystems (EE)

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**CRETE 2022**

July 15, 2022

CRETE 2022

# Growing interest in EE – Institutions arise, BUT...

- The concept of entrepreneurial ecosystems (EE) has attracted **increasing attention**
- Within this context, Cavallo et al. (2019) highlight the importance of **institutional factors** (economic, technological, societal) and social context (culture, social norms) in promoting entrepreneurship.

However,

- Scattered theoretical and empirical underpinnings → the relationship between institutions and EE operation remains *limited and inconclusive* (Stam and van de Ven, 2021; Leendertse et al., 2021; Theodoraki et al., 2021).
- The *lack of a well-defined, commonly accepted, theoretical framework* for EE, the existence of *different environmental settings* and the presence of *multiple interactions* suggest that further research (and evidence) is needed on how and to what extent institutions affect EE (Fernandes and Ferreira, 2021; Johnson et al., 2022).
- The literature examines the impact of distinct elements/institutions on entrepreneurship BUT the ecosystem's perspective implies that the EE elements are *jointly present, mutually interdependent and co-evolved* (Stam and van de Ven, 2021).

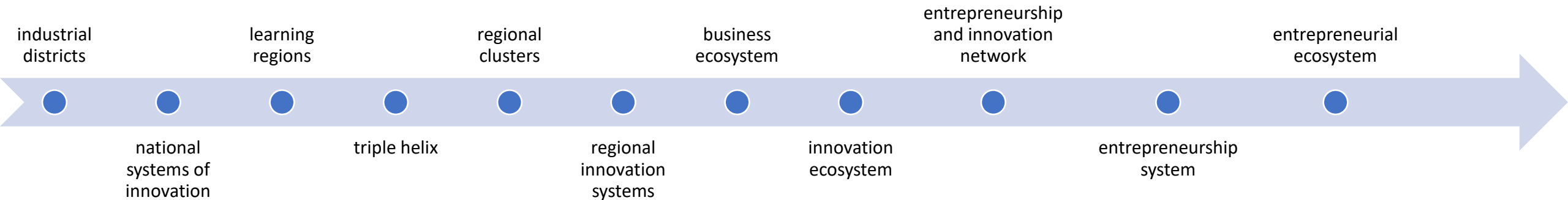
# Entrepreneurial Ecosystems

*“a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory” (Stam and Spigel, 2016 p. 1)*

Several definitions for EE exist in the literature and all of them focus on the interconnectedness of various environmental factors and the embedded actors affecting entrepreneurial activity.

# Evolution of the field

Although the literature considers the EE as a relatively novel concept, its roots can be traced back to similar notions.



Based on: Wurth, Stam and Spigel (2021); Mohammadi and Karimi (2021)

# Institutions

Institutions are “*the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction*” and regulate economic, political, and social activities (North, 1990).

Institutions can either foster or hinder entrepreneurial activity (Bruton et al., 2010), but better institutions contribute to higher levels of entrepreneurship and of higher quality (Sautet, 2005).

