GOING DIGITAL:

TÜRKİYE'S STARTUP ECOSYSTEM AND AVENUES FOR EU-TÜRKİYE COOPERATION

DEİK
DIŞ EKONOMİK İLİŞKİLER KURULU
FOREIGN ECONOMIC RELATIONS BOARD

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Centre for Economics and Foreign Policy Studies

IAI Istituto Affari Internazionali


DEiK

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About DEİK

Foreign Economic Relations Board (DEİK) is a voluntary-based business organization, aiming at strengthening the Turkish private sector since 1985.

With a key focus on "Business Diplomacy", DEİK has been working on developing foreign economic relations of Türkiye's private sector, seeking both foreign and domestic investment opportunities and enhancing bilateral trade between Türkiye and its potential partners.

With its 149 Business Councils worldwide, DEİK mainly acts to improve Türkiye's trade and investment relations in a strategic manner with direct contact in these 141 countries.

About EDAM

The Centre for Economics and Foreign Policy Studies (EDAM) is an Istanbul based independent think-tank with a research focus on Foreign and Security Policy, Cyber Governance & Digital Democracy, Economics & Energy. EDAM aims to contribute to the policy making process within and outside Türkiye by producing and disseminating research on the policy areas that are shaping Türkiye's position within the emerging global order. EDAM continues to be ranked amongst the best think tanks in Türkiye in global think tank rankings. In the latest GoTo think tanks ranking by the University of Pennsylvania EDAM has been the only Turkish think tank that was listed in 8 different categories. EDAM was ranked in the top 20 list of think tanks in the MENA region, best defense and national security think tanks globally and best think tank conference globally.

About IAI

The Istituto Affari Internazionali (IAI) is a private, independent non-profit think tank, founded in 1965 on the initiative of Altiero Spinelli. IAI seeks to promote awareness of international politics and to contribute to the advancement of European integration and multilateral cooperation. Its focus embraces topics of strategic relevance such as European integration, security and defense, international economics and global governance, energy, climate and Italian foreign policy; as well as the dynamics of cooperation and conflict in key geographical regions such as the Mediterranean and Middle East, Asia, Eurasia, Africa and the Americas.

ABOUT THE AUTHORS

Azem Yıldırım graduated from the Dual Degree Program between Sciences Po Paris and Columbia University in 2021. He received a BA in Political Science with a regional specialization on MENA from the former, and another in Economics and Political Science from the latter. He joined EDAM as a researcher in August 2021. In addition to his native Turkish, Azem is fluent in English and has a working knowledge of French. His main areas of interest include political economy and development.

Ceylan İnan holds a Master of Science in International Political Economy from the London School of Economics and a Bachelor of Arts from Sciences Po Paris, with a regional focus on the Middle East and the Mediterranean. Her research interests cover international political economy, digital economy, and political psychology and communication, with a particular focus on Türkiye's transformation, the reform of globalization to better benefit developing countries, economic sanctions policy, international trade and economic diplomacy, climate finance, and just transition. Ceylan currently advises government and private sector actors in Sub-Saharan Africa on financial market development, digital transformation, sustainability, and export diversification. She also actively engages in exchanges with international policymakers as a member of Chatham House Common Futures Conversations, developing and pitching policy solutions to decision-makers in Europe and Africa. Ceylan speaks Turkish, English, and French fluently and has professional proficiency in Arabic and Italian.

Nicola Bilotta is a Senior Fellow at the Istituto Affari Internazionali (IAI) where he works on digital and international political economy. Previously, he worked as a senior research analyst at The Banker Research Team (Financial Times), with which he still collaborates. He teaches the course "Digital Diplomacy: New Technologies and New Media in IR" at the LUMSA University. He coordinated the Task Force "Infrastructure Investment and Financing" of the Think20 under the Italian G20 Presidency in 2021. He co-edited the volumes: "The (Near) Future of CBDCs. Risks and opportunities for the global economy" (Peter Lang, 2021) and "The Rise of Tech Giants. A game changer in global finance and politics" (Peter Lang, 2019)

