

NATIONAL UNIVERSITY OF PUBLIC SERVICE
Doctoral School of Public Administration Sciences

Judit Szakos

**The role of the state in stimulating innovation:
case study of business incubators**

Doctoral (PhD) thesis

THESIS BOOKLET

Supervisor:

Prof. Dr Csaba Makó

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I. Summary

Because of their ability to reflect on today's wicked problems, I give particular importance to startups and their potential in my research. However, in Hungary, there is no tradition of these companies based on – next to other factors – the lack of culture of entrepreneurship. Therefore, starting the analysis from a more distant perspective is necessary for a deeper understanding of the ecosystem; the issue needs to be addressed holistically.

I want to contribute to the analysis of this holistic framework by looking not only at startups but also in the light of their supportive environment, particularly the different forms of business incubators. Due to the immaturity of the ecosystem, the state emerges as a powerful actor, which makes the topic suitable to be examined within the framework of public administration studies and the entrepreneurial state concept.

The research aims to explore how state support for startups is implemented in Hungary, mainly through state support for business/technology incubators helping entrepreneurship. For this purpose, I formulated my research questions and hypotheses along the problems of startups, incubators and the role of the state, from which I derived thesis and results. The research methodology is a case study, where I conducted primary data collection in addition to the secondary analysis: I interviewed 25 ecosystem actors in Hungary.

In my first hypothesis, I assumed that individual forms of support dominate in this young ecosystem, which was disproved by the data collection. Organic but immature cooperations appeared, but still with parallelisms, focused on individuals.

In my second hypothesis, I argued that state involvement in the startup ecosystem had created a significant and effective support system. The research has partially confirmed this. The intensity of startup support is an indicator of the role of the entrepreneurial state. The state is necessary, but its role needs to be revised, as it cannot replace the multi-stakeholder support system symbolized by ecosystem models. Some of its emphases may have a market-distorting effect, while further action would be needed to reduce transaction costs.

My hypothesis, reflecting the need to define further the activities of incubators, accelerators, and startup studios, was confirmed by the interviews, with support for idea realization being non-transparent yet explicitly investment-focused, with low risk-taking.

In the dissertation, I made recommendations based on the results of the analysis and suggested future research directions.

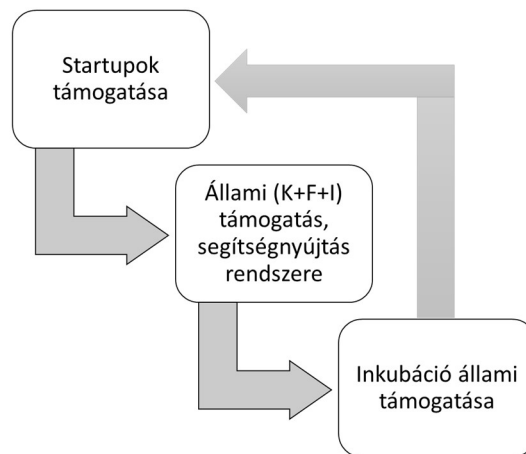
II. The subject of the research

Today, global supply chains and the countries involved are constantly challenged. Economies that have not yet recovered from the Covid pandemic face new economic recessions and difficulties caused by war conflicts. The state, and thus the day-to-day functioning of public administration, must be geared to managing stability and agility in parallel (Kattel et al., 2022). Strengthening defence capabilities, mission-oriented public policy at the time of technological change and the range of problems to be solved are also pushing decision-makers on both the public and corporate sides towards R&D and innovation. The high-growth, high-risk, innovative startups working (or about to work) in international markets can be crucial in bringing new solutions and results to market.

Because of the uncertainty surrounding these firms, they have a better chance of rapid success in the case of a surrounding supportive ecosystem. They are supported, for example, by venture capitalists, angel investors and various incubation organizations as part of the innovation ecosystem. Business incubators, accelerators and startup studios, often with overlapping profiles, can provide office space, services, networking and funding to help businesses survive. The paper, therefore, looks at innovation and startups as a tool to help the whole socio-economic system.

