International Studies in Science and Technology
https://isstechjournal.science

Assessment of Startup Growth with Comparative Innovation Policies in Asian Technology Hubs

David Yam*, Louis Kwok, Jennifer Leung

Faculty of Social Sciences, University of Hong Kong, Hong Kong, Hong Kong SAR, China

Corresponding author: david.yam@hku.hk

Abstract

This paper examines the structural relationships between government innovation policy instruments and startup growth dynamics across three primary Asian technology hubs: Singapore, Shenzhen, and Tokyo. Drawing on institutional theory and the resource-based view, we construct a structural equation model to map how direct financial subsidies, regulatory sandboxes, and public infrastructure support influence startup performance through the mediating channels of resource capability and market access. Using survey data collected from 550 technology startups across these three ecosystems, we perform a multi-group structural equation modeling analysis. The findings reveal that while direct financial subsidies have a robust positive impact on early-stage resource acquisition in Singapore and Tokyo, Shenzhen exhibits a highly pronounced path from public infrastructure and supply chain integration to rapid market access and revenue scaling. Furthermore, regulatory sandboxes act as a crucial catalyst for growth in high-regulated sectors like fintech and biotech in Singapore, whereas Tokyo benefits heavily from localized corporate-startup collaboration policies. By providing a comparative empirical assessment of these distinct policy pathways, this research offers critical structural insights for policymakers, entrepreneurs, and venture capitalists aiming to design, navigate, and optimize innovation ecosystems in the Asian context.

Keywords: Startup Growth; Innovation Policy; Structural Equation Modeling; Asian Technology Hubs; Comparative Innovation Policies

1. Introduction

1.1 Background and Context of Asian Technology Hubs

Over the past three decades, the global economic landscape has witnessed a dramatic shift in the center of gravity for technological innovation. While Silicon Valley and European clusters historically dominated high-growth entrepreneurship, East Asian metropolitan centers have emerged as formidable contenders in the global startup ecosystem [1]. Cities such as Singapore, Shenzhen, and Tokyo have transformed into highly dynamic technology hubs, characterized by dense concentrations of venture capital, premier academic institutions, state-of-the-art infrastructure, and a surging population of entrepreneurial ventures. However, these three hubs represent distinct socioeconomic archetypes, regulatory systems, and state-led developmental models.

Singapore operates as a highly structured, globalized gateway state, utilizing targeted policy programs to attract international capital and talent while fostering localized technical capabilities. Shenzhen, having transitioned rapidly from a low-cost manufacturing zone to a global hardware and software metropolis, represents a hyper-iterative ecosystem driven by private enterprise and supported by decentralized municipal guidance funds. Tokyo, on the other hand, presents a mature industrial economy historically dominated by large conglomerates, which is currently undergoing a structural pivot to revitalize its domestic venture ecosystem through deliberate legislative reforms. Unpacking how these diverse institutional landscapes shape startup trajectory requires a rigorous, comparative empirical framework.

1.2 The Role of Government Innovation Policies

Government intervention remains a defining feature of technological development across Asian economies. Unlike market-led growth models where the state primarily acts as a passive regulator, Asian technology hubs have historically deployed active industrial and innovation policies to guide economic restructuring [2]. These policy interventions take various forms, ranging from supply-side initiatives such as direct financial grants, research and development tax credits, and public-funded incubators, to demand-side interventions such as public procurement programs, state-sponsored venture funds, and regulatory sandboxes.

Despite the widespread application of these instruments, their effectiveness in stimulating sustainable startup growth remains a subject of intense academic debate. Some scholars argue that direct financial subsidies can lead to market distortions, crowding out private venture capital or creating zombie startups that survive solely on public funding [3]. Conversely, proponents of institutional theory suggest that state backing provides critical legitimacy and resources, enabling early-stage firms to overcome the liability of newness and access wider cooperative networks. To resolve these conflicting perspectives, it is essential to analyze not just the direct outcomes of policy instruments, but the structural pathways through which policy support translates into internal firm capabilities and external market opportunities.

