Regional variation of the entrepreneurial activities: the role of the entrepreneurial ecosystem

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Introduction

- The context has an important role, since it simultaneously provides individuals with entrepreneurial opportunities and sets boundaries for their actions (Zahra et al., 2014)

- However, the quality level of new start-ups is different, and only a tiny proportion of young firms with high-quality level may have a significant impact on economic development (Nightingale and Coad, 2014)

- The quality of entrepreneurial activities include different aspects like personal abilities, founding motivation, future aspirations of the entrepreneur, or the new firms' innovative activity (Vivarelli, 2013)

- As former studies revealed, the context has a vital role in the occurrence of new firms since it regulates the quality and outcome of the entrepreneurial activity (Acs et al., 2014; Szerb et al., 2019)

- Motivation: based on the results of Szerb et al. (2019) studying the role of the entrepreneurial ecosystem in the outcome of entrepreneurial activity having different quality aspects

Entrepreneurial ecosystems – The system view of the context

- Applying the system view of the entrepreneurial context, the entrepreneurial ecosystem considers the emergence of productive entrepreneurship due to actors and factors within a focal territory (Acs et al., 2014)

- Various definition of entrepreneurial ecosystem (Brown and Mason, 2014; Stam, 2015; Spigel, 2017; Mason and Brown, 2017), but there are a couple of common points
  - Focusing on the quality of entrepreneurship rather than quantity of entrepreneurship;
  - Interconnected components which refer to the different dimensions of the context;
  - The entrepreneur is in the centre of the system;
  - The components influence the behaviour of (new) entrepreneurs, but the activities of entrepreneurs have an effect on the components of the entrepreneurial ecosystem

- The entrepreneurial ecosystem includes different factors that positively affect entrepreneurship and support economic growth:
  - factors like cultural attributes; social attributes and material characteristics (Spigel 2017),
  - it considers the processes among the interconnected actors and institutions (Brown and Mason 2017).
  - these factors create a supporting background for innovative firms and motivate nascent entrepreneurs to start-up their venture; the ecosystem approach in entrepreneurship policy requires a shift from the focus on quantity to the quality of entrepreneurship (Stam and Spigel 2016).