Focusing on startups, it is also essential to incorporate the findings of entrepreneurial ecosystem models into the dissertation.

Szenes (2011) points out that "where a risk-taking national entrepreneurial class with savings and investment propensity has not yet developed or cannot develop, the state must assume its historical function". The Hungarian ecosystem has achieved this through state and EU venture capital programmes modelled on the Israeli Yozma programme, followed by incubation grants. The initiative is in line with Mazzucato's (2016) approach, which argues that state support is behind most radical innovations and that the aim of government should not only be to address market failures but also to make market-creating public policies that the entrepreneurial state can use to drive change. However, this is embedded in an interesting context in the Hungarian, double-dependent market economy, where - after the regime change - there is not only dependence on multinational corporations but also dependence on the state - which attribute encourages rent-seeking (György - Bank, 2014). Whether one considers strong state intervention - limited by government failures - or the effectiveness of a laissez-faire approach to be the best, it is undeniable that the state is there as an equal actor in the system, and it is influencing other actors by (not) reducing transaction costs or (not) making public policy.



The structure of the analysis (own editing)

Based on the theoretical background examined in the research, I concluded that incubation activities can help early-stage startups. Reaching a critical mass of startups is necessary to create an effective ecosystem. Therefore, the analysis focuses on startup incubator activity and, on other hand, looking into these organizations' practices. At the same time, it focuses on how the state can support this incubator support activity.

This topic, which covers a wide range of disciplines, can be addressed using the tools of public administration science along the following logic: the (entrepreneurial) state's promotion of innovation through the support of startups, which is not only implemented in the state-startup relation as presented in the innovation ecosystem models but also as a concept of a multi-actor and knowledge-based approach to entrepreneurial ecosystems.

The research aims to explore how state support for startups is implemented in Hungary, with a special focus on state help for business/technology incubators supporting entrepreneurship. For this, it is necessary to examine the dimension of the state's startup support activities and the chaotic system of business incubator nomination and content in Hungary. Poorly defined support objectives and instruments can be counterproductive in this area. Importantly, given the context of the domestic environment, it cannot be compared without a critical edge with the most successful ecosystems in the world, and a policy correction based on a comprehensive analysis may be necessary.

To achieve this objective, the thesis is structured along the following logic:

1. Actuality, choice of topic, context: in this chapter, I deal with the administrative, economic and social aspects, including trends in technological development;

2. Definitional issues: an overview of the key concepts, synthesis of the characteristics of research and development, innovation, startups, business incubation, the economic role of the state, and the concept of the entrepreneurial state;
3. The ecosystem as a framework: in this chapter, I systematize the innovation and entrepreneurship (ecosystem) models based on a literature review and involve the concept of the startup ecosystem in the analysis;
4. Hypothesis and methodology: using the findings of the literature, the chapter details the aim of the empirical study, the research questions, hypotheses, and methodology (case study) and describes the data collection;
5. In the chapter on the Hungarian practice, I present the analysis of startup surveys and the characteristics of startups, review the government strategies (civil and defence innovation) and compare them with the needs of startups, summarise the state subsidies for technology incubators, evaluate the activities of incubators, transaction costs and institutional practices based on primary research and interviews;
6. In the conclusions chapter, I synthesize the research experience with the literature, summarize the results, the hypotheses, the theses, present my recommendations, the practical application options, and suggest future research directions.

III. Research questions and methods

I conducted my research within the framework of startup support, states' role and business incubation, relating my research questions and hypotheses to these, as in the following:

Problem statement 1. Main features of how startups work

- KK1a: What are the characteristics and ambitions of startups?
- KK1b: What are the drivers and barriers for startups?

Hypothesis 1: Individual forms of support for startups are more dominant than collective forms.

Problem statement 2. The role of the state

- KK2a: What kind of state involvement is taking place in Hungary today?
- KK2b: What public involvement might be needed to make the startup ecosystem more competitive?
- KK2c: In which areas do you need more or less public action?

Hypothesis 2: The Hungarian state's involvement in the startup ecosystem has built up a significant and efficient support system for the development of the startup ecosystem.