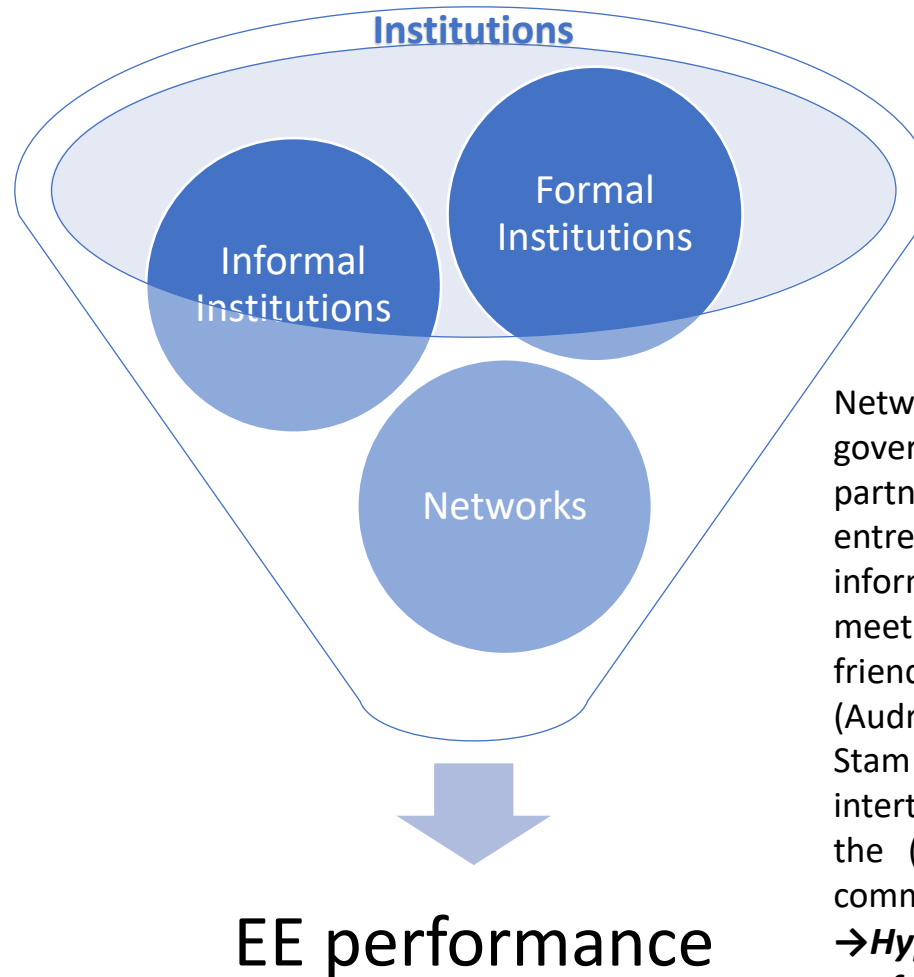
# What we do

- We focus on the role of formal and informal institutions in EE performance using meta-analysis.
- Employing meta-analysis for the first time in the relevant literature, we:
  - examine the impact of the institutional factors on EE
  - identify the main factors affecting this relationship
- Understanding which agents (institutions) are more successful and the conditions (factors) supporting this effect can help the development of new frameworks and methodological approaches.

# Main Research Questions (Hypotheses)

Informal institutions are social arrangements and norms associated with culture (cultural context, customs, traditions, moral values, religious and political beliefs) and include entrepreneurship culture which influences actors' behavior and actions (Donaldson, 2021).

→ **Hypothesis 2: Better informal institutions positively affect EE performance.**



Formal institutions are considered as the rules, laws, policies, legislation and regulations that define actors' behavior.

→ **Hypothesis 1: Higher quality formal institutions positively affect EE performance.**

Networks and collaborations can be either formal (e.g. government grants, collaborations within triple-helix partnerships, incubators and accelerators for entrepreneurship, public-private partnerships, etc.) or informal (knowing angel investors, informal business meetings, business clubs, entrepreneurs' families, friends, colleagues, relations with other actors) (Audretsch, Belitski and Cherkas, 2021).

Stam and Spigel (2017) add that EE are not only intertwined with institutions and cultures, but also with the (social) networks developed within regions and communities.

→ **Hypothesis 3: Networks positively affect EE performance.**

# Moderator analysis & Hypotheses

The moderator analysis can help us understand the potential sources of regional heterogeneity and differential effects.

➤ We focus on four moderating factors and the role they play in the nexus between institutions and EE performance.

→ **Hypothesis 4: Education influences the relationship between institutions and EE performance.**

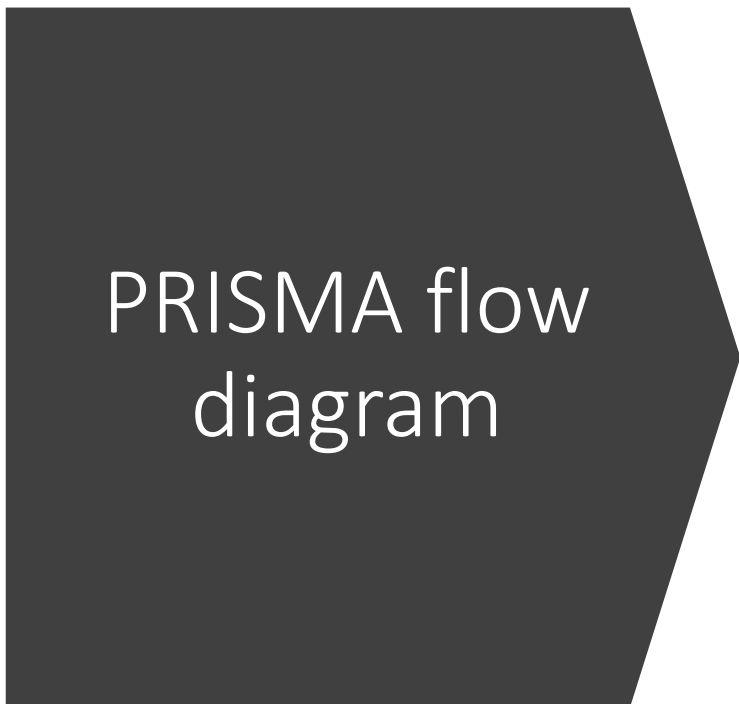
→ **Hypothesis 5: Economic development influences the relationship between institutions and EE performance.**

→ **Hypothesis 6: The cultural context influences the relationship between institutions and EE performance.**