Dilan Tulan is currently pursuing her master's studies at the University of Chicago under the supervision of the UChicago Decision Making Lab. Her research focuses on human-technology interaction and behaviorally informed technology policies. She joined the Centre for Economics and Foreign Policy Studies (EDAM) in August 2020. Dilan holds a high honor graduate degree from the Psychology Department of Koç University with a double major in Business Administration. Prior to joining EDAM, Dilan worked as an intern in think tanks, consultancy houses, startups, and the Turkish Ministry of Foreign Affairs, in addition to working as a research assistant at Koç University under different labs. Dilan has an interest in the areas of behavioral and decision sciences, technology policies focusing on artificial intelligence, political psychology, cognitive psychology, and neuroeconomics.

TABLE OF CONTENTS

Nail OLPAK
President of DEİK

2021 was a year in which we achieved historic successes in the field of start-up ecosystems and technology funding in Türkiye. The total number of transactions, which was 155 in 2020, when the interest in the start-up ecosystem increased as a result of the effect of the pandemic that triggered the digital transformation, increased to 251 in 2021. On the other hand, the total funding value increased 10 times compared to the previous year, reaching a peak value of $1.55 billion. This made our country leave many European countries behind and become one of the top 10 countries in Europe and fetch 2nd place in the Middle East and North Africa region in technology-based start-up funding.

The average timespan of reaching a market value from zero to $1 billion in the world decreased to 7 years and we are in a fierce competition environment where start-ups that reach high valuations lose ground and shrink much faster. In this process, companies that can achieve the necessary pace of development survive in competition through significant gains in the following years, while those that did not achieve this transformation cannot escape from the destructive effects of their competitors. It requires certain strategies for our imagination to be blended with knowledge and technology and to reach billions of dollars and for our unicorn companies to keep their acceleration and to rise to the decacorn league.

As DEİK, we have adapted digital technology and artificial intelligence, both of which we have been talking about at any opportunity since the outbreak of the pandemic, in a more widespread and quicker way than we thought we would. Also, it seems that we are talking about a new Digital Economy, not just a digitalisation in which we are involved in every aspect of our lives.

In this direction, we aim to be a platform in the field of technology and digitalisation through our new Business Council that we established to adapt to digitalisation. For this reason, we established our 148th Business Council named "Digital Technologies". Under this Business Council, we aim to execute national and international activities that will grow the DEİK eco-system by following the developments in the field of digital technology, considering our rapidly digitalising world and economies. Our main priorities include making Türkiye a centre of digital technologies, establishing digital corridors with other countries, promoting the digital transformation of companies, and ensuring access to international markets and finance for venture capital efforts.

As the EU Working Group, we give a lot of importance to digitalization for Türkiye's welfare and it is a great pleasure for me to present DEİK's "Going Digital: Türkiye's Startup Ecosystem and Avenues for EU-Türkiye Cooperation" report. I hope that this report will be a guide to the Turkish private sector.

I would like to take this opportunity to thank Chair of the EU Working Group and Coordinating Chairperson of DEİK European Business Councils Berna Gözbaşı and Sinan Ülgen, the Chairman of the Center for Economics and Foreign Policy Studies (EDAM) for their immense contribution in the making of this report.

Berna GÖZBAŞI
Türkiye-Europe Business Councils
Coordinating Chairperson

Türkiye's transformation in industry, services, trade and as a result, in real economy since the beginning of 2000s, paved the way forward to a more sustainable field for a healthy startup ecosystem. Strong character of the skilled population and entrepreneurship of Türkiye have played a crucial role for the ecosystem.

Thanks to its large-scale domestic market and access to more than 40 periphery countries within less than a 3 hours flight, Turkish start-ups are finding more than the necessary stimulus for investment. As a result, gaming, artificial intelligence, fin-tech, health-tech and grocery deliveries attracted considerable amount of investment and these investments proved the soundness of Turkish start-ups. While reading this report, you will have a chance to visualize the factors lying behind these success stories.