Issue 3: The role of business incubators - with a special focus on the role of startup studios and accelerators

- KK3: What are the content, main characteristics and perception of incubation?

Hypothesis 3: Further differentiation of incubation activity is needed to effectively meet the diverse startup needs.

In order to identify the possibilities of public support for startups, particularly for business/technology incubators supporting entrepreneurship, I use mainly qualitative methods to answer the research questions. Citing the research of Csákné Filep et al. (2019), "startups are part of a very fragile and hard-to-catch firm population in terms of data collection. Consequently, in terms of research methodology, qualitative methodologies are much better than quantitative surveys to understand them". Accordingly, I have chosen the case study method for this dissertation, a common research method in the social sciences, including, by definition, public administration, to help understand complex social science issues. This method aims not to conduct representative research in the statistical sense but to gain a deeper understanding of the issues under study and to design variables for future quantitative research. Its explanatory, descriptive and illustrative role seeks to answer the how and why questions. In case studies, the main focus is on how the activity under study is organized and what mechanisms characterize it. It tries to systematically study the processes that shape a phenomenon in its real-time context, while the boundary between the phenomenon under study and the context is unclear (Yin, 2018). The analysis of the role of business incubators in the innovation process and startup support has precisely the same limitations of the case study methodology, and therefore the use of this method is justified.

Due to the diversity of data and sources, the thesis uses a multi-case case study design. The embedded units of analysis are startups, business incubators, the state and the supporting role or future potential of the ecosystem as a whole.

The focus of the study is Hungary, the Hungarian startup ecosystem and the functioning of the government. The starting point for the analysis of this thesis is the adoption of the Runway Budapest 2.0.2.0 in 2013. The research was completed on 23 December 2022, while the manuscript was formally finalized on 9 January 2023.

The methodology used relies on a combination of secondary and primary data collection.

As secondary sources, in addition to available national documents (statistics, strategies, reports and press releases), the results and lessons learned from relevant international reports and evaluation rankings are also included. The active involvement of the public sector can be identified primarily through the analysis of public policy strategies and tenders, and the paper will therefore also review the last ten years of national and EU-funded tenders for startup incubators. The Hungarian Startup Report published in 2021 and 2022 provided an essential basis as well.

To use the case study research technique, I conducted 25 interviews with key startup players-considered the core population - during the academic years 2020/2021 and 2021/2022. The startups in the study were based in Budapest, one university city in Western Hungary and one in Eastern Hungary. The difficulties in defining incubator and startup had an impact on the selection. A further limitation of the selection is the lack of a complete and reliable database of Hungarian incubators and startups in Hungary. Previously, there was a national government initiative (Kaleidoscope online database) and several national and international databases (Dealroom, Pozi, RocketShepherd, Insider Blog); however, none is a complete source, although they are not up-to-date due to difficulties in self-reporting and/or updating. In this paper, I consider as Hungarian startups and incubators that meet one of the following criteria: (1) the founders are Hungarian citizens and/or (2) the organization carries out its activities in Hungary. The results are presented in aggregated form, while the respondents are listed according to their attributes that are relevant to the thesis but do not help with identification.

The interviews were processed in MAXQDA Analytics Pro 2020 text analysis software, using qualitative coding (separation and grouping of elements) of the texts [Sebők, 2016, p. 15]).

IV. Summary of the research

Public involvement is mainly expressed through targets set through business promotion, R&D and innovation strategies and the provision of tender funding to technology incubators and venture capitalists. In education, the Hungarian Startup University Programme is the most significant related government initiative, with its nationwide coverage of entrepreneurship promotion and mindset training.

The strategies set out the primary objective of cutting red tape, while the actors call for introducing new legal instruments that have been successfully applied in international practice. In their view, Hungarian legal entities have little chance of attracting international investment, so in addition to creating a startup-friendly and more predictable legal environment, investment is also in favour of creating an international legal entity rather than a domestic one. Therefore, by looking at international models, it would be important to introduce company forms that attract foreign capital and encourage talented young people to enter.