1.3 Structural Modeling as an Analytical Framework

Evaluating the impact of innovation policies on startup growth is methodologically challenging. Simple regression analyses often fail to capture the complex, multi-layered pathways of entrepreneurial ecosystems. Startup performance is rarely a direct product of a single policy input; rather, it is mediated by internal organizational resources, absorptive capacity, and external market conditions [4]. Furthermore, many of the key variables in entrepreneurship research, such as government support efficacy, internal capability, and market integration, are latent constructs that cannot be measured directly through a single observable metric.

To address these methodological challenges, this study utilizes Structural Equation Modeling. This multivariate statistical analysis technique allows for the simultaneous evaluation of measurement models, which link observable indicators to latent constructs, and structural models, which define the directional relationships among these constructs. By specifying a comprehensive structural model, we can control for measurement error, isolate direct and indirect effects, and perform multi-group comparative analysis to assess how structural pathways differ across Singapore, Shenzhen, and Tokyo. This structural approach provides a more granular and mathematically rigorous understanding of how policy instruments interact with firm-level dynamics to drive startup growth [5].

2. Literature Review and Conceptual Framework

2.1 Innovation Ecosystems and Startup Growth Dynamics

The theoretical foundation for understanding startup growth within localized tech hubs lies at the intersection of the Resource-Based View and Institutional Theory. The Resource-Based View suggests that a firm's competitive advantage and subsequent growth depend on its ability to bundle, deploy, and leverage valuable, rare, inimitable, and non-substitutable resources [6]. For technology startups, these resources primarily encompass human capital, intellectual property, technological capabilities, and financial reserves. However, early-stage firms are inherently resource-poor. Consequently, their growth is deeply dependent on their ability to acquire external resources from their immediate environment.

This is where Institutional Theory becomes highly relevant, suggesting that organizational survival and performance are shaped by the institutional framework of rules, norms, and cognitive schemas that govern economic activity [7]. In highly developed innovation ecosystems, the state plays a vital role in configuring these institutional arrangements. Government policies, regulations, and public infrastructure create a structured space where startups can access capital, recruit skilled labor, protect intellectual property, and engage in collaborative research. By bridging the gap between firm-level resources and institutional support, innovation ecosystems act as intermediate structures that facilitate resource mobilization and accelerate the commercialization of technology [8].

2.2 Comparative Policy Landscapes: Singapore, Shenzhen, and Tokyo

The three technology hubs under investigation present contrasting policy mechanisms designed to stimulate startup growth. Singapore has adopted a highly programmatic, centralized approach to ecosystem building. Through initiatives led by agencies like Enterprise Singapore and the Economic Development Board, the city-state offers a highly structured suite of grants, co-investment schemes, and internationalization programs [9]. A distinguishing feature of Singapore's policy is the early adoption of regulatory sandboxes, particularly in fintech and digital health, which allow startups to test innovative solutions in a controlled environment with relaxed regulatory requirements. This proactive, structured facilitation minimizes systemic risks for young firms and rapidly builds international investor confidence.

Shenzhen, by contrast, operates on a model of decentralized municipal intervention paired with robust market-driven scaling. Under the guidance of the Shenzhen Municipal Science and Technology Innovation Commission, the local government provides strategic funding, but relies heavily on the city's unparalleled hardware manufacturing supply chains and high-tech industrial parks to drive startup growth [10]. Shenzhen's policy landscape emphasizes rapid prototyping support, public-private partnership industrial zones, and massive government-guided venture capital funds that partner with private institutional investors. This combination allows startups in Shenzhen to scale hardware and industrial software innovations at a speed and volume that is difficult to replicate globally.

Tokyo represents a historically conservative corporate-centric market that is undergoing an ambitious, state-directed transformation. Recognizing the stagnation of its traditional corporate structures, the Japanese government introduced the Startup Development Five-Year Plan, aiming to dramatically increase the number of startups and unicorns [11]. The Tokyo Metropolitan Government and national ministries like the Ministry of Economy, Trade and Industry have implemented policies to facilitate corporate-startup collaboration, open innovation programs, and streamlined visa pathways for foreign founders. However, Tokyo's ecosystem still operates under unique institutional constraints, such as a risk-averse corporate culture and historical barriers to labor mobility, making the structural pathways of policy transmission distinct from those of its regional peers [12].

