

Finding Alternative Growth Engines in Central and Eastern Europe

Interview with Andrea Szalavetz¹

Review of Economic Theory and Policy (RETP) interviewed Andrea Szalavetz, scientific advisor at the Institute of World Economics, Centre for Economic and Regional Studies, ELTE. Her research focuses on upgrading in global value chains, digital transformation and regional differences in technological development and innovation capabilities. In this interview, we discuss how Central and Eastern Europe (CEE) could transition from a development model dependent on foreign direct investment (FDI) to a more innovation-oriented and resilient trajectory. We also examine the technology and entrepreneurship ecosystem in the region, as well as the impact of developments in the defence industry and industrial policy on future growth.

RETP: One of the consensus conjectures in today's literature discussing the development perspectives and industrial policy in Central and Eastern Europe is that these countries need to modify their FDI-driven, dependent development trajectory, and obviously also the related industrial policy. They need to shift to a more resilient, innovation-driven development trajectory. What do you reckon? Is it possible? Are there any forerunners in this respect?

Andrea Szalavetz: While I fully agree with this conjecture, I must add that – as I pointed out 15 years ago² – a proper consensus definition of what constitutes innovation-drivenness is still lacking. Are countries with high R&D expenditures innovation-driven? Not necessarily, because the efficiency of spending, or, if you wish, the return on R&D, matters a lot. The other proxies of innovation-drivenness, such as ‘the share of the digital economy’ or ‘the share of ICT in output’ or ‘patents per capita’, also bear numerous problems. Notwithstanding, it is a commonplace that CEE actors – like everybody else – need to navigate in a radically new competitive environment, characterised by transformed manufacturing value chains and a new overall structure of value creation.

¹ Research for this interview was supported by the Hungarian National Scientific Research Fund (K138846).

² Szalavetz, A. (2011). Innovációvezérelt növekedés. [Innovation-driven growth.] *Közgazdasági Szemle*, 58(5), 460-476.

With the entry of an array of non-manufacturing actors – a development associated with digitalisation and servitization – the traditional asymmetries in the distribution of value within manufacturing value chains have significantly increased. Platform companies, technology providers and Big Tech firms capture an increasing share of total value added within each single value chain. It goes without saying that this development has been to the (further) detriment of dependent market economies, whose modernisation has been shaped by efficiency-seeking FDI inflows into manufacturing for decades.

RETP: How can CEE economies remain resilient in the face of such transformations? How do you imagine the required transition to a more resilient development trajectory?

Andrea Szalavetz: I propose we do not call it a transition to a new trajectory but rather refer to the necessity of finding alternative growth engines that complement the traditional FDI-driven, dependent development.³ Technology entrepreneurship may become such an alternative growth engine. It enables path creation in terms of mitigating the region's exposure to FDI-driven industrial development. Technology entrepreneurship represents specialisation in high-value activities.

RETP: Are there any technological domains in which CEE actors are already competitive, outcompeting their advanced economy counterparts and the Chinese competitors?

Andrea Szalavetz: CEE tech entrepreneurs are specialised predominantly in enterprise software (the business model is to provide software as a service) and focus on business-to-business markets. The reason is simple: it is easier to understand enterprise clients than consumers. For example, every construction company is similar in terms of needs and problems.

Irrespective of this specialisation pattern, we cannot point to any specific technological domain in which CEE actors would outcompete other technology providers, simply because the structure of competition is different. For example, if you want to outsource the manufacturing of T-shirts, you would look for manufacturing services providers in, say, Bangladesh. In the case of novel technological solutions, it is not that self-evident who the winner will be. Let me illustrate this with a quote from an interview with the head of a corporate venture capital firm based in Silicon Valley. He said, if our parent corporation needs to integrate a particular technological solution into its offerings, and I am aware of a specific startup developing this kind of solution, I would also do some research about the startup's competitors. I will search for similar providers in the U.S., Israel, Europe, China, and India. There are always at least a dozen startups that are in the process of developing similar solutions, and I need to find the best one.

