

INSTITUTIONAL ASYMMETRY IN GEORGIA'S STARTUP ECOSYSTEM

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ABSTRACT

Background: Since 2014, Georgia's startup ecosystem has received sustained public investments. Today, grant programs exist, accelerators exist, and investment volumes have grown, but the number of companies that survive past the early stage, raise growth capital, or compete internationally has not grown proportionally. There have been some studies on Georgia's startup ecosystem over the past years, yet existing analyses treat ecosystem underperformance as the sum of isolated barriers. This paper argues that ecosystem underperformance is a product of systemic coordination failure. To the authors' knowledge, this paper is the first application of the Triple Helix framework to the Georgian startup ecosystem and the first study to treat its underperformance as a structural coordination failure rather than a set of isolated resource deficits.

Methods: The following study applies the Triple Helix framework to identify where conversion is breaking down. Three data sources are used: GEDI, the ADB's Georgia ecosystem assessment, and StartupBlink. The development gaps across Georgia's government, university, and industry spheres are mapped, and the interactions among those gaps are examined.

Results: Georgia's government sphere has developed financial instruments without building corresponding legal and institutional infrastructure. The university sphere produces graduates without transferring knowledge into commercial applications, and the industry sphere generates early-stage startup activity without converting it into growth-stage performance. GEDI bottleneck analysis identifies risk capital availability, technology absorption, and internationalization as the problematic pillars. Rather than a simple shortage of cash or talent, these bottlenecks reflect a systemic breakdown in how the government, university, and industry spheres actually interact.

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Conclusions: The underperformance of the Georgian startup ecosystem is not financial but structural. More investment will not fix the problem. Legislative reform and the introduction of instruments such as SAFE notes, IP transfer mechanisms, and university–industry linkages are the necessary interventions. Evidence from Israel and Estonia shows that financial intervention should go hand in hand with deliberate institutional construction. Such a combination produces outcomes that financial intervention alone cannot achieve. Georgia has completed the financial component, but the institutional component still needs development.

Keywords: Triple Helix, startup ecosystem, Georgia, GEDI, institutional theory, entrepreneurial ecosystem, coordination failure.

INTRODUCTION

Georgia began building a startup ecosystem ten years ago, and today there are clear signs of the support system. There are grant programs, such as GITA matching grants, accelerator partnerships, such as 500 Global, and a co-investment fund. According to GITA (2024), cumulative investment reached \$180 million by 2024, and StartupBlink’s rankings have also improved (StartupBlink, 2024). Looking only at these figures, one might conclude that the project is working, but closer observation reveals that output indicators present a less favorable picture.

Input measures capture money invested, programs, and institutional efforts, but do not measure the actual results — what the ecosystem produces. Companies that survive and scale are rare. When output metrics such as GEDI rankings are examined, significant gaps are seen. Among transition economies comparable to Georgia, Georgia scores in the lower tier on the most important components needed for growth. These components are the availability of risk capital, technology absorption, and human capital quality (Ács et al., 2019; World Bank, 2024). The ADB’s 2023 assessment reaches the same finding from a different angle: there is a gap between what early-stage grant funding provides and the needs of growth-stage companies. That gap has not closed despite a decade of financial intervention (Nanitashvili & Vandenberg, 2023).

This paper argues that the gap is not a funding problem. The Triple Helix model (Etzkowitz & Leydesdorff, 2000) points to where the structural problem is hidden: government, university and industry — Georgia’s three institutional spheres — are partially developed separately but not connected to each other. Innovation does not emerge from a single sphere but from the productive interactions between them (Etzkowitz, 2008). The state has built financial instruments, and universities produce graduates. The private sector generates startups, but the institutional infrastructure that connects them is missing. There are no legal frameworks, knowledge transfer mechanisms, or risk-sharing instruments that could help transform individual actors into a functioning system.