Incubators, accelerators and startup studios are actively supporting startups, but their role in the startup ecosystem is less emphasized by other actors in the ecosystem. Even in an institutionalized form, cooperations are primarily focused on individuals, but there is a slow, organic build-up of synergies between organizations and actors. Joint investments between venture capitalists, business angels and incubators have emerged. Startups are also in contact

with several mentors and organizations simultaneously, or at least seeking advice from more experienced entrepreneurs.

Opinions are divided on direct financial incentives for startups because of their inflexibility on the good, necessary bad and counterproductive harmful axes, while at the same time bringing money into the market. The activities of Hiventures Zrt, a state-owned venture capital investor, are equally divisive. The ownership rights and stake it seeks may deter a subsequent round of international investors, while the controversial perception of public funding may mitigate the lack of a small number of early investors in the market.

Public support for technology incubators has also been investment-focused, with the so-called "gazelle" grant scheme, which started in unpredictable circumstances, and its successors dedicating 80% of the incubation grant money won to investment.

It would be important to measure the effectiveness and efficiency of state-supported incubators. At present, however, according to the interviewees' statements, only continuous reporting and monitoring is present in the system, where, in the context of one of the recently completed projects, one incubator reported that the business plan of fast-growing startups had to be approved at the ministry level, where on the one hand, the appropriate competence is not available. On the other hand, these companies are still in the validation and business plan development phase, with little planning.

This is also contradictory because the market would fund ideas with low risk and predictable growth, but because of the requirements, these less risky ideas dominate the budget-funded proposals, thus not achieving the de-risking objective of the state. On the other hand, the risk-taking of the applicants was often low in addition to the state. This should be reduced by the last incubation scheme, which was only open to organizations that had previously won or managed a successful incubation programme. This is expected to channel the experience of previous incubator calls (including by consulting previous winners in the scheme's design).

At the same time, most respondents consider the state's role to be too strong. They agree that a public presence is necessary, especially in an immature market. When the state became active, startup funding, especially in the early stages, could not be market-based because of the lack of capitalist roots (or the specific nature of established capitalism) and the lack of money in the market.

However, nowadays, respondents consider it more important to review the basic institutions' shortcomings and create stability rather than funds. Looking at the current situation, while the Covid pandemic has had a mostly negative impact on the networking potential of respondents,

the crisis has even had a stimulating effect on digital startups. However, in the current economic downturn, keeping transaction costs down is an important factor, and there is an expectation of this from businesses regarding the role of the state.

Creating the entrepreneurial state is an endeavour that reflects the challenges of the present and the future and involves all disciplines and organizations. Here, startups could play a flagship role, channelling research results directly to the market against the slow innovation response of large companies. However, as we have seen, the first step is not only money but also access to support contacts and information and removing barriers, so it is time to rethink the state's role in professional cooperation.

V. New scientific results

The new scientific results of my research can be summarised in four points:

1. Based on the literature and empirical research, I found that systemic networks and collaborations in the startup ecosystem can help individual startups succeed. In the domestic ecosystem, the different actors are already present, but the community is still young, so that we can observe person-to-person rather than institutional collaborations. At the same time, due to the evolving roles and role searches, there are duplications and distortions in the ecosystem.
2. According to the literature, where there is not enough national capital in the market for angel and venture capital investors to emerging, even because of the socialist past, the role of the state can help. Based on a review of past bids and interviews, I have found that state presence is necessary but has a market-distorting effect in its current form. Private investors are gradually entering the market, and previous tenders have created a cash-rich environment, so instead of direct financial incentives, the state's role as a facilitator and facilitator (ensuring market stability, bringing research results to the market, follow-up, etc.) is needed in the startup ecosystem in the future.
3. Based on interviews and secondary sources, I have made suggestions regarding the state's institutional powers to reduce transaction costs. These proposals include filling legal gaps in relation to business legal forms and raising capital that hinders the successful domestic operation of startups based on international practice. For appropriate adaptation, I consider it necessary to set up a consultative forum to develop a startup strategy, bringing all actors in the models around the same table.