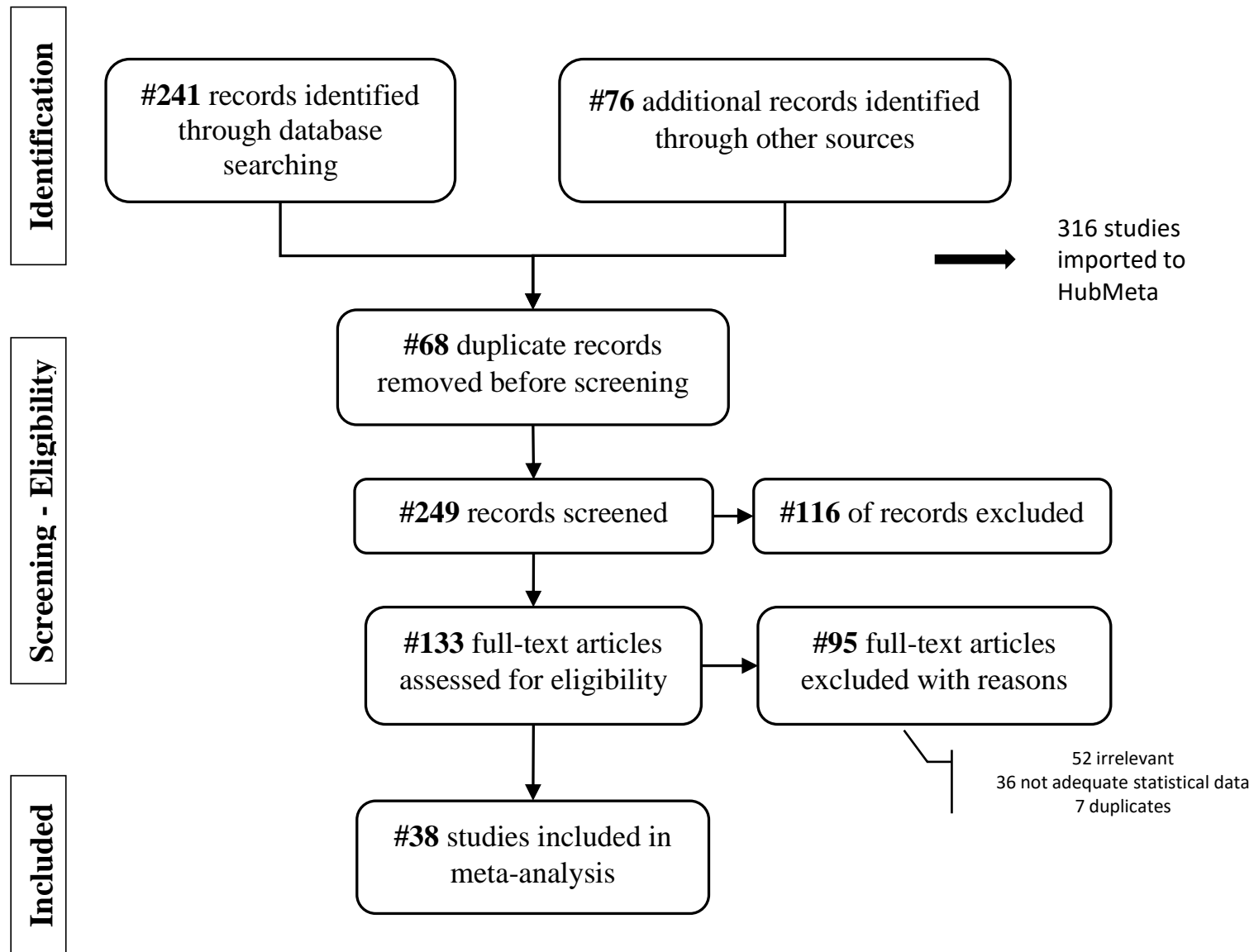
→ **Hypothesis 7: The spatial context influences the relationship between institutions and EE performance.**

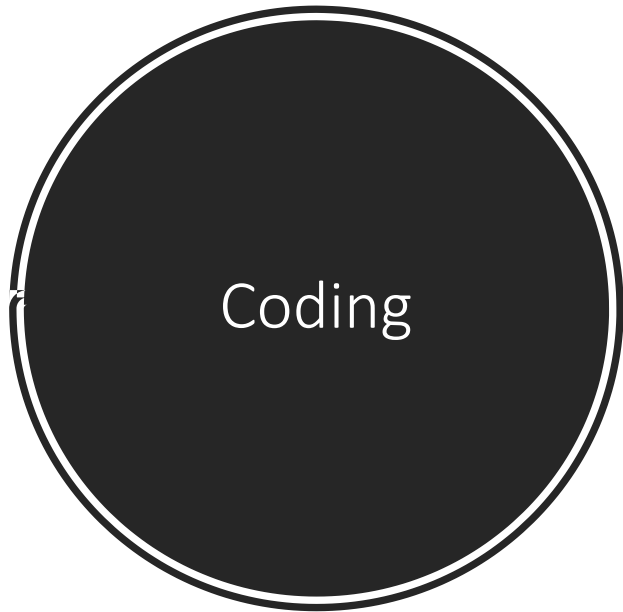


# Data & Methods



*'entrepreneur\* ecosystem\*' AND institution\* AND (quantitative OR qualitative OR empirical OR data\*) in title, abstract and keywords*





Moderator variables: *education, level of economic development, cultural background and spatial context.*

Control for systematic differences in effect sizes or outcomes across studies.