The paper uses GEDI 2019 data, the ADB 2023 ecosystem assessment, and StartupBlink 2024 rankings to pinpoint the asymmetry in Georgia’s Triple Helix configuration and identify

structural interventions that can close the gap between ecosystem investment and ecosystem performance.

LITERATURE REVIEW

Triple Helix as Analytical Framework

Etzkowitz and Leydesdorff's Triple Helix model (2000) starts from a simple observation: innovation does not happen inside institutions but between them. Governments set conditions, universities generate knowledge, and companies commercialize it. The value is in the overlap and interaction, where these functions meet (Etzkowitz, 2008; Carayannis & Campbell, 2009).

Countries with similar sizes and resources can produce very different innovation outputs, and the Triple Helix model has been applied to explain this. Israel's transformation into a high-tech economy was not the result of private sector initiative alone. It required deliberate state construction of the legal and financial infrastructure within which private capital could operate productively (Avnimelech & Teubal, 2006). Estonia succeeded through government-led infrastructure investment, university capacity building, and rapid private-sector adoption (Startup Estonia, 2024). All three spheres of the Triple Helix were in active coordination, and that coordination was not emergent — it was deliberately constructed in both cases.

When one sphere develops faster than the others, or spheres act without mutual interaction, inputs do not produce proportionate outputs. Mazzucato (2013) argues that the state's role is not only to remove barriers but to actively construct the institutional infrastructure that markets cannot build alone: legal frameworks, risk capital instruments and knowledge transfer mechanisms.

GEDI and Bottleneck Logic

The Global Entrepreneurship and Development Index (GEDI), developed by Ács et al. (2019), measures entrepreneurial ecosystems across fourteen pillars. These pillars are organized into three sub-indices: entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations. The index applies bottleneck logic — overall ecosystem performance is diminished by its weakest components and cannot be compensated for by its strongest. A country with a strong perception of opportunity but limited availability of risk capital will not produce high-growth companies, no matter how many startups are founded.

Georgia's GEDI profile illustrates this asymmetry. The country scores relatively well on opportunity perception and startup skills, which are indicators of entrepreneurial intent, but significantly lower on risk capital, technology absorption, and internationalization (Ács et al., 2019). This pattern reflects an ecosystem that generates early-stage activity but cannot convert it into growth-stage startups. Founders recognize opportunities and possess basic skills, but lack access to the financial instruments, legal infrastructure, and institutional networks required for growth. Field observations from ecosystem practitioners and the ADB assessment consistently corroborate this pattern (Nanitashvili & Vandenberg, 2023).

North's (1990) institutional theory provides the explanatory mechanism. Formal institutions — the legal and regulatory rules governing economic transactions — determine whether entrepreneurial intent can convert into sustainable enterprise. When formal institutions fail, economic actors find informal workarounds. This solves individual problems but leaves systemic gaps. As a result, an ecosystem appears active at the surface but stays structurally constrained.

What the Literature Has Missed

The Georgian ecosystem has been studied, but mostly in a fragmented manner (Isenberg, 2010). Isenberg's entrepreneurial ecosystem approach identifies access to finance, market size, and talent availability as discrete factors to be addressed individually. What this factor-level perspective misses is how these barriers reinforce each other and why fixing one in isolation does not improve the overall picture. Stam's (2015) sympathetic critique of the ecosystem approach raises a related concern: without a systemic framework, ecosystem analyses risk producing long lists of deficiencies without explaining the structural logic that connects them. Neither Isenberg's framework nor Stam's critique provides an institutionally grounded account of how failures in coordination across spheres interact to produce ecosystem-level underperformance.

Nanitashvili and Vandenberg (2023) come closest to a systemic picture, identifying a funding gap known as the Series A gap and the weak connection between academic research and commercial application as structural rather than incidental problems. Chachanidze et al. (2020) document a related failure: support organizations built around early-stage needs that do not align with what growth-stage companies actually require, legally and financially. Neither study applies the Triple Helix framework to map the coordination failures driving these individual barriers.