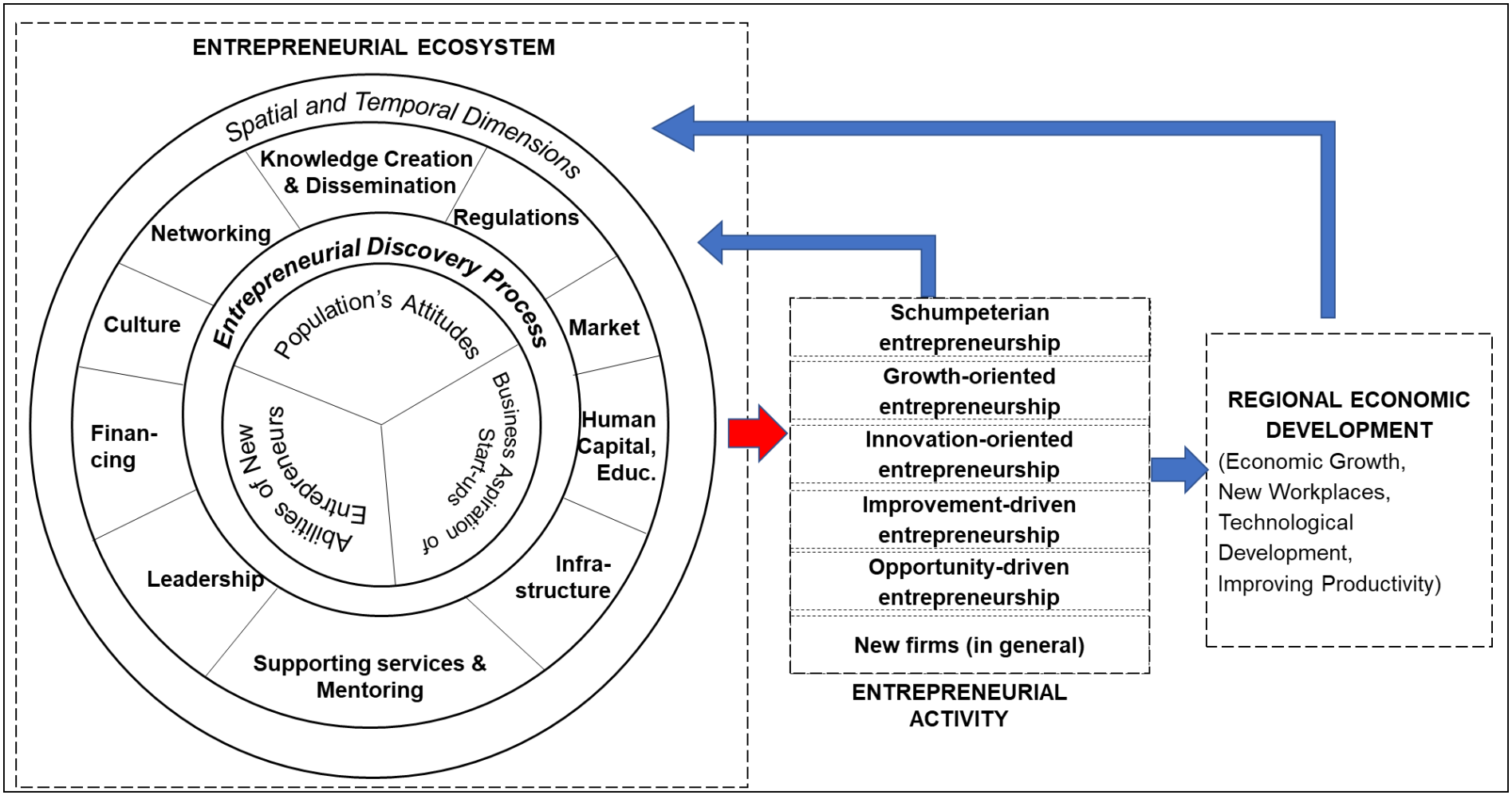
The role of entrepreneurial ecosystems in the creation of new firms

- Productive entrepreneurial activities vary across regions as the conditions of individual and institutional factors within entrepreneurial ecosystems are different (Szerb et al., 2017a)

- The entrepreneurial activity is an output of the entrepreneurial ecosystem, and it provides the framework for individuals to recognize and exploit entrepreneurial opportunities (Acs et al., 2014; Stam. 2015)

- The quality of the ecosystem may have an important role:
  - regions with strong entrepreneurial ecosystem can materialize the effects of high business-formation rates;
  - regions with weak entrepreneurial ecosystem may rely on innovative entrepreneurs to compensate for the absence of entrepreneurship support policies (Szerb et al., 2019)

The conceptual model of the study



Source: Author's edition based on Stam (2015), Spigel (2017) and Autio et al. (2017)

Research question, hypotheses

Research Question

- The study addresses the research question, whether there is a significant relationship between entrepreneurial activity quality and the entrepreneurial context.

Hypotheses

- The role of the entrepreneurial ecosystem varies in the case of different types of entrepreneurial activities.

- The entrepreneurial ecosystem's role is more significant in entrepreneurial activities with higher quality than in the case of other types of entrepreneurial activities.

Measuring the entrepreneurial activity

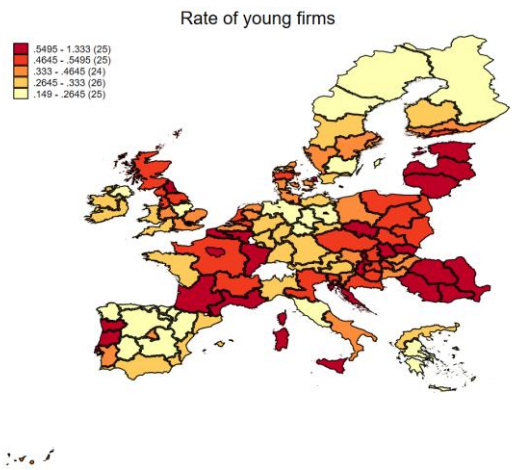
- To measure different types of entrepreneurial activities, we applied the GEM Regional Dataset and calculated a unique indicators for each type of activities
- Pooled (cross-sectional) data for 2010–2014 on 125 NUTS1 and NUTS2 regions from 24 EU countries
- We followed the categories of GEM and distinguished young firms (up to 42 months old) and established firms (older than 42 months)
- We created altogether six indicators
  - All indicators refer to a kind of „competitive pressure" as they compare the number of different types of young firms to the number of established firms and not to all firms – so in an extreme case, rates could be higher than 1
  - One exception is the rate of Schumpeterian young firms where the number of innovative young firms are compared to the number of innovative established firms – It means that if it is higher than 1, the number of innovative young firms are higher than the number of innovative established firms