For long-term feedback and channelling, I consider it necessary to set up a bilateral consultative forum.

4. Based on the interviews, I found that the perception of business incubators is twofold: on the one hand, they often do not take on a risk-taking role due to the requirements of grant funding, and therefore the principles of the scheme cannot be realized. On the other hand, they can contribute to helping startups in one aspect or another, which often leads to participation in several parallel programmes to maximize the assistance. Market cleansing is needed rather than quantity for incubation programmes to be sufficiently effective.

VI. Derivation of theses

I organized the studies along three main hypotheses, which followed the logic of the startup-state-business incubation as a support triad. The hypotheses were based on the characteristics of the startup ecosystem developing in a young, dual-dependency economy, where, as already apparent in the literature, terminological inconsistencies were to be expected. Of the hypotheses, one was fully and partially verified by the case study methodology used in the domestic market, while the first hypothesis was not justified in light of the results for the reasons detailed below.

Hypothesis H1: Individual forms of support for startups are more dominant than collective forms.

Contrary to the initial expectations of a young ecosystem, startups are no longer linked to a single incubator, venture capitalist or business angel but receive help, support and funding from several actors at once. In the field of funding, the data tables of the KSH also show that several forms of support are present at the same time. Joint investments between venture capitalists and other organizations are also emerging. There are compulsory parallel programmes (e.g. Hiventures incubation), but also voluntary participation in several programmes, with a wide range of underlying reasons. Firms that have neither participated in an incubation nor received venture capital are also linked to more successful entrepreneurs. In this respect, entrepreneurial peers and even family patterns, based on the interviews, have an impact on the life course.

The hypothesis is therefore rejected, and collective, ecosystem-level support is outlined rather than individual support.

Thesis T1: Organic cooperations between actors in the startup ecosystem are emerging but are still in their infancy.

Synergies and forms of joint support between organizations are still in their early stages but can already be observed at the ecosystem level. Based on the experience of the interviews, teams in the incubation phase of Hiventures Ltd. are required to work with an incubator or mentor. Several incubators reported external investment, and some startups participated in several incubation programmes at the same time due to different funding, visibility, networking and other support from mentors, in addition to venture capital and incubation. Venture capitalists are increasingly investing with each other and with angel investors. However, these benefits are still less felt by businesses, which may even see it as a time-consuming duplication of work. However, the trend is towards developing a literature-based, collaborative ecosystem.

Hypothesis H2: The Hungarian state's involvement in the startup ecosystem has built a significant and efficient support system for developing the startup ecosystem.

In Hungary, startup-related calls for proposals focus on supporting technology incubation and venture capital investment, but the latter is dominant in terms of size. There are many critical voices in the market about the support for venture capital investment, which talk about poorly formulated government strategic indicators and related counterproductive implementation. However, following the entrepreneurial state approach, finding appropriate forms rather than rejecting state intervention may be the key to competitiveness, and this research focuses on finding appropriate forms to meet other needs.

The analysis of strategies and funding showed that the state had identified a role for itself in the startup ecosystem: as a supporting actor for non-market-based early-stage funding and the maintenance of R&D frameworks in line with international practices.

The interviews suggest that the success of this is not clear, but even with dysfunctionality, the role of the state is necessary rather than completely absent in startup incubation, as few of these can succeed globally. However, it is important to learn from the experience of the past years and incorporate it into policy design based on a broad professional consultation.

Based on the above, the hypothesis is partially confirmed, the role of the state is strong, but the actors often talk about its market-distorting effect instead of its efficiency.

Thesis T2a: State intervention in the intensity of startup support is an indicator of the role of the entrepreneurial state.

The concept of the entrepreneurial state goes beyond competitiveness and paints a picture of a mission-driven, problem-solving state, where after R&D, the key is to bring solutions to market, of which startups could be an important reflection. However, startups are high-risk, high-growth, international market players that are vulnerable at the beginning of their life cycle, with

different needs and support systems from SMEs that are not startups. As a market-based support system is not yet mature in our country, the state's role is essential in this respect - not only to support startup organizations and startups, but to help the whole concept of the entrepreneurial state take root.