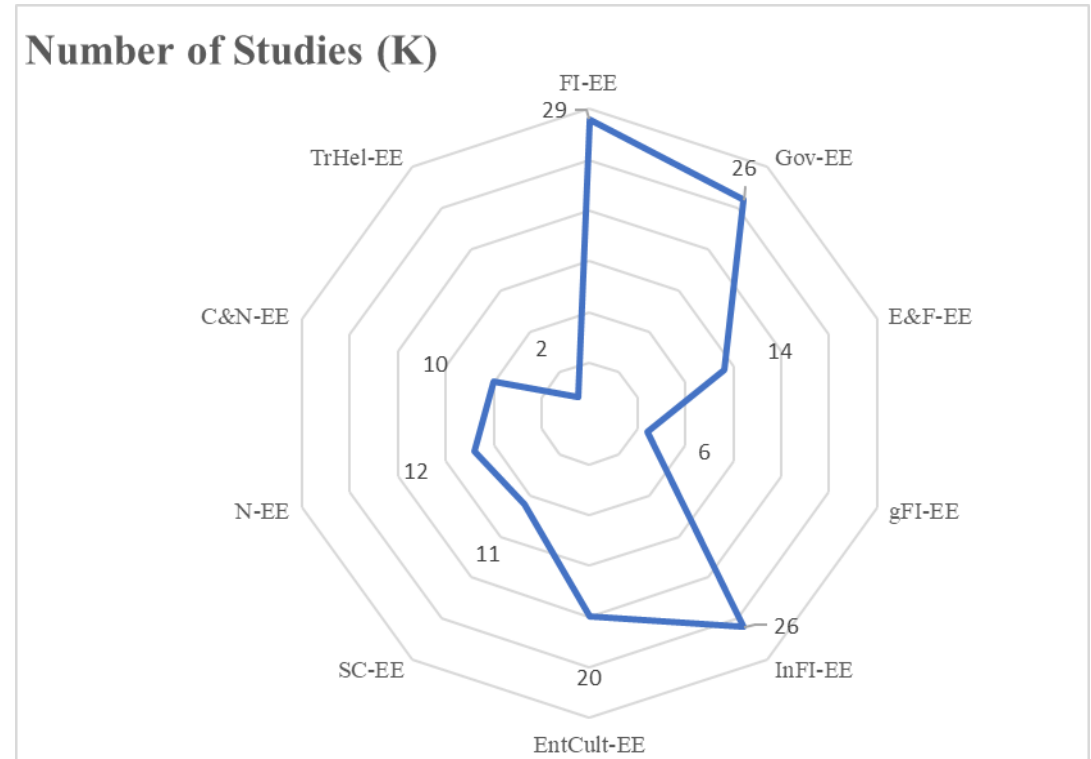
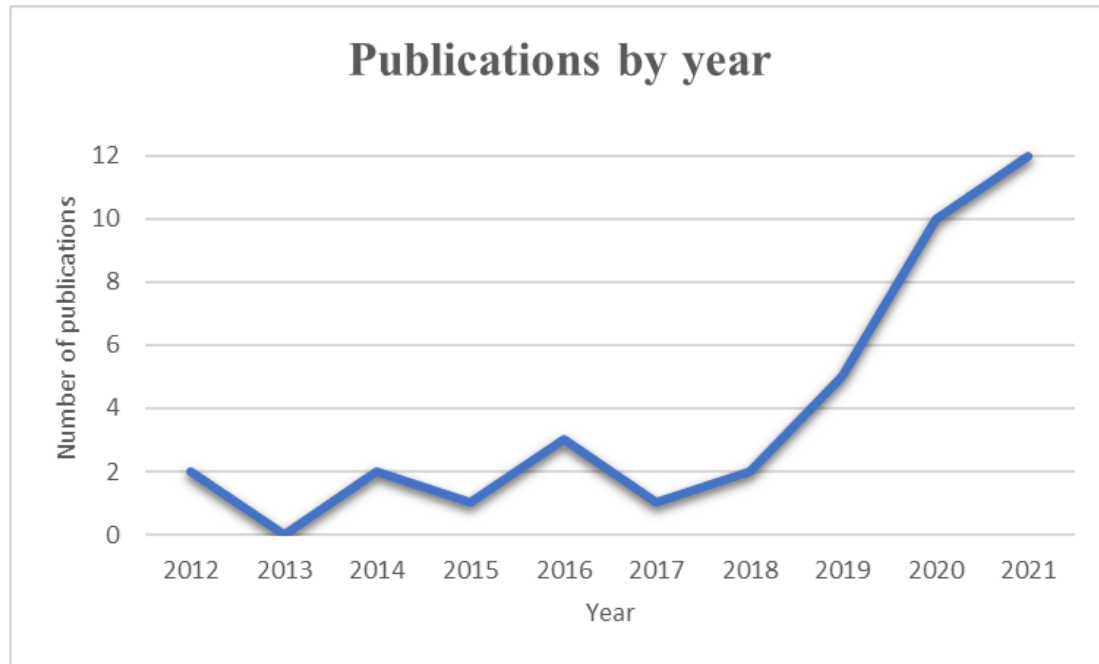
Dependent variable