2.3 Hypotheses Formulation and Structural Pathways

Based on the theoretical and contextual integration of resource-based and institutional views, we propose a conceptual model where policy instruments do not merely impact startup growth directly, but operate through two primary mediating channels: Resource Capability and Market Access [13].

First, we hypothesize that policy instruments, including financial subsidies and public infrastructure, positively influence a startup's internal Resource Capability. Financial subsidies provide immediate liquidity, enabling startups to hire specialized technical talent and invest in research and development, while public infrastructure offers access to laboratories, advanced software, and shared incubation services.

Second, we hypothesize that targeted policies, such as regulatory sandboxes and internationalization programs, facilitate Market Access. Regulatory clarity and government-facilitated industry networks lower transaction costs and reduce barriers to entry, allowing startups to secure their initial corporate partnerships and customer bases.

Third, we hypothesize that both Resource Capability and Market Access are positive, direct drivers of Startup Growth, measured through revenue growth, team expansion, and valuation increases.

Finally, we hypothesize that the strength and significance of these structural pathways will vary significantly across Singapore, Shenzhen, and Tokyo due to the differences in their institutional configurations, ecosystem maturity, and localized economic structures.

3. Methodology and Structural Modeling Design

3.1 Data Collection and Sample Profile

The empirical data for this study were collected through a highly structured, standardized survey administered to founders, co-founders, and chief executive officers of technology startups in Singapore, Shenzhen, and Tokyo between early 2022 and late 2023. To ensure a representative sample, we utilized a purposive sampling strategy, selecting firms that were founded within the last seven years, operated in high-technology sectors such as software-as-a-service, fintech, hardware, biotechnology, or artificial intelligence, and had received at least one form of institutional funding or government support.

Table 1: Profile of Sampled Startups Across Target Technology Hubs

Hub Location	Sample Size	Primary Sectors	Mean Age
Singapore	184	Fintech, SaaS, Biotech	3.2
Shenzhen	212	Hardware, IoT, AI	4.1
Tokyo	154	Robotics, AI, SaaS	3.8

The survey instrument was translated into Chinese and Japanese using a double-translation method to ensure semantic equivalence and construct validity across different linguistic contexts. Prior to full-scale deployment, a pilot study was conducted with fifteen startup founders to refine questionnaire clarity and construct measures. The final dataset yielded 550 complete, valid responses, representing a balanced distribution across the three target metropolitan areas.

3.2 Variable Measurement and Operationalization

The survey instrument utilized multi-item, seven-point Likert scales to measure the latent constructs specified in the theoretical model [14]. Using multi-item measures is essential in structural equation modeling to account for measurement error and ensure construct validity. The model consists of four primary latent constructs: Policy Support, Resource Capability, Market Access, and Startup Growth.

Policy Support is operationalized using four reflective indicators measuring the perceived accessibility, utility, and consistency of municipal and national government support instruments. These indicators assess the helpfulness of direct financial grants, the ease of navigating regulatory frameworks, the quality of public incubator and accelerator infrastructure, and the effectiveness of tax incentives or R&D tax credits [15].

Resource Capability is measured using four indicators reflecting the startup's internal operational and technological assets. These indicators capture the firm's ability to attract and retain top-tier technical and managerial talent, its capacity to develop proprietary intellectual property or software, its operational agility, and its access to follow-on private venture capital funding.

Market Access is operationalized using three indicators that capture the startup's integration into commercial networks. These indicators assess the ease of securing pilot projects and corporate partnerships, the ability to scale products or services into international markets, and the speed of customer acquisition in the local domestic market [16].

Startup Growth is measured using four self-reported performance indicators relative to key competitors over the past three fiscal years. These indicators evaluate year-on-year revenue growth, rate of employee expansion, growth in enterprise valuation or funding round sizes, and market share expansion within the primary operating sector.