Thesis T2b: Strong public involvement is necessary for the startup incentive scheme, but it cannot replace the multi-stakeholder support system symbolized by ecosystem models.

Currently, public involvement focuses on direct financial incentives to technology incubators and venture capitalists for investment. There is less focus on creating an institutional environment, but removing barriers that slow down the ecosystem would be essential. Domestic support is not cooperation-focused, the horizontal, vertical and cross-sectoral cooperation necessary for the entrepreneurial state function is not encouraged, and risk-taking and experimentation are less supported by the bureaucratic framework. Since the need for a strong state role was recognized, much has changed in the market-based part of the ecosystem, so there is a need to rethink roles and responsibilities to redefine the focus, where the state could focus on creating the technical side of the stages that do not pay off in the market and could replace the building of an internationally well-functioning institutional and regulatory environment. An equal, mutually supportive balance of ecosystem models is not achieved in the current environment, as exemplified by Hiventures Zrt.'s efforts to invest in as many Hungarian startups as possible, even if this may work against the aspirations of future investors.

Hypothesis H3: Further differentiation of incubation activities is needed to effectively meet the diverse startup needs.

The incubators may not have been successful or unsuccessful in their activities in general - as there is no follow-up or metrics available even for those that are publicly funded - but because of their specific focus or international network and the attitude embedded in it.

Based on the interviews, the identified hardware or financial B2B incubator could provide the knowledge, contacts and embeddedness in addition to the possible funding. Among those with a general profile, those with a community were able to give traction to the startups operating within them. These included startup studios, incubators and accelerators, but all were based on internal funding.

Therefore, it is impossible to categorically state that certain incubation forms work only. The common point in the positive feedback was the understanding of "smart money" embeddedness and the startup world (an example of this was an interview where an incubator gave up certain rights to allow the company it supported to be included in one of the most prestigious

international programmes). Differentiation cannot be based on a name or a list of services but on the involvement of professionals who also understand and can build the startup world, and then further delineation within these should be developed.

So for startups, a one-size-fits-all solution is not recommended. The domestic terminology also does not draw sharp boundaries between incubation formations. Further delineation is needed, but this would require a follow-up of applications, information sharing between market-based organizations, and a database and data processing across all organizations. Accordingly, the hypothesis is confirmed.

Thesis T3: The research experience calls for further differentiation of incubation activities (startup needs - idea realization, idea generation - have a fundamental impact on the effectiveness of incubation activities).

The startup's life stage (idea or prototype, growth stage), target audience (B2B, B2C, B2A), target market (which regions of which continent), and product-service (technology, hardware-software) require different incubation assistance. Domestic names do not reflect the incubator-accelerator distinction outlined in the literature. Startup studios are also changing their business models to keep pace with market movements. According to the sources, the key factors for success were the knowledge, (international) networking and ecosystem knowledge of the individuals running the organization. Further delineation would therefore require a comprehensive database of organizations engaged in any form of business incubation and, secondly, a differentiation based on existing knowledge in response to startup needs.

VII. Practical use of the research results and recommendations

Based on the experience of the interviews, reports and the results of the research, the practical implementation of the following steps could help the ecosystem to develop:

1. Supporting domestic incubation organizations not with investment grants but with support for building infrastructure - training, coaching - mentors - (international) networking, which is less rigid for startups and tries to facilitate investment through market partnerships.
2. Encourage Hungarian startups to join the most successful international incubators, where they have the knowledge and connections to scale up so that Hungarian "unicorns" and "zebras" would have a better chance of emerging.

3. Implementing a legal form from the international (US, Lithuanian, Estonian) system could help attract talent to a startup, not yet financially prosperous innovative business by issuing shares. This could also help to encourage talent to stay at home.
4. Creating the legal possibility for "Secure Agreements for Future Equity" and "convertible notes". These could facilitate market-based investment at an early stage, making the system sustainable in the long term without public subsidies.
5. Rethinking the state's role in the startup ecosystem through broad social consultation and developing an effective startup strategy.
6. On the public side, creating a consultation forum to provide a forum for consultation on any relevant legislation, strategy or ambition, and also to channel issues and concerns from businesses.