³ Cf. Sass, M. (2017). Is a live dog better than a dead lion? Seeking alternative growth engines in the Visegrad countries. In: Galgóczi, B., & Drahokoupil, J. (2017). *Condemned to be left behind? Can Central and Eastern Europe emerge from its low-wage model?* Brussels, European Trade Union Institute, pp. 47-79.

What is the lesson of this quote? One lesson is that in the case of specific technological solutions, clients look for individual technology firms competing globally with each other and not countries whose competitiveness is considered above average. In specific winner-take-all markets and especially in the B2B domain, we cannot say that Israeli, American, Chinese, or Estonian tech entrepreneurs are more competitive than the rest. Their entrepreneurial ecosystems are much more developed and much more efficient than those of the rest, but this does not mean that you can point to a technological domain where, say, Indian or Chinese tech entrepreneurs would necessarily outcompete others.

On the other hand, the list of countries and regions the corporate venture capitalist mentioned is thought-provoking. Apart from the largest entrepreneurial countries such as the U.S., China, and India and the best-known startup nation, Israel, he mentioned Europe: not Germany, not Estonia, not the UK, but Europe. The main take is that it makes no sense to ask whether there are any technologies in the case of which CEE actors are or could be more competitive than their counterparts. In particular cases, the country of origin of the winning provider may be Estonia, Romania or Hungary, but this case cannot be generalised at the country level or CEE level.

RETP: OK. Then, let me ask it in this way: Are there any forerunners within CEE in terms of technology entrepreneurship?

Andrea Szalavetz: Yes, as it is well-known, the Baltic countries are outstanding in this respect, especially Estonia, but Lithuania is rapidly catching up. Additionally, Poland and the Czech Republic have good results in various indicators quantifying the performance and maturity of the tech ecosystem. While observers usually look at the number of unicorns and/or venture capital funding per capita, or the total enterprise value of the tech ecosystem, I think the number of scale-ups and the volume of later-stage (series B or above) funding are more important. According to Dealroom data,⁴ Poland and Estonia have the highest share of total CEE scale-ups (more than 20% and 18% respectively). Another important indicator is the number of exits, mainly because successful and exited CEE entrepreneurs often return to their home region as investors or founders of new ventures.

RETP: Compared with their advanced economy peers, are CEE technology startups different, e.g., in terms of entrepreneurial culture?

Andrea Szalavetz: I recently conducted research⁵ investigating this specific question, based on qualitative data obtained from experts and representatives of technology ventures in Hungary, Poland, and Romania. I inquired about founders'

⁴ Dealroom.co (2025). Central and Eastern European startups 2025. <https://dealroom.co/uploaded/2025/03/Dealroom-CEE-Report-2025.pdf?x58107>

⁵ Szalavetz, A. (2025). Technology startups in Central and Eastern Europe: are they CEE-specific? *Post-Communist Economies*, 37(4), 299-324.

entrepreneurial journeys, practices, and problems encountered. From these accounts, I tried to make inferences about founders' personality traits and entrepreneurial attributes. More specifically, I tried to answer the question whether the CEE context makes local tech entrepreneurs *CEE-specific* and, if yes, in which respect?

RETP: What did you find?

Andrea Szalavetz: Let me start with a caveat, namely that we mustn't forget that there are significant across-CEE differences in contextual variables such as institutional quality, ratio of state redistribution, and state involvement in firms' operation. We cannot make broad inferences regarding CEE entrepreneurs! My results, or rather, let's use the term I employed in the paper, the propositions I developed based on the identified commonalities of a small sample of 34 entrepreneurs, cannot be generalised across CEE.