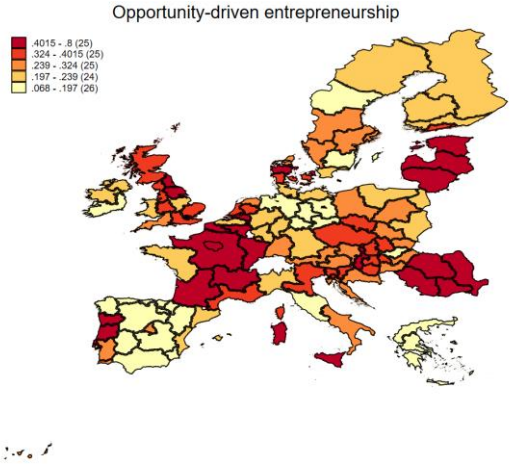
The applied entrepreneurial activity indicators

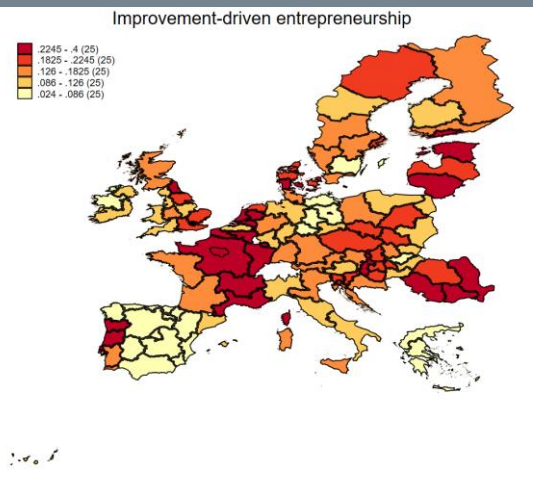
Indicator	*Description*	*Quality criterion/criteria*
New firms in general	The number of **all young firms** compared to the number of the established firms	No quality creiterion
Opportunity-driven entrepreneurship	The number of **opportunity-driven young firms** compared to the number of the established firms	Opportunity-driven start-up of a firm
Improvement-driven entrepreneurship	The number of young firms that **„are pulled to entrepreneurship by opportunity and because they desire independence or to increase their income compared to the number of the established firms”** (source: GEM)	Opportunity-driven start-up of a firm and the motivation of the entrepreneur for being more independent or increasing his/her income
Innovation-oriented entrepreneurship	The number of young firms **providing product or process innovation** compared to the number of the established firms	Introduction of new product and/or applying new technologies and/or low number of competitors
Growth-oriented entrepreneurship	The number of young firms **having high-growth orientation** compared to the number of the established firms	High-growth orientation
Schumpeterian entrepreneurship (based on Szerb et al. (2019))	The **number of innovative young firms compared to the number of innovative established firms**	Introduction of new product and/or Applying new technologies and/or Low number of competitors.