This paper addresses that gap. By applying Triple Helix analysis to Georgia's available ecosystem data, the analysis aims to demonstrate that Georgia's underperformance is not the sum of isolated problems but the product of a specific pattern of institutional asymmetry. This paper is, to the authors' knowledge, the first application of the Triple Helix framework to the Georgian startup ecosystem. Unlike prior studies that diagnose individual barriers, it offers a systemic account of how failures in coordination across three institutional spheres interact to prevent the conversion of ecosystem inputs into scalable outputs.

METHOD

This study employs a secondary data analysis approach combining three complementary sources. These sources together provide a multi-dimensional picture of Georgia's startup ecosystem performance. The research design is diagnostic and exploratory. Rather than causal identification, the evidence is used to establish a structural interpretation by mapping observed characteristics onto the Triple Helix framework.

The first data source is the Global Entrepreneurship and Development Index (GEDI) 2019, which is the most recent available edition (Ács et al., 2019). Although GEDI was published in

2019, it remains the most comprehensive cross-country index of entrepreneurial ecosystem components available for Georgia. More recent data from the ADB (2023) and StartupBlink (2024) sources supplement and update the picture where possible. GEDI measures entrepreneurial ecosystems across 14 pillars, organized into 3 sub-indices: entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations. GEDI provides country-level scores enabling internal diagnosis and cross-country comparison. Georgia's GEDI profile serves as a basis for identifying bottlenecks — which pillars constrain overall ecosystem performance — and for mapping those constraints onto the Triple Helix framework.

The second data source is the Asian Development Bank's 2023 assessment of Georgia's startup ecosystem (Nanitashvili & Vandenberg, 2023). This report provides the most comprehensive recent empirical mapping of Georgia's ecosystem structure, financing flows, and institutional gaps. It supplements GEDI's quantitative profile with qualitative institutional detail, including the financing gap between early-stage and growth-stage capital and weak linkages between academic institutions and commercial actors.

The third data source is StartupBlink's Global Startup Ecosystem Index 2024, which ranks national startup ecosystems by activity, quality, and business environment (StartupBlink, 2024). Georgia's ranking results over time are used as an output indicator to assess whether ecosystem investments lead to internationally recognized performance.

All three sources are analyzed through the Triple Helix framework, mapped onto three institutional spheres: government, university, and industry. Table 1 presents the mapping of GEDI pillars to Triple Helix spheres applied in this analysis. This mapping was constructed based on the institutional functions each pillar measures, following the Triple Helix framework's conceptual demarcations (Etzkowitz & Leydesdorff, 2000).

Table 1. Mapping of GEDI Pillars to Triple Helix Spheres

GEDI Pillar	Triple Helix Sphere	Rationale
Institutional environment	Government	Measures legal-regulatory framework quality
Risk capital	Government / Industry	Measures public-private co-investment capacity
Human capital	University	Measures workforce quality produced by education
Technology absorption	University / Industry	Measures research-to-application transfer capacity
Internationalization	Industry	Measures market reach and competitive integration
Opportunity perception	Industry	Measures entrepreneurial readiness
Startup skills	Industry	Measures practical entrepreneurial capacity

The analytical procedure follows three steps: each Triple Helix sphere is scored using mapped GEDI pillars and ADB qualitative assessments; within-sphere development gaps are identified by comparing stronger and weaker pillars; and, finally, cross-sphere coordination failures are diagnosed by examining where sphere-level gaps interact to prevent ecosystem-level

conversion. This triangulation approach compensates for the limitations of each separate source and produces a more comprehensive diagnosis than any single source alone.

The study has acknowledged limitations. GEDI data are from 2019 and may not fully reflect recent developments. More recent data from the ADB and StartupBlink sources are used to update the picture where possible. Informal dynamics, personal networks, and the role of trust across spheres that shape ecosystem behavior in practice cannot be fully captured by secondary data analysis. Field observations from ecosystem practitioners and accelerator-level evidence are referenced where they corroborate the secondary data findings and are framed as such rather than as generalizable empirical evidence.