Independent variables

Stam and van de Ven's (2021) EE model:  
*'institutional arrangements component is captured by the formal institutions, culture and network elements'*

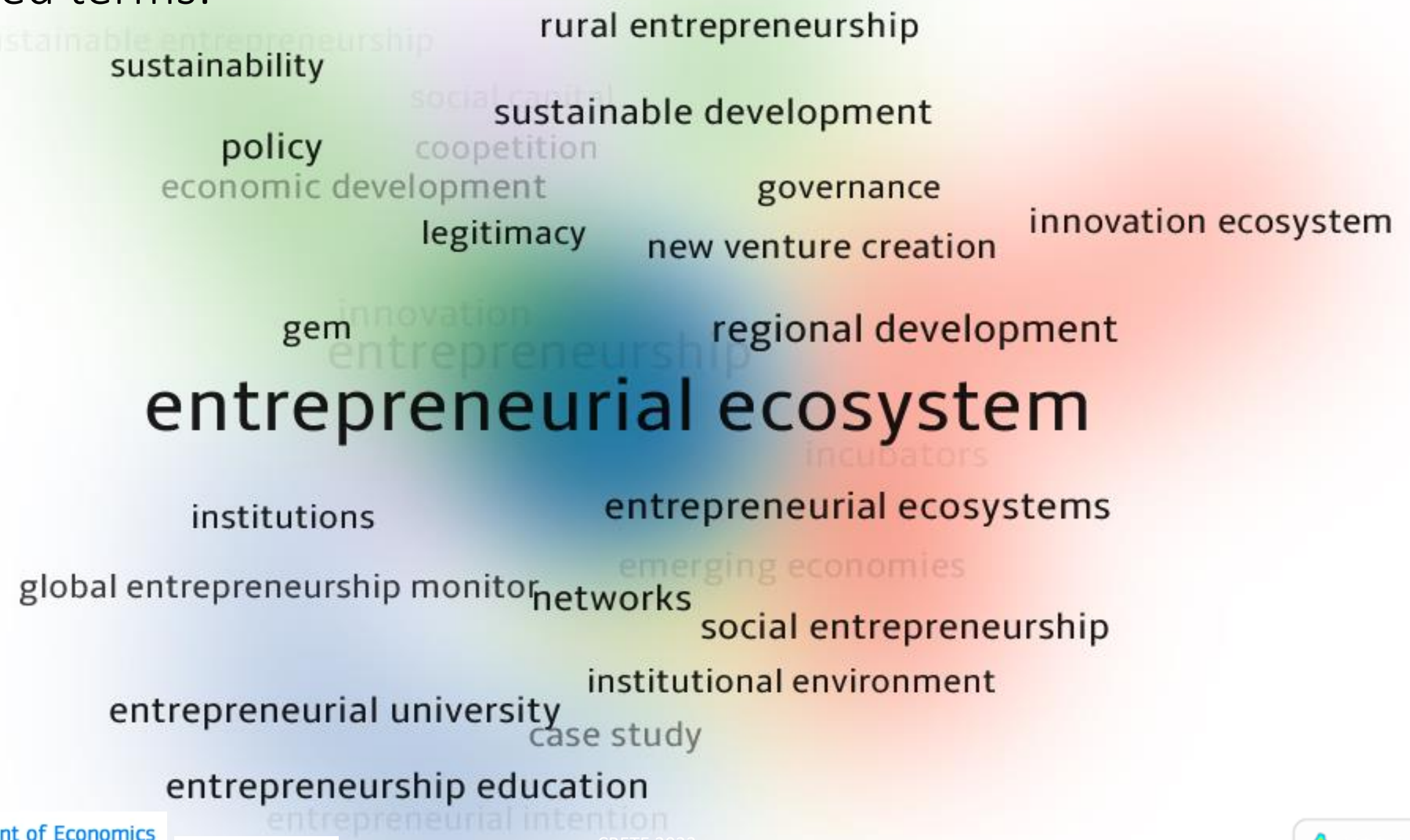
Group	Constructs	Measures				
Group Constructs	<u>EE performance</u> (k=38)	Entrepreneurial performance (k=38)	Assessed through alternative measures such as firm performance, new firm entry (or firms' birth rate), entrepreneurship potential and density (e.g. number of firms) or specific EE performance indices.	58 measurements		
	<u>Formal Institutions</u> (k=29)	Government (k=26)			Measured by various indicators (Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption, Citizens Rights). Alternative measures include government support, taxation, economic freedom, IPR regulatory framework and protection, procedures required to start a business, employee protection and trade regulations.	47 measurements
		Economic and financial institutions (k=14)	Regulations governing markets (ease of entry, trading) and measures of financial development (financial support, venture capital, access to credit).	23 measurements		
		General formal institutions (k=6)	Other measures of formal institutions not uniquely specified.	8 measurements		
		<u>Informal Institutions</u> (k=26)	Entrepreneurial Culture (k=20)	Measured by a variety of metrics including new firms' birth rate, the degree to which entrepreneurship is valued in a region, entrepreneurship and sustainability awareness, entrepreneurial orientation, stakeholders' support, fear of failure and uncertainty avoidance, attitudes against corruption, bribes, tax avoidance, and individualism.	36 measurements	
			Social Capital (k=12)			Measured by trust indicators (social, interpersonal, institutional), tolerance and self-efficacy.
	<u>Networks</u> (k=12)	Collaborations & Networks (k=10)	Both formal and informal networks are included. Collaboration for entrepreneurship and innovation, participation in associations.	19 measurements		
		Triple Helix (k=2)			It measures networking and collaboration among the triple helix agents (government, industry, university).	17 measurements