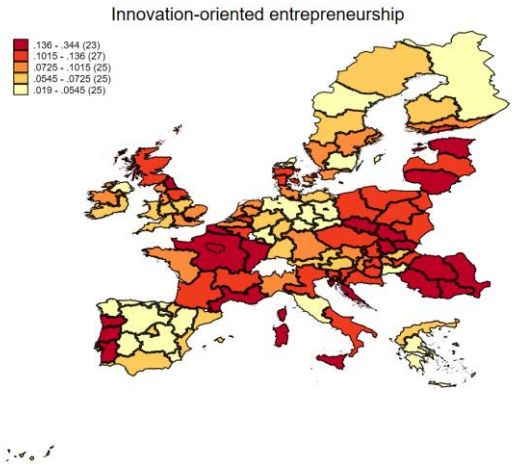
Source: Author’s edition

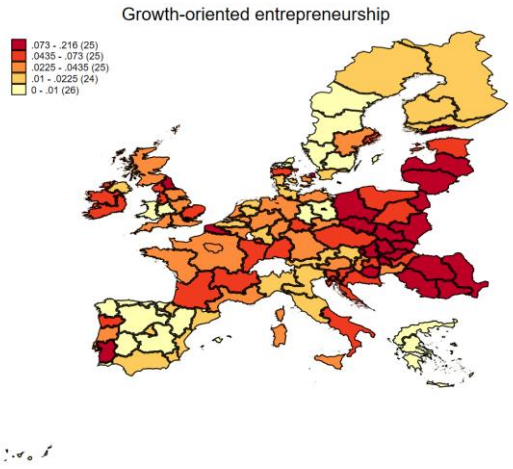
The regional distribution of the values of the different ep. activity indicators

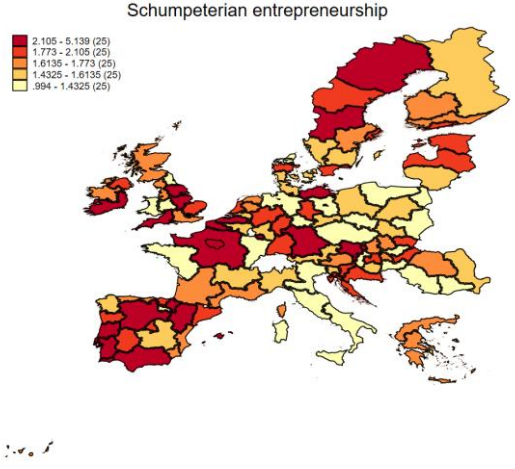












Source: Author's edition

Method, variables

Method

- Estimating this linear regression equation by OLS

$$Activity_i = \beta_0 + \beta_1 REDI_i + \beta' X_i + \epsilon_i$$

Dependent variable (in the equation: *Activity*$_i$)

- Different calculated indicators of entrepreneurial activity (note: the six activity indicators were included separately in the models; none of them were involved in any model simultaneously)

Control variables (in the equation: *REDI*$_i$ *and* X_i *as the vector of other control variables*)

- Quality of the entrepreneurial ecosystem – REDI scores (2012-2014)
- Regional population density (Eurostat, 2011–2014, average value);
- Share of manufacturing employees (Eurostat, 2011–2014, average value);
- Unemployment rate (Eurostat, 2011–2014, average value);
- Dummy for capital city regions
- „Varieties of Capitalism" fixed effects on country level (Dilli–Elert–Hermann, 2018)

Results (Young firms in general, Opportunity-driven ep.ship)

Dep. Var.: Rate of young firms	A1 model	A2 model	A3 model	A4 model
REDI	*0.002551 (1.36)*	*-0.004008** (2.53)*		
Pop.density	0.000030 (1.62)	0.000025 (1.23)	0.000033* (1.81)	0.000015 (0.72)
Share of mf. emp.	-0.311767 (1.28)	-0.023378 (0.09)	-0.364075 (1.51)	0.304770 (1.43)
Unemp. Rate	-1.192754*** (3.22)	-1.156066*** (3.13)	-1.403354*** (4.16)	-0.525989* (1.89)
Capital city reg. (Y)	-0.029993 (0.61)	0.112542** (2.56)	-0.004961 (0.11)	0.113060** (2.52)
VoC fix effects	Yes	No	Yes	No
Constant	0.421925*** (2.92)	0.698784*** (4.88)	0.591976*** (8.22)	0.383010*** (5.35)
R-square	0.346	0.156	0.336	0.111
Adj. R-square	0.301	0.121	0.296	0.081
N	125	125	125	125
F	7.668 (0.000)	4.401 (0.001)	8.440 (0.000)	3.740 (0.006)
VIF (avg.)	3.28	1.77	2.63	1.26