RESULTS

Georgia's government sphere shows strong financial incentives but weak institutional construction. GITA is a dedicated institutional actor in ecosystem development, and sustained public investment in grant programs, accelerator partnerships, and co-investment instruments has been evident for over a decade. StartupBlink's 2024 rankings place Georgia among the top improving ecosystems in the Caucasus region, reflecting the visible outputs of this investment (StartupBlink, 2024).

However, GEDI uncovers a structural imbalance within the government sphere itself. Georgia scores relatively well on the institutional environment pillar, reflecting macroeconomic stability and basic rule of law, but significantly lower on the risk capital pillar. This pillar measures the availability of growth-stage financing instruments (Ács et al., 2019). The ADB findings corroborate this gap: Georgia's public instruments are concentrated at the early stage, with grants and seed-level co-investment available, but the Series A financing gap (the structural hole between \$150,000 and \$3 million) remains unaddressed by any public instrument (Nanitashvili & Vandenberg, 2023). Chachanidze et al. (2020) recognized the same pattern: entry infrastructure exists, growth infrastructure does not — a finding that subsequent reports have consistently confirmed.

Universities annually produce substantial numbers of graduates in business and technology, and several institutions have established entrepreneurship programs alongside innovation hubs. GEDI's human capital pillar scores for Georgia are moderate — above the regional average but below the level required to drive high-growth startup activity (Ács et al., 2019). Field observations by ecosystem practitioners and the ADB assessment suggest that globally competitive startups rarely emerge from Georgian universities, despite the formal presence of entrepreneurship support infrastructure.

The more significant finding concerns knowledge transfer. The ADB assessment identifies weak linkages between academic institutions and the commercial sector as one of the most persistent structural gaps in Georgia's ecosystem (Nanitashvili & Vandenberg, 2023). Universities produce graduates, but the commercialization of research and IP transfer remain rare. Faculty networks are disconnected from investor communities. The university sphere is performing its basic educational function, but its innovation-intermediary function — the

capacity to translate knowledge into commercial applications — is largely absent from Georgia's Triple Helix configuration.

There is a related gap in legal and financial specialization. Very few Georgian law faculties produce graduates with expertise in venture capital transactions, SAFE note structures, or startup equity frameworks. This legal knowledge is essential for growth-stage companies, and its absence is documented in accelerator-level evidence: startups regularly struggle to identify qualified legal counsel in Georgia for international operations (Nanitashvili & Vandenberg, 2023). Even if legislation were reformed, building a professional community with the requisite knowledge would require investment over multiple years.

Georgia's industry sphere presents the most contradictory picture. GEDI scores for opportunity perception and startup skills are among Georgia's stronger pillars, indicating conditions favorable to early-stage entrepreneurial activity (Ács et al., 2019). The ADB confirms that Georgia produces a consistent flow of early-stage startups in FinTech, SaaS and AgriTech (Nanitashvili & Vandenberg, 2023). Accelerator-level data corroborates this picture: application volumes consistently exceed 100 per cycle, indicating robust early-stage pipeline activity.

Conversion rates are considerably less promising. The proportion of Georgian startups that successfully transition from the seed stage to the growth stage is low compared with regional comparators. StartupBlink's quality score, which weights ecosystem outputs by company quality and investment raised rather than startup count, significantly reduces Georgia's activity ranking (StartupBlink, 2024; Szerb et al., 2018). The ecosystem is generating startups, but few of them scale.

Georgia scores particularly low on GEDI's technology absorption and internationalization pillars (Ács et al., 2019). The inputs needed to build competitive products are difficult to access. When startups reach the stage of raising international capital, the legal and financial infrastructure that investors expect is absent. The industry sphere is not inactive, but it is structurally constrained at the point of transition from early to growth stage.