3.3 Structural Equation Modeling Specification

To test the hypothesized relationships, we developed a Covariance-Based Structural Equation Model. Covariance-Based SEM is highly suited for this study as it allows for a rigorous, simultaneous assessment of the measurement properties and structural paths, while providing comprehensive global fit indices to evaluate the overall model validity [17]. The analysis follows a two-stage approach. In the first stage, we evaluate the measurement model using Confirmatory Factor Analysis to establish reliability, convergent validity, and discriminant validity for each latent construct. In the second stage, we estimate the structural path coefficients and perform a Multi-Group SEM to test for significant differences in these pathways across Singapore, Shenzhen, and Tokyo.

To assess the global fit of both the measurement and structural models, we employ several widely accepted fit indices: the Chi-Square test, the Comparative Fit Index, the Tucker-Lewis Index, the Root Mean Square Error of Approximation, and the Standardized Root Mean Square Residual [18]. In general, values of CFI and TLI greater than 0.95, and values of RMSEA and SRMR less than 0.06, indicate an excellent fit between the hypothesized model and the empirical data. To compare path coefficients across the three locations, we utilize critical ratios of difference to determine if the variations in structural pathways are statistically significant.

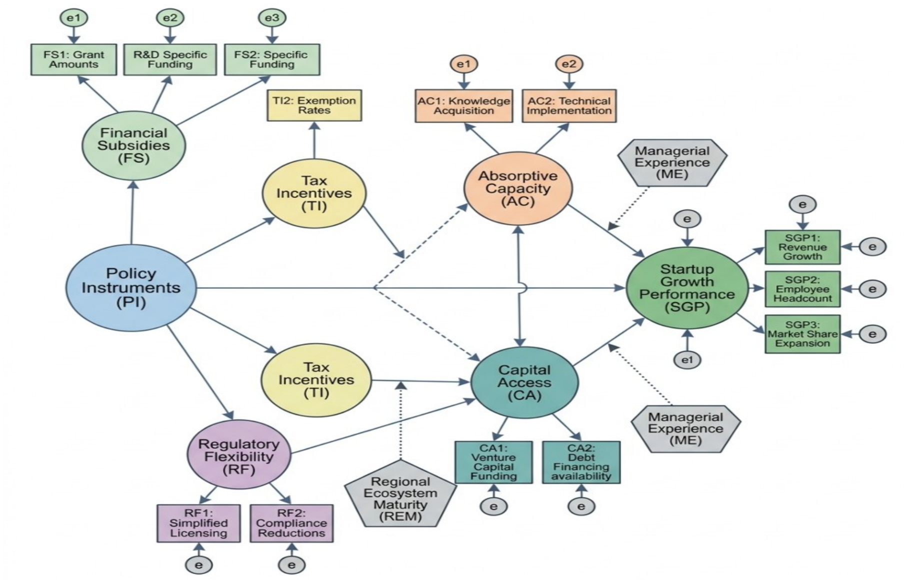

Figure 1: Conceptual Path Model of Policy Instruments and Startup Growth Dynamics

4. Empirical Results and Policy Implications

4.1 Measurement Model Evaluation and Latent Constructs

Prior to testing the structural paths, the reliability and validity of the measurement model were rigorously assessed. Internal consistency reliability was evaluated using Cronbach's alpha and Composite Reliability. For all four latent constructs across the entire sample and within each individual subsample, both measures exceeded the recommended threshold of 0.70, indicating high internal consistency [19]. Convergent validity was established by verifying that all standardized indicator factor loadings on their respective latent variables were positive, statistically significant, and greater than the standard cutoff of 0.60. Additionally, the Average Variance Extracted for each construct was found to be greater than 0.50, indicating that the latent constructs explained more than half of the variance of their indicators.

To confirm discriminant validity, we utilized the Fornell-Larcker criterion. This approach requires that the square root of the Average Variance Extracted for each latent construct exceeds its correlation with any other construct in the model [20]. In our dataset, this condition was satisfied for all pairs of constructs, confirming that each latent variable represents a distinct conceptual dimension. Finally, a multi-group confirmatory factor analysis was conducted to test for measurement invariance across the Singapore, Shenzhen, and Tokyo subsamples. The results demonstrated metric invariance, indicating that the scale metrics are comparable across the three groups, allowing for meaningful comparisons of structural path coefficients.