Dep. var.: Rate of opportunity-driven young firms	B1 model	B2 model	B3 model	B4 model
REDI	*0.002566* (1.90)*	*-0.001360 (1.23)*		
Pop.density	0.000019 (1.41)	0.000015 (1.02)	0.000022 (1.65)	0.000011 (0.79)
Share of mf. emp.	-0.239670 (1.37)	-0.099617 (0.58)	-0.29228* (1.67)	0.011693 (0.08)
Unemp. Rate	-0.973561*** (3.65)	-0.866541*** (3.37)	-1.185377*** (4.85)	-0.652814*** (3.44)
Capital city reg. (Y)	-0.002664 (0.08)	0.078402** (2.56)	0.022513 (0.68)	0.078577** (2.56)
VoC fix effects	Yes	No	Yes	No
Constant	0.295257*** (2.84)	0.459432*** (4.60)	0.466290*** (8.92)	0.352319*** (7.20)
R-square	0.322	0.182	0.301	0.172
Adj. R-square	0.275	0.148	0.259	0.144
N	125	125	125	125
F	6.890 (0.000)	5.296 (0.000)	7.202 (0.000)	6.216 (0.000)
VIF (avg.)	3.28	1.77	2.63	1.26

Note:
* – p<0.1.
** – p<0.05.
*** – p<0.01.
t-test values in parentheses

Results (Improvement-driven ep.ship, Innovation-oriented ep.ship)

Dep. Var.: Rate of improvement-driven young firms	C1 model	C2 model	C3 model	C4 model
REDI	*0.002778*** (3.43)*	*-0.000044 (0.07)*		
Pop.density	0.000010 (1.24)	0.000007 (0.86)	0.000013 (1.63)	0.000007 (0.86)
Share of mf. emp.	-0.159137 (1.52)	-0.016253 (0.16)	-0.216108** (2.00)	-0.012628 (0.14)
Unemp. Rate	-0.651717*** (4.08)	-0.543014*** (3.47)	-0.881092*** (5.82)	-0.536054*** (4.67)
Capital city reg. (Y)	-0.019479 (0.92)	0.041638** (2.23)	0.007785 (0.38)	0.041644** (2.24)
VoC fix effects	Yes	No	Yes	No
Constant	0.075673 (1.21)	0.217321*** (3.57)	0.260883*** (8.06)	0.213832*** (7.22)
R-square	0.378	0.223	0.315	0.223
Adj. R-square	0.335	0.190	0.274	0.197
N	125	125	125	125
F	8.799 (0.000)	6.814 (0.000)	7.673 (0.000)	8.588 (0.000)
VIF (avg.)	3.28	1.77	2.63	1.26

Dep. Var.: Rate of innovation-oriented young firms	D1 model	D2 model	D3 model	D4 model
REDI	*0.001353** (2.56)*	*-0.000849* (1.84)*		
Pop.density	0.000006 (1.25)	0.000004 (0.75)	0.000008 (1.56)	0.000002 (0.38)
Share of mf. emp.	-0.092161 (1.35)	0.002676 (0.04)	-0.119905* (1.73)	0.072173 (1.18)
Unemp. Rate	-0.325485*** (3.12)	-0.261030** (2.43)	-0.437187*** (4.52)	-0.127587 (1.60)
Capital city reg. (Y)	-0.017684 (1.28)	0.029026** (2.27)	-0.004407 (0.34)	0.029136** (2.26)
VoC fix effects	Yes	No	Yes	No
Constant	0.056318 (1.39)	0.156324*** (3.75)	0.146513*** (7.08)	0.089446*** (4.35)
R-square	0.352	0.108	0.316	0.082
Adj. R-square	0.308	0.070	0.275	0.052
N	125	125	125	125
F	7.893 (0.000)	2.876 (0.017)	7.721 (0.000)	2.697 (0.034)
VIF (avg.)	3.28	1.77	2.63	1.26

Note:
* – p<0.1.
** – p<0.05.
*** – p<0.01.
t-test values in parentheses

Results (Growth-oriented ep.ship, Schumpeterian ep.ship)