I found that indeed CEE tech entrepreneurs face several contextual constraints, that is, institutional and economic deficiencies and resource constraints. However, rather than being CEE-specific, the contextual factors influencing CEE tech entrepreneurs' behaviour and performance are mostly not distinct from those in emerging economies. For example, policy inconsistency, the regulatory and bureaucratic impediments they faced, the poor availability of venture capital funding, and the underdeveloped local market for technology apply equally to emerging economy entrepreneurs. The accounts of emerging economy entrepreneurs – as described in the literature – reflect surprisingly similar experiences. Even the perceived liability of the country of origin – several entrepreneurs complained about the poor reputation of their home countries that hurt their perceived legitimacy across potential international clients and venture capital companies – was mentioned several times in research on entrepreneurship in emerging economies. Consequently, we cannot claim that the contextual difficulties that CEE entrepreneurs need to overcome are the legacy of the shared command economy history.

Likewise, the strategies CEE tech entrepreneurs employ to cope with these constraints are strikingly similar to those described in research on entrepreneurship in emerging economies.

RETP: What are these coping strategies?

Andrea Szalavetz: One of them is early internationalisation: it helps CEE entrepreneurs mitigate the institutional uncertainties of their home countries. However, as per the literature, the same strategy characterises emerging economy entrepreneurs; it is not CEE-specific! Another strategy is to disguise the country of origin when marketing the company and the offering, or when speaking to potential clients or investors. Founders would not mention their country-specific background; they would rather speak about their professional experiences and label themselves as a European company with offices, among others, in Hungary (or Romania or Poland). Relatedly, most of them – note that my sample consists of successful ventures – move the headquarters of their ventures to an advanced economy.

RETP:—Successful technology companies would relocate to an advanced economy?

Andrea Szalavetz: This is a kind of virtual relocation. Startups do not relocate in the traditional sense of the word: the founders incorporate a new company abroad (mostly in the USA or the UK). This company becomes a kind of holding company ‘above the original startup’. The original startup becomes a 100 per cent-owned subsidiary of the foreign entity. At the same time, the core business functions remain in the country of origin. The original CEE startup continues its operations as a foreign subsidiary. In this way, it can overcome some of the country-of-origin-specific constraints and capitalise on the opportunities of the new location.⁶

RETP: Any other commonalities across the sample?

Andrea Szalavetz: In fact, when analysing entrepreneurs’ accounts of their motivations, entrepreneurial journeys, practices, dilemmas, problems and coping strategies, I inferred that most of them are generic in nature: they apply to all technology entrepreneurs irrespective of their location. Even the personality traits of these successful entrepreneurs, such as their resourcefulness, that is, their ability to find clever ways to overcome difficulties, or their relatively high education level and the high technological sophistication of their offerings, apply practically to all successful tech entrepreneurs.

RETP: All in all: no CEE specifics?

Andrea Szalavetz: No, this is not my conclusion: I did find some CEE-specific characteristics! The features I labelled as undisputably CEE-specific are related to certain personality traits and capability deficits of the founders. These features were either inferred from interviewees’ accounts or self-critically mentioned by the founders themselves when speaking about the challenges of the initial years and the mistakes they committed. A major deficiency is that CEE founders have strong technical but rudimentary commercialisation, management, and business development capabilities. They are product-centric instead of being customer-centric and focus on technical features rather than on customer acquisition.

Another cultural particularity is that, compared with their peers in the USA, many CEE founders have poor negotiation skills. Interviewees also noted that the education standards in CEE fail to emphasise collaboration culture and the resulting individualistic leadership attitudes constrain organisational development during scaling.

A further commonality, classified as CEE-specific, is the low level of social trust. Interviewees, who relocated to a startup hub in the US, occasionally noted how much they were surprised at the openness and trust they found among local stakeholders. This reduced their prevailing distrust and helped them build business re-

⁶ This process and founders motivations are described and the theoretical implications analysed in Szalavetz, A., & Skala, A. (2024). An empty shell? Relocation of central and eastern European startups, virtual headquarters and beyond. *Geoforum*, 154, 104074.

lations. Finally, the experts interviewed pointed out that CEE entrepreneurs are particularly adept at ‘working around difficulties’, resorting to creative, albeit often informal agreements to circumvent regulatory and resource constraints.⁷

RETP: Interesting. Your findings suggest that the behavioural patterns that entrepreneurs developed in the institutional and cultural environment of the command economy have been transmitted to the subsequent generation of entrepreneurs, including today’s tech entrepreneurs.