The Pattern of Asymmetry

Viewed together, the three spheres exhibit a pattern of compounding failure rather than parallel underperformance. The government sphere provides the financial entry point but not the legal structure for growth-stage activity. The university sphere supplies graduates, but not commercially viable knowledge, and the industry sphere receives inputs but lacks the tools to turn them into scalable businesses. The gaps reinforce each other: without legal frameworks, private capital does not follow public grants at the growth stage; without knowledge transfer mechanisms, university talent does not feed into industry innovation; and without growth-stage infrastructure, startups migrate rather than scale. The Triple Helix model predicts that when many startups are founded, but few survive to scale, sphere-level gaps prevent productive inter-sphere interaction.

DISCUSSION

The diagnosis is structural. The evidence is consistent with the interpretation that the underperformance of the Georgian startup ecosystem reflects not insufficient investment or a deficit in entrepreneurial culture, but a Triple Helix asymmetry in which the three institutional spheres are developed separately, lacking the coordination mechanisms necessary to convert individual inputs into systemic outputs.

Why Coordination Fails

North's (1990) institutional framework explains the mechanism. Formal institutions — the legal and regulatory rules governing economic transactions — determine whether the interactions between Triple Helix spheres can be productive (Williamson, 2000). Georgia lacks specific formal instruments that would enable productive inter-sphere interaction. Government grant programs provide startups with financial resources, but without necessary legal instruments in place, private co-investments do not follow at scale. Financial instruments such as SAFE notes, convertible notes, and standardized equity frameworks are not available under Georgian law. Without these instruments, co-investments at the growth stage remain constrained.

University knowledge cannot be commercialized efficiently because IP protection and licensing mechanisms are underdeveloped. Startups cannot access international capital because the legal infrastructure that international investors require is missing. Startups that reach Series A stage encounter a structural absence of the legal and financial scaffolding needed to attract global investors and achieve scale. Informal workarounds — Delaware incorporation, informal arrangements, or outright exit — are consistent with what DiMaggio and Powell (1983) describe as adaptive responses to institutional misalignment. Gegeshidze (2020) documents parallel synchronization gaps between technology platforms and commercialization processes in Georgia, further evidence of systemic coordination failure across multiple institutional dimensions.

The Mazzucato Problem

Mazzucato's (2013) entrepreneurial state argument is directly applicable to Georgia's case. Georgia has built the visible components of an innovation-supporting ecosystem, such as a grant agency, accelerator partnerships, and co-investment programs. However, it has not constructed the necessary institutional infrastructure — legal frameworks compatible with venture-backed company formation, knowledge transfer mechanisms between universities and commercial actors, or specialized dispute resolution systems for startup transactions. Financial interventions are present, but institutional construction remains underdeveloped.

Comparative Perspective

When different ecosystems are compared, the importance of structural factors becomes apparent. Israel's Yozma program succeeded not because it provided capital, but because it introduced legal reforms simultaneously. These reforms made domestic incorporation viable for venture-backed companies and enabled the co-evolution of public instruments with private

capital markets. Capital alone does not explain the outcome (Avnimelech & Teubal, 2006). Estonia's digital economy transformation combined government-led infrastructure investment with university capacity building and coordinated private sector adoption; no single sphere could have produced comparable results independently (Startup Estonia, 2024). Triple Helix coordination was deliberately constructed through policy choices that addressed institutional gaps before attempting to scale financial intervention in both cases.

Georgia directs public resources into the ecosystem and has founders willing to build companies, but lacks the institutional layer that connects them: legal frameworks that enable global transactions, knowledge-transfer mechanisms in universities, and risk-sharing instruments that allow public and private capital to work together at the growth stage. Without these coordination mechanisms, the three spheres continue to develop in parallel, which is not the same as developing together.