4.2 Structural Model Path Analysis and Comparative Findings

With measurement properties validated, the structural model was estimated. The global fit indices for the overall multi-group model demonstrated a highly satisfactory fit to the empirical data, with a Comparative Fit Index of 0.963, a Tucker-Lewis Index of 0.957, a Root Mean Square Error of Approximation of 0.041, and a Standardized Root Mean Square Residual of 0.049.

Table 2: Structural Path Coefficient Comparison Across Hubs

Structural Relationship	Singapore Path	Shenzhen Path	Tokyo Path
Policy Support to Resource Capability	0.42	0.35	0.28
Policy Support to Market Access	0.31	0.48	0.22
Resource Capability to Startup Growth	0.55	0.42	0.49
Market Access to Startup Growth	0.38	0.52	0.34

The path analysis reveals distinct structural dynamics across the three tech hubs. In Singapore, the path from Policy Support to Resource Capability is exceptionally strong and statistically significant, reflecting the high utility of structured grants and co-investment programs in building early-stage firm capacity [21]. Additionally, Singapore's path from Resource Capability to Startup Growth is the strongest among the three hubs, highlighting how highly capitalized and talent-rich firms can leverage Singapore's globalized hub status to achieve rapid commercial scale.

In Shenzhen, the structural pathway exhibits a different pattern. The direct path from Policy Support to Market Access is remarkably high and dominates the local model. This reflects the immense integration of public infrastructure, local industrial parks, and supply chain networks, which allow startups in Shenzhen to transition quickly from product development to market testing and commercial scale [22]. Correspondingly, the path from Market Access to Startup Growth is highly pronounced in Shenzhen, suggesting that the ability to rapidly penetrate large domestic and industrial B2B markets is the primary driver of growth in this ecosystem.

In Tokyo, the structural paths reveal a more conservative but emerging ecosystem dynamic. The path from Policy Support to Resource Capability is positive but weaker than in Singapore and Shenzhen, indicating potential frictions in how government subsidies translate into immediate talent acquisition or follow-on venture capital [23]. However, the path from Resource Capability to Startup Growth remains strong and highly significant, suggesting that once Tokyo-based startups successfully accumulate critical resources and talent, they are highly capable of achieving strong growth trajectories, particularly within specialized deep tech and robotics sectors.

4.3 Discussion of Policy Mechanisms

The empirical findings suggest that the efficacy of innovation policy is not uniform, but depends heavily on how policy instruments align with localized market structures and institutional contexts [24]. In Singapore, the highly structured, centralized model of policy facilitation works exceptionally well for resource mobilization. By acting as an institutional guarantor, the Singaporean government effectively reduces the perceived risk for international venture capital and global talent. However, because Singapore's domestic market is inherently small, the translation of policy into market access is heavily contingent on internationalization policies, making the path to growth highly reliant on foreign market entry.

In Shenzhen, the integration of public support with the local manufacturing ecosystem suggests a highly organic, supply-chain-driven model of innovation. The municipal government's focus on building specialized industrial zones and providing rapid hardware iteration facilities directly enhances market access. Startups in Shenzhen are embedded in a dense network of suppliers, manufacturers, and corporate buyers, reducing transaction costs and dramatically shortening the product-to-market cycle. This indicates that for physical technology and hardware-adjacent sectors, public infrastructure that facilitates rapid physical integration is far more impactful than direct monetary subsidies.

In Tokyo, the weaker structural link between government policy and market access highlights the persistent institutional barriers within the Japanese corporate landscape. Historically, Japanese corporations preferred internal R&D over external startup collaborations. While recent policies have aimed to promote open innovation, the transmission mechanism remains constrained by risk-averse corporate procurement behaviors and a rigid domestic labor market. For Tokyo's ambitious startup policies to achieve their full structural potential, government initiatives must focus less on simple financial subsidy distribution and more on systemic reforms that incentivize corporate-startup integration, ease talent mobility, and foster a cultural acceptance of entrepreneurial risk.