# Descriptive analysis of the selected studies

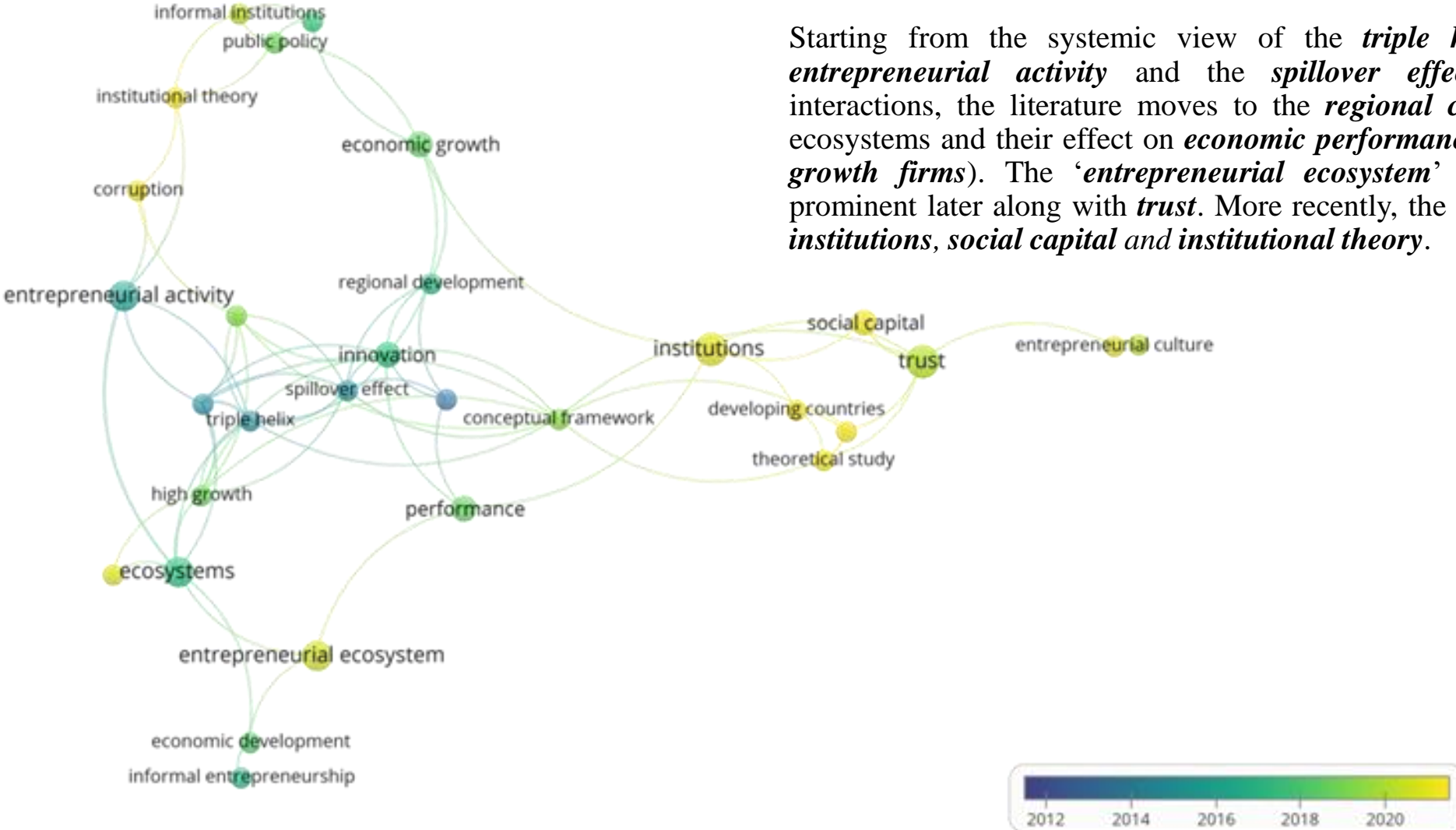


The number of studies where each specific pair-wise correlation is examined.  
(Bivariate meta-analysis using HubMeta.)