The proposals align with the views expressed by different stakeholders in public forums, government strategies and literature. The first four proposals were among the targeted policy options identified in the interviews, which many felt were essential to help the ecosystem, which has developed a lot in the ten years under review but has not been able to fulfil the potential that the 2013 Startup Credo had foreseen for it.

My research has shown that, in the current situation, prosperity may require more of a focus on social coordination to make up for institutional failures of the state than on organically (also) developing incubation organizations.

VIII. Future research directions

The lack of a widely accepted definition of concepts related to this thesis's topic complicates research and can also be a barrier to the development of practical tools. Accordingly, one of the most important independent research directions for the future is to clarify some of the conceptual overlaps that may emerge:

1. In the context of the conceptual framework of startups:

The concept of startups could integrate the self-image of companies. The general definition ignores the form of the company and the age of the company, which makes legal regulation difficult. The interrelationship between the conceptual framework of startup, spin-off and scale-up companies could also be a topic for future research.

2. Defining and measuring the startup ecosystem:

This includes actors and institutions of innovation ecosystem models as well as attributes and actors of entrepreneurial ecosystem models. For the time being, the

analysis in the model is carried out on an ad hoc basis. The model's effectiveness could be found in its ability to measure the relationships between actors, but this requires further research, which was not the aim of this thesis.

3. Domestic survey and terminological clarification of the business/technology incubator:
Not only is there inconsistency in terminology in the literature, but the domestic situation is also diverse, which makes it difficult to support, organize and even help applicants find their way around. In the start-up-studio-accelerator-incubator conceptual triad, there are overlaps and constant fine-tuning in several places. The sample size of this thesis did not allow a definition of the domestic ecosystem. In general, startup incubator organizations should be reviewed - in a taxonomic way - in a future research project as organizations that support startup companies with one of the five services accepted as a core service in the literature. However, this would require information - available at the national level - and a large, resource-intensive national survey.
4. Clarifying the context and determinants of state involvement:
The theory of a two-tier market economy has drawn conclusions for the economy as a whole, but the specific characteristics of startups (fast growth, international market) in this system are worth further exploration: how the practical and cultural impact of a predatory environment on an ecosystem is one of the potential barriers to success.

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12. Judit Szakos (2022): Startupok és állami támogatás – mit mond a piac? [Startups and state support - what does the market say?] *Hidak és utak - II. Innovációs Konferencia Lehetőségből cselekvés*. Corvinus University of Budapest, Budapest (presentation)
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14. László Gábor, Judit Szakos (2021). How Open Source Tools Could Help Remote Learning during the First Lockdown in Hungary? – Case Study of University of Public Service. In: Thomas Hemker; Robert Müller-Török; Alexander Prosser; Péter Sasvári; Dona Scola; Nicolae Urs (eds.) *Central and Eastern European e|Dem and e|Gov Days 2021*. Wien, Ausztria, Österreichische, Computer Gesellschaft. pp. 187–194. (paper)
15. Szakos Judit (2019). Innovation related research trends. In: Lehoczki, Zóra Zsófia; Szakos, Judit; Pató, Viktória (eds.) *Critical rethinking of Public Administration*. Budapest, Magyarország, Doktoranduszok Országos Szövetsége, Közgazdaságtudományi Osztály [Association of Hungarian PhD and DLA Candidates] ISBN: 9786155586453 (abstract)
16. Szakos Judit (2018). Proactive state as a future? Overview from the night-watchman to the entrepreneurial state. In: Keresztes, Gábor (ed.) *Tavaszi Szél 2018 Konferencia. Nemzetközi Multidiszciplináris Konferencia, Absztraktkötet*. Budapest, Hungary, Doktoranduszok Országos Szövetsége (DOSZ). [Association of Hungarian PhD and DLA Candidates] 312–312. (abstract)
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19. Szakos Judit (2018). Sustainable and inclusive innovation? – How the Quintuple Helix Model works in practice. In: Juraj Nemeč (szerk.) *Public Administration for Well-being and Growth: Presented Papers from the 26th NISPAcee Annual Conference*. Bratislava, Slovakia, NISPAcee (abstract)
20. Szakos Judit (2017). Government's role in sustainable universities in Hungary. In: Juraj Nemeč (szerk.) *25th NISPAcee Annual Conference: Innovation Governance in the Public Sector*. Bratislava, Slovakia, NISPAcee (abstract)
21. Szakos Judit (2016). Innováció és gazdaság Magyarországon az elmúlt 100 évben. [Innovation and the Hungarian economy in the last 100 years.] *A Haza Szolgálatában Konferencia*. University of Public Service, Budapest (presentation)
22. Nemeslaki András, Szakos Judit (2016). Boosting Innovation in Central and Eastern Europe: Capacity Building Using the Triple Helix Concept in Public Policy. In: Anon, A (szerk.) *24th NISPAcee Annual Conference: Spreading Standards, Building Capabilities: European Administrative Space in Progress*, Zagreb, Croatia, NISPAcee Press (abstract)