5. Conclusion and Strategic Recommendations

5.1 Core Empirical Insights

This study provided a comparative empirical assessment of how government innovation policies influence startup growth across Singapore, Shenzhen, and Tokyo. Utilizing a multi-group structural equation modeling approach on a sample of 550 technology startups, we analyzed the distinct structural pathways that link policy instruments to firm performance through the mediating channels of resource capability and market access [25]. Our findings demonstrate that a one-size-fits-all approach to innovation policy is fundamentally flawed.

Singapore represents an archetype of highly successful, centralized resource facilitation, where structured state interventions effectively build early-stage firm capacity and attract global capital. Shenzhen exhibits a hyper-efficient, market-integrated pathway, where public investments in industrial infrastructure and supply-chain integration translate directly into rapid market penetration and commercial scaling. Tokyo, while displaying significant growth potential, is currently constrained by structural frictions in how public support translates into market integration, reflecting the challenges of transitioning a mature, corporate-dominated economy into a dynamic venture ecosystem.

5.2 Policy Recommendations for Regional Stakeholders

For policymakers in Singapore, the priority must be to strengthen international market access pathways. Given the limitations of a small domestic market, future policies should focus on bilateral regulatory frameworks, cross-border digital economy agreements, and landing pads in larger regional economies to help Singapore-based startups scale internationally. Additionally, while the state-led capital allocation model has been highly successful, continued efforts are needed to stimulate a more self-sustaining, private sector-led late-stage venture capital ecosystem.

For Shenzhen's municipal planners, the challenge lies in balancing rapid, market-driven hardware iteration with long-term foundational scientific research. While the ecosystem excels at commercializing and scaling existing technologies, policies should pivot toward supporting basic research and protecting intellectual property in deep tech sectors. This will ensure that Shenzhen remains a global innovation leader as global supply chains become increasingly fragmented and geopolitically sensitive.

For Tokyo's administration, the key to unlocking startup growth is dismantling the institutional barriers between established conglomerates and early-stage ventures [26]. Policymakers should design stronger tax incentives for corporate venture capital, streamline regulatory approvals for new business models, and reform corporate governance codes to mandate or reward open innovation partnerships. Furthermore, expanding initiatives that encourage spin-offs from universities and research labs will help Tokyo convert its world-class scientific capabilities into high-growth commercial ventures.

5.3 Limitations and Directions for Future Research

While this study offers valuable comparative insights, several limitations must be acknowledged. First, the cross-sectional nature of our survey data limits our ability to establish definitive causal relationships over long horizons. Future research should strive to employ longitudinal datasets to track the evolution of startups and the long-term impacts of policy shifts over time. Second, while our sample covered a broad range of high-technology sectors, distinct industries like biotech, hardware, and software may respond differently to specific policy instruments. Future studies could apply sector-specific structural models to unpack these internal variations. Finally, expanding this comparative framework to include other emerging technology hubs in Asia, such as Seoul, Bangalore, or Jakarta, would enrich our understanding of the diverse institutional dynamics shaping the future of global entrepreneurship.

References

1. Albanese, P.; Rauhala, A. A decade of disconnection: Child care policies in changing economic times in the Canadian context. Int. J. Child Youth Fam. Stud. 2015, 6, 252–274.

2. Peters, B.G. Managing horizontal government: The politics of co-ordination. Public Adm. 1998, 76, 295–311.

3. Carr, J.B. What have we learned about council-manager government? Public Adm. Rev. 2015, 75, 673–689.

4. Esposti, R.; Bussoletti, S. Impact of Objective 1 Funds on Regional Growth Convergence in the European Union: A Panel-data Approach. Reg. Stud. 2008, 42, 159–173.

5. Reynolds, C.W. Flocks, herds, and schools: A distributed behavioral model. In Proceedings of the 14th Annual Conference on Computer Graphics and Interactive Technique, Anaheim, CA, USA, 27–31 July 1987; Volume 21, pp. 25–34.