# EE related terms:



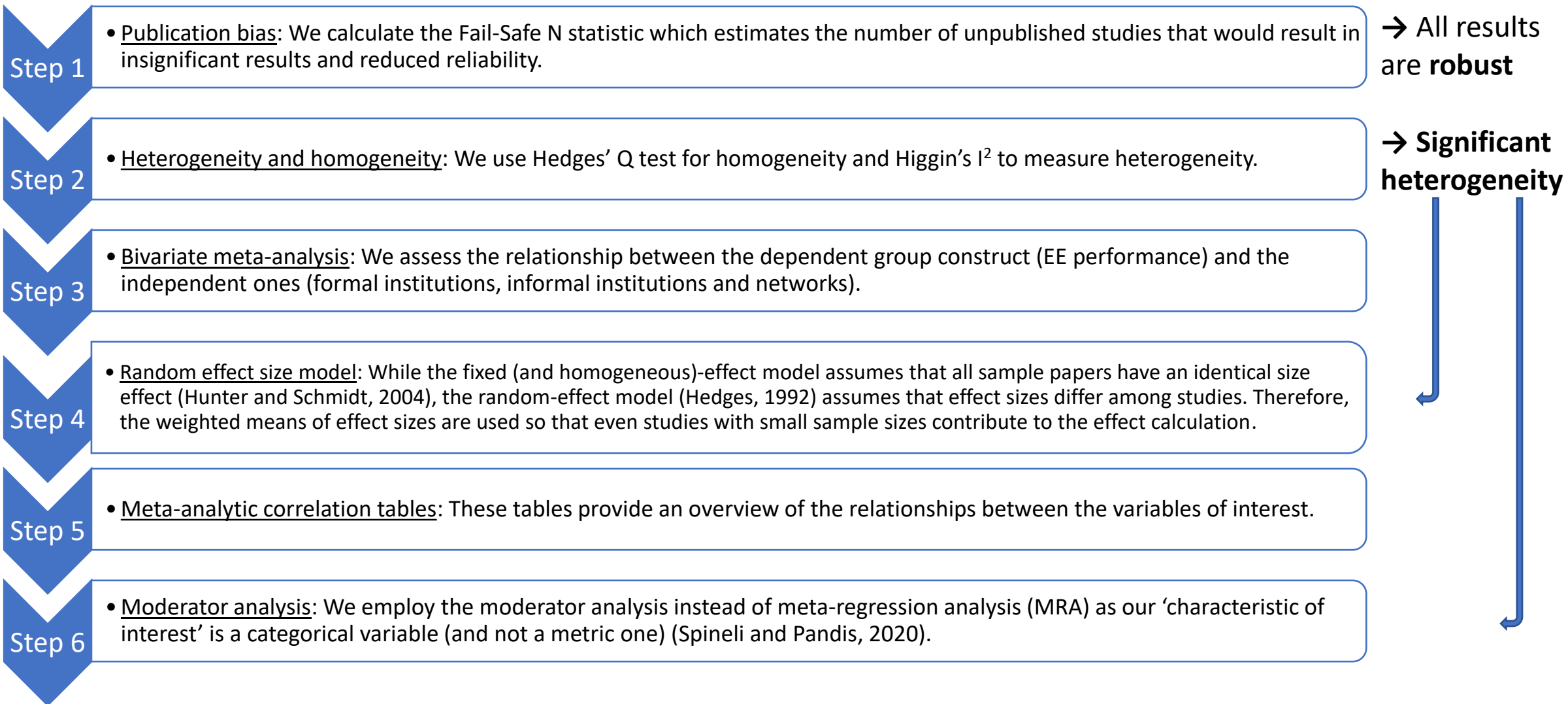
# Evolution of the EE concept (VOSviewer overlay visualization over co-occurrence analysis)



Starting from the systemic view of the *triple helix*, its impact on *entrepreneurial activity* and the *spillover effects* of the helices' interactions, the literature moves to the *regional characteristics* of the ecosystems and their effect on *economic performance* (focusing on *high-growth firms*). The '*entrepreneurial ecosystem*' term becomes more prominent later along with *trust*. More recently, the spotlight is placed on *institutions, social capital and institutional theory*.



# Meta-analysis Methodology



# Random Effect sizes - the strength of the relationship between factors/variables

## Bivariate meta-analysis using random effects

Bivariate Variables	Mean Effect Size (r), adjusted, random-effects Fisher's Z model	95% Confidence interval lower bound	95% Confidence interval upper bound
<b>H<sub>1</sub>:</b> <b>FI- EE [H1]</b>	0.1922	0.1165	0.2656
Gov - EE	0.1061	-0.0149	0.224
E&F - EE	0.2421	0.0061	0.4524
<b>H<sub>2</sub>:</b> gFi- EE	0.2168	-0.0472	0.4525
<b>InFI- EE [H2]</b>	0.4381	0.3665	0.5046
EntCult- EE	0.402	0.3207	0.4772
<b>H<sub>3</sub>:</b> SC - EE	0.3866	0.2539	0.505
<b>N- EE [H3]</b>	0.3924	0.218	0.5426
C&N - EE	0.4397	0.3123	0.5515
TrHel - EE	0.1244	-0.7761	0.858