Andrea Szalavetz: Exactly. These patterns, if you wish, the non-entrepreneurial imprinting of the command economy societies continue to influence today’s tech entrepreneurs’ behaviour, performance, and abilities.

RETP: Can industrial policy provide meaningful support to technology entrepreneurs? Can you elaborate on the differences in the effectiveness of technology entrepreneurship-specific initiatives?

Andrea Szalavetz: Well, that’s an important question, and unfortunately, I am not an expert in this field, my overview is limited. In my view, the most important thing is to create an entrepreneurship-friendly regulatory framework. Copying what works in other countries, for example, the employee stock ownership programme (an earmarked part of the startup’s shares, allocated to early-stage employees to turn them into stakeholders of the startup’s success) or the SAFE notes (Simple Agreement for Future Equity) and other simple instruments that provide entrepreneurial finance for early-stage ventures, and importantly, dedicated entrepreneurship education are often more effective than any direct support provided in the form of public venture capital programmes⁸ or tax incentives.

The flipside of the coin also applies: the harm caused by adverse regulations cannot be compensated by pouring tons of public money into promoting tech entrepreneurship. Let me give you an example, namely the recent (2025) amendment of a 2022 government decree. Accordingly, in strategic industries, the Hungarian state may exercise the right of first refusal (the right of first refusal gives its holder the first opportunity to purchase an asset) in transactions involving the foreign acquisition of Hungarian assets and equity. ‘Strategic industries’ include, among others, the tech sector, energy, transportation, communication, and certain financial services. Now, imagine an investor identifying a Hungarian startup with promising technology, a good business model, an ambitious team, and a significant growth potential. Would it ever try to invest under such regulatory conditions? This government decree makes the Hungarian tech sector a ‘no-go zone’ for investors!

⁷ These descriptions are the adapted versions of the relevant paragraphs in Szalavetz, A. (2025). Technology startups in Central and Eastern Europe: are they CEE-specific? *Post-Communist Economies*, 37(4), 299–324.

⁸ Cf. Karsai, J. (2023). *The development of the central and eastern European venture capital market in Europe*. KRTK-KTI Working Papers, No. 23.

RETP: Let me return to the issue that we started our conversation with: transition to innovation-driven development. Can the recent radical increases in defence expenditures help accelerate technological innovation? Can CEE actors profit from Member States' efforts to improve European defence capability?

Andrea Szalavetz: Indeed, the defence tech sector could become an important factor fostering a high-road development in CEE. On one hand, the European defence industry is undergoing strong demand-pull growth in the framework of the European Open Strategic Autonomy initiatives. An important specific initiative targeting the defence industry is the European Commission's ReArm Europe plan that aims to trigger €800 billion in defence investments over four years, mainly by mobilising private capital. For CEE actors, this represents an opportunity for capacity building and integration into newly emerging value chains.

On the other hand, it is a commonplace that modern warfare is technology-driven: success on the battlefield hinges on adopting and mastering high-tech solutions. Consequently, investment in Europe's defence capability is an opportunity for defence tech innovation, entrepreneurship, and R&D collaboration. In principle, rapid growth in the European defence industry facilitates the commercialisation of local defence tech entrepreneurs' solutions. It may thereby contribute to path creation, in terms of specialisation in high-value activities and finding alternative growth engines that complement the traditional ones.

RETP: Only 'in principle'?

Andrea Szalavetz: Well, military-focused startups have to overcome formidable obstacles before scaling, such as strict export controls, compliance requirements, and the usual delayed payments in the case of government contracts. Growing demand, however, makes it easier for startups to obtain funding. According to Sifted data, investors have been pouring money into European defence tech startups: nearly € 1b in the first half of 2025! Although this funding is highly concentrated, with German defence tech firms accounting for more than 80% of the total, CEE actors also showcase some remarkable success stories.

