Extended Abstract for the
Special Section Entrepreneurial Ecosystems in Transformation: Digitalisation, Agency, and Regional Value Creation (S58) for the congress Global Challenges and Regional Responses in a transition era of the European Regional Science Association

Title of the research work:

The impact of public funding and the university-centred entrepreneurial ecosystem on the development of Hungarian university spin-off companies

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Keywords:

Spin-off; academic entrepreneurship; university-centred entrepreneurial ecosystem; university spin-offs development, growth, and performance

Discussion of the objective

The purpose of the submission is to explore, on the one hand, the impact of the university-centred entrepreneurial ecosystem (EE) that has developed over the past decade and, on the other hand, the impact of a specific R&D grant scheme aimed specifically at university spin-off companies. This is because one of the primary goals of both the university-centred entrepreneurial ecosystem and the related grant programs is to support the creation and growth of academic spin-off companies.

In recent years, several studies have examined the development, growth, and performance of USOs (university spin-off companies) (hereafter: USO DGP, Patzelt and Shepherd 2009) and examining the effects of both EE and support programs (Bellucci et al. 2019). However, following Walter and his colleagues (Walter et al. 2006) Ferretti et al. found that few empirical studies have attempted to identify the main drivers of USO growth and long-term survival (Ferretti et al. 2020).

Based on the research findings of Szerb et al. (2020), the EE approach shares many common features with the national and regional smart specialization (S3) approach, according to which the involvement of local actors, the embrace of bottom-up initiatives, and building on regional characteristics are key features of both concepts. However, according to the researchers, S3 lacks a consistent framework for both analysis and policy-making that would empirically assess the strengths and weaknesses of the various EE elements (and the relationships between them), which makes it significantly more difficult to understand regional characteristics or even the results of regional comparisons.

The common starting point for regional sciences and business research is that entrepreneurial activity and innovation are strongly geographically determined: the production, dissemination, and economic utilization of knowledge are linked to institutional, organizational, network, and environmental conditions. Furthermore, the regional innovation system (RIS) approach describes this as the combination of companies, knowledge-intermediating organizations (universities, research institutes), government instruments, and market relationships that determine the innovation performance and development paths of regions (Asheim et al. 2011).

In agreement with Patzelt and Shepherd (2009), who state that assessing the added value and long-term impact of policies and subsidies on USO DGP is challenging, we nevertheless attempt to demonstrate these effects on a narrow, specific sample that has not been examined to date.

Ferretti and his colleagues examined the impact of ownership structure and management composition on the development and performance of companies in 138 Italian spin-offs (Ferretti et al. 2020), while Bellucci et al. analyzed the impact of two Italian regional research and innovation policy support programs on SMEs (Bellucci et al. 2019) in a sample of 238, in both cases based primarily on the economic and financial indicators of the companies. Aaboen and his colleagues used interviews to assess the position and role of USOs in business networks, while in their recommendations for further research they explicitly suggest that these studies should also be conducted from the perspective of entrepreneurial ecosystems (Aaboen et al. 2016).

Research questions

a) What changes can be observed in the development of Hungarian spin-off companies between 2020 and 2025?
b) What characterizes the entrepreneurial ecosystems affected by the USOs examined?
c) What role did the university-centred entrepreneurial ecosystem and the support provided by the examined grant scheme play in the development of Hungarian spin-off companies?
d) What types of spin-off company development paths/patterns can be observed among Hungarian USOs?
e) What difficulties do Hungarian spin-off companies face in terms of support, regional issues, and ecosystem functioning?
f) How could the EE more effectively support the development of Hungarian spin-off companies?

Contribution of the paper

The research results provide a better understanding of the role and impact of the entrepreneurial ecosystem, as well as the development paths and opportunities of spin-off companies linked to Hungarian universities and publicly funded research institutions. The results may be useful for explaining the development of spin-off companies in regions and ecosystems with scientific, economic, and regional characteristics similar to those in Hungary, as well as for conducting future research using similar methodologies in such environments.