6. Ajzen, I. The theory of planned behavior. Organ. Behav. Hum. Decis. Process. 1991, 50, 179–211.

7. Moe, T. M. (1990). The politics of bureaucratic structure. In J. E. Chubb, & P. E. Peterson (Eds.), Can the government govern? (pp.

267–329). Brookings Institution Press.

8. Kim, S.Y.; Swann, W.L.; Weible, C.M.; Bolognesi, T.; Krause, R.M.; Park, A.Y.S.; Tang, T.; Maletsky, K.; Feiock, R.C. Updating the Institutional Collective Action Framework. Policy Stud. J. 2022, 50, 9–34.

9. Kim, J.; Fram, M.S. Profiles of choice: Parents' patterns of priority in child care decision-making. Early Child. Res. Q. 2009, 24, 77–91.

10. Albanese, G.; de Blasio, G.; Locatelli, A. Does EU regional policy promote local TFP growth? Evidence from the Italian Mezzogiorno. Pap. Reg. Sci. 2020, 100, 327–348.

11. Védrine, L.; Le Gallo, J. Does EU Cohesion Policy Affect Territorial Inequalities and Regional Development? HAL: Tokyo, Japan, 2021.

12. Pennebaker, J. W., Boyd, R. L., Jordan, K., & Blackburn, K. (2015). The development and psychometric properties of LIWC2015. University of Texas at Austin.

13. Fidrmuc, J.; Hulényi, M.; Zajkowska, O. The Elusive Quest for the Holy Grail of an Impact of EU Funds on Regional Growth; CESifo Working Paper: Munich, Germany, 2019.

14. Stojanovski, J., & Mofardin, D. (2025). Diamond open access landscape in Croatia: DIAMAS survey results. Publications, 13(1), 13.

15. The People's Government of Hunan Province. Hunan Province is Set to Solve the Challenges in Childcare Services. 2024. Available online: https://www.hunan.gov.cn/hnszf/hnyw/zwdt/202405/t20240502_33291727.html (accessed on 6 August 2024).

16. Lefebvre, P.; Merrigan, P. Childcare policy and the labor supply of mothers with young children: A natural experiment from Canada. J. Labor Econ. 2008, 26, 519–548.

17. Di Cataldo, M.; Monastiriotis, V. Regional needs, regional targeting and regional growth: An assessment of EU Cohesion Policy in UK regions. Reg. Stud. 2018, 54, 35–47.

18. Piętak, Ł. Structural Funds and Convergence in Poland. Hacienda Publica Esp.-Rev. Public Econ. 2021, 236, 3–37.

19. Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. Communication Monographs, 59(4), 329–349.

20. Nagel, K.; Schreckenberg, M. A cellular automaton model for freeway traffic. J. Phys. I 1992, 2, 2221–2229.

21. Kang, K.M.; Lee, S.Y. A qualitative inquiry into the experiences and thoughts of full-time housewives sending their infants under 36 months to childcare. Child Care Support Res. 2016, 11, 137–172.

22. Wu, C.-M.; Guan, S.-Z.; Yang, C.-C.; Lin, K.-T.; Kuang, M.-Y. Scalable and Interference-Aware Spectrum Access in IoT Networks via Decentralized Proximal Policy Optimization. Comput. Netw. 2026, 275, 111885.

23. Kim, K.M. A study on the promotional activities and information provision by support centers for childcare: Focused on the Years 2019–2023. J. Converg. Cult. Technol. 2024, 10, 357–365.

24. Browne, M. J., & Hoyt, R. E. (2000). The demand for flood insurance: Empirical evidence. Journal of Risk and Insurance, 67(2), 291–306.

25. Pontarollo, N. Does Cohesion Policy affect regional growth? New evidence from a semi-parametric approach. In EU Cohesion Policy: Reassessing Performance and Direction; Routledge: Oxfordshire, UK, 2016; pp. 70–83.

26. Christensen, T., & Lægreid, P. (2007). The whole-of-government approach to public sector reform. Public Administration Review, 67(6), 1059–1066.