RETP: Funding is, however, only one side of the coin. Can military-focused startups already generate traction?

Andrea Szalavetz: I have 2023 (European Commission) data: accordingly, the turnover of the defence tech sector is also sharply increasing, amounting to €158.8b. When preparing for this interview, I also looked for the respective Hungarian number: €0.78b. Of course, these numbers pale compared to, say, turnover in the motor vehicle industry (€17.7b in Hungary, in 2023), but if you also consider the local value added ratios of the two industries, you can better understand the development potential of the tech sector.

RETP: You mentioned ‘remarkable success stories’ in the CEE defence tech sector. Can you give some examples? Which countries are outstanding in this respect, and what are these startups producing?

Andrea Szalavetz: Again, the Baltic countries are exemplary, and not only Estonia but also Lithuania and Latvia. Defence startups are specialised, for example, in autonomous drone production or other unmanned defence systems or in the flipside of the same coin: anti-drone detection and neutralisation systems. Examples include the Estonian Milrem Robotics, which makes autonomous tanks, 14 of which are currently in use in Ukraine and Lendurai, developing autonomous drone capabilities; the Latvian Origin Robotics, which builds reusable autonomous drones; and the Lithuanian RSI Europe, developing drones and remotely controlled detonators. Some startups develop software that can be used by the military sector, for example, the Latvian Exonicus, a virtual reality trauma simulator and Light-space Technologies, which makes augmented reality headsets that can be used to simulate military operations. Several CEE startups specialise in dual-use products, such as autonomous robotic systems, advanced materials, or cybersecurity, e.g., threat detection, AI-powered sensing, and encryption.

RETP: I suppose successful CEE startups are rapidly acquired by advanced economy competitors.

Andrea Szalavetz: Indeed, there have been many notable acquisitions. For example, *Nanoavionics* is a Lithuanian satellite startup that has recently been acquired by Norwegian Kongsberg, a defence company and the previously mentioned *Light-space Technologies* was acquired by the Finnish Summa Defence. Acquisitions are, however, not the end of the story: they are rather the beginning of a rapid scaling trajectory. Note that even after such an acquisition, operations and product development usually remain locally based. Consequently, from an industrial policy perspective, being acquired by a foreign company represents a boost to the high-road development of the country of origin.

RETP: You mentioned industrial policy. Let me double-click on this issue. How can countries support the formation of local defence innovation ecosystems? How can they enhance the innovation-fostering role of the military sector? Are there any good practices?

Andrea Szalavetz: Let me start by emphasising the beneficial role of NATO’s DIANA programme in this respect. DIANA is a network of defence startup accelerators – note that one of its headquarters is in Estonia – and several countries from the CEE region participate in this programme. DIANA not only provides funding in the form of grants but also helps startups integrate into NATO ecosystems, for example, by connecting startups with mentors and universities and providing access to test centres and accelerator facilities. Examples include Revobeam, a Polish company (to mention not only Baltic success cases) that develops beam-steering antennas and anti-jamming communication technologies for defence applications and Dronetag, a Czech company, specialising in drone traffic management solutions, have been accepted in this programme.

Another supranational industrial policy programme is the European Defence Fund, allocating funding to joint defence R&D projects (winners include several Polish, Czech, Hungarian, and Romanian companies).

CEE countries have also set up their own defence tech accelerators and funding programmes. Several countries, including Hungary, have NATO-accredited test centres operating within the framework of the DIANA programme. Defence industry associations and clusters⁹ are also important initiatives, and they are often supported by national industrial policy programmes.

Thank you for the interview!

⁹ Examples include the Lithuanian Defence and Security Industry Association that represents 100+ stakeholders. The respective Czech association has 165 member companies. The Estonian '*Defence Estonia Cluster*' and the '*Polish Chamber of National Defence Manufacturers*' are also worth mentioning.