Positive & significant

*Thresholds (Steel et al. 2021):*  
 Small=0.10  
 Medium=0.18  
 Large=0.32

# Correlation table (correlations among the 4 group constructs)



Meta-analytic correlation table of group constructs

Variable	Entrepreneurial ecosystem performance	Formal institutions	Informal institutions	Networks
Entrepreneurial ecosystem performance	<b>1.00</b>	29 (232390**)	26 (968998**)	12 (203352**)
Formal institutions	<b>0.1182</b>	<b>1.00</b>	18 (37626*)	9 (184008**)
Informal institutions	<b>0.3237</b>	<b>0.0721</b>	<b>1.00</b>	8 (3830**)
Networks	<b>0.2687</b>	<b>0.1064</b>	<b>0.4232</b>	<b>1.00</b>

Substitutes

Complementary

*Notes:* The values above the diagonal indicate: the number of times the specific correlation is examined in the literature and the corresponding total sample size (in parenthesis).

\*\*, \* indicate statistical significance at the 0.01 (0.05) level.



# Moderator analysis

*Hyp. 4: Education influences the relationship between institutions and EE performance.*

→ **Supported**

*Hyp. 5: Economic development influences the relationship between institutions and EE performance.*

→ **Partially Supported**

*Hyp. 6: The cultural context influences the relationship between institutions and EE performance.*

→ **Supported**

*Hyp. 7: The spatial context influences the relationship between institutions and EE performance.*

→ **Partially Supported**

Moderator	Moderator Subsample	Relationship examined	n	k	Random effects (RE)	RE.CI low	RE.C I upp.
<b>Education</b>	Yes	FI-EE	8514	13	0.3829	0.4813	0.6465
		II-EE	931408	16	0.4434	0.3983	0.5039
		N-EE	2690	5	0.5548	0.4813	0.6101
	No	FI-EE	223876	16	0.048	-0.0256	0.121
		II-EE	37590	10	0.4093	0.2645	0.605
		N-EE	200662	7	0.2464	-0.0115	0.5145
<b>Economic Development</b>	Developed	FI-EE	8017	13	0.4808	0.2094	0.7518
		II-EE	9612	12	0.5948	0.3988	0.9711
		N-EE	22255	8	0.4468	0.3693	0.6787
	Developing	FI-EE	3920	7	0.2385	0.0143	0.472
		II-EE	8704	8	0.3734	0.1293	0.6555
		N-EE	21421	4	0.5501	0.47	0.767
<b>Cultural context</b>	Eastern	FI-EE	1729	4	0.3482	0.0898	0.637
		II-EE	6513	5	0.327	-0.0144	0.6932
		N-EE	581	2	0.5658	0.5047	0.778
	Western	FI-EE	45304	13	0.3131	0.1621	0.7332
		II-EE	32244	9	0.5675	0.2075	1.0802
		N-EE	20295	6	0.4543	0.2469	0.7332
<b>Spatial context</b>	Ecosystem	FI-EE	183883	10	0.5192	0.2646	0.886
		II-EE	3655	8	0.5895	0.2693	1.0845
		N-EE	183798	9	0.3211	0.1345	0.5311
	Regional	FI-EE	1949	4	-0.0702	-0.5814	0.4409
		II-EE	6679	6	0.3721	0.029	0.7528
		N-EE	n/a	n/a	n/a	n/a	n/a
	National	FI-EE	46558	15	0.0327	-0.0487	0.1142
		II-EE	958664	12	0.3676	0.2685	0.5029
		N-EE	19554	3	0.6145	0.702	0.7301

Notes: EE: EE performance, FI: Formal institutions, II: Informal institutions, N: Networks, n: total sample size, k: number of correlations, RE.CIlow: Confidence interval lower bound (random effects), RE.CIupp: Confidence interval upper bound (random effects)

# Conclusion

Our study

- ✓ *synthesizes* the emerging literature on EE performance, *captures the complexity of EE* and help towards the systematization and development of an appropriate *theoretical framework*, which is currently lacking.
- ✓ provides *robust* empirical results.
- ✓ verifies the *interdependencies* that exist in EE.

→ Formal and informal institutions and networks *positively and significantly* affect EE performance. The strength of these effects depends on the *moderating factors* (economic development, cultural and spatial context). *The stakeholders of an ecosystem should account for these factors, comprehend their dynamics and adjust accordingly when aiming at supporting local economies' performance and sustainability.*



# Policy implications

- Knowledge regarding the impact of processes and the actors' and factors' influence on EE performance.
- Support in the design and implementation of interventions and policies, the allocation of resources, and the identification of tipping points in systems and effective levers.

# Future Research Directions

- Additional empirical studies
- More studies including a 'holistic' approach (more than one kind of institutions)
- Further examination of the role of trust (social, individual, institutional) as major measure of social capital
- Extended geographical coverage (so as to capture cultural differences); better coverage of less-developed areas; further regional analysis
- Capturing the dynamics of the EEs and the interactions of different actors.
- Work towards the development of a 'global' theoretical framework

# Thank you!

Any questions?

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