The heterogeneity of spin-offs is a central point of debate in the literature on academic entrepreneurship: spin-offs are not uniform types of companies, but may differ in terms of, for example, knowledge content, market orientation, value creation methods, and institutional ties, personal/ownership relationships (Asheim et al. 2011). The study compares the scientific spin-off typology with the eligibility criteria of the support program under review. Building on the results and lessons learned from numerous preliminary empirical studies, we are confident that our ongoing research will contribute to a better understanding of the functioning of university-centred entrepreneurial ecosystems (Bedő et al. 2020).

The results obtained from examining the effects of interventions aimed at supporting spin-off companies can also be useful from a policy perspective, for the planning and development of new support programs (Bellucci et al. 2019). We intend for this research to contribute to a better understanding of the formation, operation, and development of USOs, and to provide useful lessons for policymakers involved in the support and development of university-related spin-off companies and university-centred entrepreneurial ecosystems for the planning of future interventions (Szerb et al. 2020).

Methodology, research design, explanation of the methods and data used

In this study, we examine the development of spin-off companies linked to Hungarian universities and publicly funded research institutions that received funding in two consecutive rounds of a Hungarian state innovation grant program. These funding schemes are specifically designed to reduce the technology and market entry risks of spin-off companies with academic ties. The research links the frameworks of regional innovation systems (RIS) and entrepreneurial ecosystems (EE) with the literature on university entrepreneurship and analyzes the performance of the companies studied through a variety of variables (e.g. sales revenue, employment, intellectual property activity, additional fundraising, and investment events).

Our research examines the geographical embeddedness of the spin-off enterprises included in the study on several scales: on the one hand, at the NUTS2 regional level of the European Union, and on the other hand, based on the regional typology of the Hungarian National Smart Specialization Strategy (S3) for 2021-2027, which corresponds to the NUTS3 level.

We use both quantitative and qualitative methods in our ongoing research. The quantitative analysis is largely based on publicly available financial, economic, and industrial property rights data on beneficiary spin-off companies (94 firms), but we also rely on data provided by the grant management office. Databases based on publicly available information are used to assess economic and financial performance and map ownership structures. Industrial property rights information can be obtained from the public databases of the Hungarian Intellectual Property Office, the European Patent Office Espacenet Portal, and WIPO. Investment and ecosystem data (startups, growth companies, VC activity, ecosystem information) can be obtained for example from the Dealroom.co startup data platform.

As part of the qualitative research component, we primarily conduct interviews with the spin-off companies under review, mapping their university connections, regional embeddedness, and role in entrepreneurial and innovation ecosystems. The interview outline is based in part on the questions from the survey conducted by Erdős et al. (2020) on the university-centred entrepreneurial ecosystem at the University of Pécs (Hungary) and partly from research examining the role of USOs in business networks (Aaboen et al. 2016).

Findings, (tentative) results and conclusions

At the current stage of the research, the empirical results should be considered as preliminary, as the database is still under construction. However, based on the calls for proposals and the frameworks, it is possible to formulate test patterns that meet the expectations of the ERSA conference and the special session (dynamics, measurement, spatial differences).

We expect that, in terms of regional differences, the S3 region types will provide greater explanatory power than the analysis based on NUTS2 categories. On the one hand, S3 denotes smaller territorial units on average than NUTS2 regions, and therefore typifies more homogeneous geographical areas based on certain criteria. On the other hand, S3 territorial units are specifically based on differences in RDI performance, which is the focus of the research, and assign specific objectives to the region types (e.g., strengthening the university-centred innovation ecosystem in knowledge regions; knowledge diffusion in industrial production zones; strengthening openness and adaptation in regions with more moderate RDI intensity).

We expect to see significant differences in the impact of grant support on the success of USOs in terms of the life cycle and maturity of the businesses, as well as the maturity and market readiness of the scientific/business idea.

Furthermore, according to our hypotheses, the maturity, scope, and adequacy of the EE concerned, or the position and role of the USO within the EE, have a greater impact on the performance and results of the USO than the grant received.

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