One of the results of Türkiye's persistent willingness to be a part of global economy was the application for the accession of European Union. Being a part of General Agreement on Tariffs and Trade and later on World Trade Organisation and establishment of Customs Union between Türkiye and EU, contributed to the economic climate of Türkiye. Nevertheless, the world is changing, as it has been for thousands of years. In a developing and transforming world, taking into account current issues pandemic, supply-chain problems, and inflation, we have no other chance but realize the "upgrade" of customs union, along with green and digital economy, which is beneficial for both parties.

I hope to see a fruitful discussion with the help of this report and looking forward to have/hear new success stories in Türkiye.

Sinan ÜLGEN
Director of EDAM

This report is focused on Türkiye's burgeoning digital entrepreneurship ecosystem. Indeed over the past few years, Türkiye's startup environment has been able to nurture a growing number of successful ventures. This success has put Türkiye firmly in the list of European countries that stand out as a fast growing and resourceful environment for launching commercially successful new ideas. The aim of this report is to firstly examine the conditions that have created this particular universe.

A related aim was to understand the key success factor and analyze the sustainability of these conditions. In that sense a key finding that the combination of a young and talented pool of entrepreneurs with an increasingly more sophisticated network of institutional enablers are indeed creating the conditions for a sustainable edge for Türkiye's startup ecosystem.

A third major aim however was to explore how a more robust Türkiye-EU cooperation can take shape with a view to create mutually beneficial outcomes for Turkish and EU stakeholders. The report therefore concludes with a set of unique and detailed recommendations which hopefully can contribute to future efforts to deepen and diversify the Türkiye-EU relationship especially with a view to the slated modernization of the Customs Union.

GOING DIGITAL: TÜRKİYE'S STARTUP ECOSYSTEM AND AVENUES FOR EU-TÜRKİYE COOPERATION

AZEM YILDIRIM | CEYLAN İNAN | DİLAN TULAN

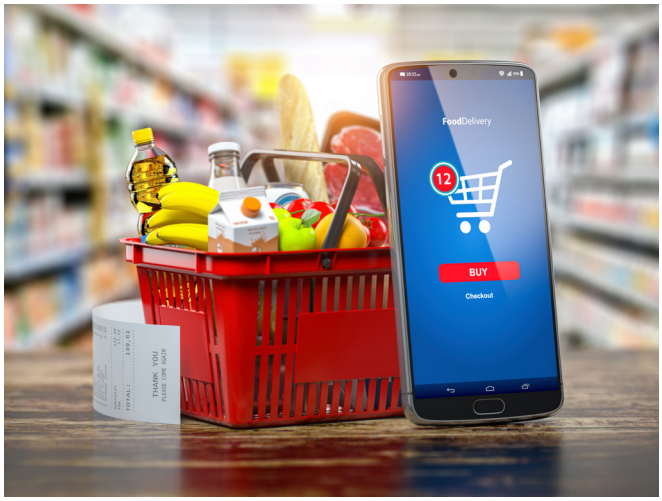
SUMMARY

Two decades after its inception, Türkiye's startup ecosystem has taken off, taking solid steps toward becoming a key regional hub for entrepreneurship and innovation. The startup scene began booming in the early 2010s, catalyzed by a vibrant community of entrepreneurs that stand out for their flexibility and agility in adapting to volatile market conditions. Over the last decade, the innovation ecosystem expanded exponentially with the number of key support elements - acceleration, incubation, co-working areas and technoparks, angel networks and local venture capital funds established and the number of VC-backed firms increasing rapidly. Startup Genome's 2021 Report has ranked Istanbul 15th amongst the Top 100 Emerging Ecosystems, awarding high marks for access to top tier talent and market reach[1] .

Türkiye is becoming a rising tech talent hub and top talents are increasingly motivated to put their skills to use in startups rather than conglomerates. Every year, around 98,000 students with STEM degrees graduate from universities, 35% of which are female[2]. The tech community is characterized by remarkable self-learning skills, providing the 5th source of Udemy traffic[3]. According to Github, Türkiye is among the top 10 countries that have the strongest growth in open-source contributions[4] , with a greater number of Turkish users active on the platform than the digital leaders of Europe such as Ukraine and Romania. Major global tech companies are taking notice of these developments, as illustrated by the decision of Delivery Hero, the world's leading local delivery platform which acquired YemekSepeti.com in 2015 with a valuation of $589M, to open its next tech hub in Türkiye after Berlin and Singapore[5].