LIMITATIONS

Two limitations are worth mentioning. First, GEDI data are from 2019 and may not reflect developments since then. Some regulatory reforms have been introduced in subsequent years. More recent data from ADB and StartupBlink sources partially compensate for this, but a comprehensive, updated index would provide a clearer picture. Second, the Triple Helix framework captures institutional structure well. However, secondary data analysis cannot capture informal dynamics, such as personal networks, inter-sphere trust, and the cultural perception of failure. These are the factors that shape ecosystem behavior in practice. A qualitative study examining how ecosystem actors experience coordination (or its absence) would add a dimension that secondary data analysis cannot provide. The personal observations of ecosystem practitioners, referenced in this paper where they corroborate secondary findings, point to the value of such a study but do not substitute for it.

CONCLUSION

Georgia's startup ecosystem has a specific and diagnosable problem. Financial investments, such as grants, accelerator programs and co-investment instruments, have produced visible results: more startups, better rankings and growing investor attention. Despite this, very few startups cross the Series A threshold.

This paper argues that the explanation is Triple Helix asymmetry. Georgia's three institutional spheres — government, university and industry — are each partially developed but lack the coordination mechanisms needed to transform individual inputs into systemic outputs. The three-sphere pattern of compounding failure identified in the Results section is as follows: financial inputs without legal structure, graduates without knowledge transfer, and startups without growth-stage infrastructure. This pattern is triangulated across GEDI 2019, the ADB 2023 assessment, and StartupBlink 2024, each of which captures a different dimension of the same structural problem.

There are structural policy interventions required. Table 2 presents the recommended interventions, linked to the bottlenecks and coordination mechanisms.

Table 2. Policy Recommendations: Bottleneck–Mechanism–Solution Linkages

Recommendation	Bottleneck Addressed	Mechanism	International Precedent
SAFE note and convertible note legal framework	Risk capital; Series A gap (Government–Industry link)	Standardizes co-investment structures; enables public instruments to catalyze private growth-stage capital	Israel’s Yozma program paired legal reform with capital injection, enabling domestic incorporation attractive to foreign VC (Avnimelech & Teubal, 2006)
IP transfer and licensing mechanisms	Technology absorption; knowledge commercialization (University–Industry link)	Creates legal pathways for converting academic research into commercial products; activates the university’s innovation intermediary function	Estonia’s university–industry integration relied on formalized IP licensing agreements as a precondition for private sector technology adoption (Startup Estonia, 2024)
Structured university–industry linkage programs	Human capital gap; knowledge transfer failure (University–Industry link)	Connects university research networks to investor and accelerator communities; enables the innovation intermediary role the university sphere currently lacks	Both Israel and Estonia embedded university–industry partnerships into national innovation strategies before financial scale-up (Avnimelech & Teubal, 2006; Startup Estonia, 2024)
Enforceable ESOP (Employee Stock Option Plan) frameworks	Talent retention; human capital at growth stage (Industry sphere scaling)	Enables Georgian startups to attract and retain international-caliber talent without relocating; reduces company migration	Estonian startup law reforms (2017) included ESOP frameworks as part of a broader legal modernization package that reduced company migration to foreign jurisdictions

Georgia is not a unique case where such asymmetry is seen. Small transition economies frequently exhibit active early-stage ecosystems with weak institutional infrastructure. This pattern is common across Eastern Europe and Central Asia. The solutions are also not unique. Israel and Estonia demonstrate that deliberate institutional construction, paired with financial intervention, produces outcomes that financial intervention alone cannot generate (Saxenian, 1994). Georgia has made substantial progress on the financial component, but the institutional component remains the primary constraint on ecosystem performance.

Future research should study how small economies comparable to Georgia have enabled Triple Helix integration and whether those mechanisms are transferable. A retrospective study of the effects of legislative reforms on ecosystem performance indicators would provide the empirical grounding this structural diagnosis requires. A qualitative study of practitioners’ and investors’ experiences within the ecosystem would add the informal and relational dimensions that secondary data analysis cannot capture.

Additional information

Conflict of interest

The authors have declared that no competing interests exist.

Ethical statement

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Artificial Intelligence (AI) use

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Data availability

All data supporting the findings of this study are available within the main text and the Supplementary Information.

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