XI. Curriculum vitae

Judit Szakos got her absolutory from the Doctoral School of Public Administration Sciences of the University of Public Service (UPS) in August 2022. She is currently a program coordinator and doctoral research fellow at the Eötvös József Research Centre, Institute for American Studies.

After completing primary school in Szorgalmatos, the doctoral candidate graduated from the Arany János Program at the Ilona Zrínyi High School in Nyíregyháza. She continued her studies in public administration at the University of Debrecen in 2010. During her years in Debrecen, she participated in the University's Talent Management Programme, where her research topic was middle-level public administration management. In 2011 she completed a one-year internship at the Hungarian Parliament. In 2012 she received a fellowship granted by the Republic. At the same time, she completed training courses as accredited EU tender writer and as a procurement rapporteur.

In 2013, she was admitted to the Master's programme in Public Administration at the University of Public Service. There her new research on startups was awarded 3rd place in the Section of Public Administration at the National Scientific Students' Associations Conference in April

2015. He has also volunteered at the Negotiation Moot Association and at the Zoltan Magyary College for Advanced Studies. The latter she chaired for one and a half years, for which he received the "Magyary Award" in 2016.

Between 2015 and 2018, he completed a master's degree in Economist in Public Policy and Management at Corvinus University of Budapest. Her thesis was about to map the business incubators in Hungary. During the two master's programmes, she spent half a year twice in Erasmus+ student mobility at the University of Ljubljana and Tallinn University of Technology. She started her PhD studies at the UPS in 2016. Her research area is studying innovation at the ecosystem level, with special regard to the role of the state. Her supervisor is Prof. Dr. Csaba Makó.

As a doctoral student, he was vice president and then president of the Association of Hungarian PhD and DLA Candidates, Section of Public Administration Sciences between 2016 and 2019. Between 2018 and 2020, he was a delegate of the University's Doctorates' Council, and thus a delegate of the Doctoral Council of the Discipline. Between November 2019 and June 2022, she was a PhD representative of the Hungarian Accreditation Commission's Committee for Economic.

In addition to her doctoral studies, she has also been involved in the teaching of the University since 2016. Since 2020 she has been working with the Innovation and Technology Office, where she first participated in the development of an innovation manager course ("EGYETEMI-ÖKO" project), and then became a course instructor for the Fundamentals of innovation and innovation management course and took part in the development of the course book. In collaboration with the Office, she has been a member of the Innovation Advisory Board of the University since 2022.

During her doctoral studies, she participated in the KÖFOP-2.1.2 "Development of public services for good governance" Innovative, Learning Public Administration Ludovika Special Research Workshop. She has been awarded individual research grants under the National Scholarship for Young Talent and the UCPP Higher Education Doctoral Student Research Fellowship; and participated in the Topic Area Excellence Programme.

During his training he has published 14 papers, conference proceedings and co-edited books in Hungarian and English. The doctoral candidate has an active knowledge of English and basic German.