Dep. Var.: Rate of growth-oriented young firms	E1 model	E2 model	E3 model	E4 model
REDI	*0.000444 (1.18)*	*-0.001202*** (3.47)*		
Pop.density	0.000007** (2.05)	0.000008* (1.78)	0.000008** (2.22)	0.000005 (1.04)
Share of mf. emp.	-0.040060 (0.83)	0.072752 (1.36)	-0.049154 (1.03)	0.171124*** (3.59)
Unemp. Rate	-0.151193** (2.05)	-0.250704*** (3.12)	-0.187809*** (2.80)	-0.061819 (1.00)
Capital city reg. (Y)	-0.003390 (0.35)	0.037682*** (3.93)	0.000962 (0.11)	0.037837*** (3.78)
VoC fix effects	Yes	No	Yes	No
Constant	0.027706 (0.96)	0.098588*** (3.15)	0.057271*** (4.00)	0.003925 (0.25)
R-square	0.525	0.265	0.519	0.19
Adj. R-square	0.492	0.234	0.490	0.163
N	125	125	125	125
F	16.001 (0.000)	8.575 (0.000)	18.024 (0.000)	7.057 (0.000)
VIF (avg.)	3.28	1.77	2.63	1.26

Dep. Var.: Rate of Schumpeterian young firms	F1 model	F2 model	F3 model	F4 model
REDI	*0.013482* (1.96)*	*0.009343* (1.81)*		
Pop.density	-0.000052 (0.77)	-0.000056 (0.84)	-0.000035 (0.52)	-0.000031 (0.47)
Share of mf. emp.	-1.084094 (1.22)	-0.749191 (0.94)	-1.360528 (1.53)	-1.514081** (2.21)
Unemp. Rate	0.717801 (0.53)	1.147544 (0.96)	-0.395178 (0.32)	-0.321124 (0.36)
Capital city reg. (Y)	-0.272634 (1.52)	-0.177933 (1.25)	-0.140344 (0.83)	-0.179139 (1.24)
VoC fix effects	Yes	No	Yes	No
Constant	1.180561** (2.23)	1.485202*** (3.18)	2.079249*** (7.81)	2.221250*** (9.65)
R-square	0.087	0.069	0.056	0.044
Adj. R-square	0.024	0.030	-0.000	0.012
N	125	125	125	125
F	1.375 (0.215)	1.768 (0.125)	0.999 (0.435)	1.367 (0.250)
VIF (avg.)	3.28	1.77	2.63	1.26

Note:
* – p<0.1.
** – p<0.05.
*** – p<0.01.
t-test values in parentheses

Conclusion

- The results suggest that
  - the quality of the entrepreneurial ecosystem plays a different role in the emergence of various types of entrepreneurial activity;
  - the importance of the entrepreneurial ecosystem on entrepreneurial activity may depend on what type of entrepreneurial activity we are talking about;
  - firms having at least one quality criteria are more likely to appear in regions where the ecosystem around them is also functioning effectively.

- The results underline that the purpose of the entrepreneurial ecosystem is to foster the emergence of a productive entrepreneurship (Spigel, 2017; Stam, 2015).

- It is also implied that it is worth focusing on measuring entrepreneurial activity with quality characteristics, as the results of Henrekson – Sanandaji (2014, 2020), Szerb et al. (2019) and Lafuente et al. (2020) also showed

- From the point of view of regional development policy, monitoring the regional socio-economic environment and specifically developing factors of the business environment may be a key issue to support the entry of quality entrepreneurial activity.

Limitations, further improvements of the study

Limitations

- Lack of temporal dimension – the dataset provides only a snapshot on entrepreneurial activitiy for the investigated time period
- REDI scores are available only for two periods (2007–2011; 2012–2014)
- The use of REDI as control variable may cause endogeneity in certain models (although VIF values did not refer to a high level of multicollinearity)

Further improvements

- Clustering regions through REDI pillars and involving these groups as categorical variables instead of the REDI score (trying to solve endogeneity)
- Looking for further dataset which could also refer on different types of entrepreneurial activities (even these indicators were specifically created through GEM criteria, so it means that the calculated indicators should be replaced by other ones)
- Solving (or at least exploring) why the model including the calculated indicator of Schumpeterian entrepreneurship was insignificant

Thank you for your attention!

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