Türkiye provides an excellent testbed for new technologies as Turkish consumers and businesses have embraced the various benefits of digital tools and enhancements in digital literacy have brought a boom in demand for digital products from both segments. A youthful population structure and a culture that sets great store by adaptation have ensured a high pace of tech adoption, reflected in mobile penetration rates and high usage frequency of e-commerce and fintech platforms. The accelerationist impact of COVID-19 in driving a boom in e-commerce, for instance, has outpaced Türkiye's peer ecosystems, according to a study by Netcomm Suisse and UNCTAD[6].

These factors have resulted in rapid development and growth in a range of verticals, cementing Türkiye's position as a leader in the global market in buoyant areas such as the gaming space, and set in motion the rise of billion-dollar companies since early 2020. Six unicorns and two decacorns emerged from the market over two years, and the ecosystem has become attuned to mega-round investments in high-flying scaleups with truly global ambitions such as Getir and Dream Games. Türkiye's first decacorn, Trendyol has become the most valuable company in the country, and in a landmark occasion for



[1] *Startup Genome. 'Global Startup Ecosystem Report GSER 2021',*
[2] *YÖK. 'Yükseköğretim Bilgi Yönetim Sistemi', https://istatistik.yok.gov.tr/.*
[3] *Similarweb. 'Udemy.Com Traffic Analytics & Market Share', https://www.similarweb.com/website/udemy.com/.*
[4] *Octoverse - Github. 'The State of the Octoverse', https://octoverse.github.com/.*
[5] *Papuççiyan, Arden. 'Yemeksepeti, ilk yılında 1000 kişiyi istihdam edeceği teknoloji merkezi açıyor'. Webrazzi, 2021.*
[6] *'COVID-19 and E-Commerce'. UNCTAD, Netcomm suisse, 2020. https://unctad.org/system/files/official-document/dtlstictinf2020d1_en.pdf.*

the ecosystem, Hepsiburada.com, an online shopping platform, became the first Turkish firm to go public on Nasdaq in 2021.

The growth strategy of most Turkish startups has been focused inwards until 2018, with internationalization taking a back seat - attributed to a large domestic market that allows companies to scale without a global posture. More recently, the series of successful expansion stories have inspired entrepreneurs to eye opportunities and plan the launch of their products and services in international markets. The ecosystem has also seen an impressive jump in investment activity compared with its neighborhood, with records broken in both the value of investments and the number and diversity of investors in every quarter since the first half of 2020. Turkish tech companies have raised more capital in 2021 than in the previous 4 years combined, although only 4% of the total investment went towards women entrepreneurs. Still, access to finance has remained among the top three difficulties in the breakdown of Türkiye's WEP Global Competitiveness Index ranking.

The country's GERD/GDP ratio positions it as a "catching up economy", with an R&D spending of around 1% of GDP[7] , well behind the OECD and the EU average lagging particularly in private sector contributions[8]. This picture has had implications for the country's performance in innovation outputs, placing Türkiye at #41st among the 131 economies featured in the Global Innovation Index 2021 of the World Intellectual Property Organization[9] , up 10 spots from the year before.

Although the inflow of venture capital (VC) is expanding, the demand continues to exceed supply notably in Series B funding and beyond, which ecosystem players agree is the key impediment holding back the flourishing of a greater number of success stories. There is significant room for growth in Türkiye's performance in VC funding, the materialization of which is complicated by the country's non-investment grade and a trust and knowledge deficit among investors. Overall, Türkiye is highly a promising market for business development on an international scale, invigorated by the agility of entrepreneurs in honing their endeavors to changing market conditions, if backed with the right ingredients for success. Challenges also exist for the ecosystem. Precautions have to be taken against potential interrelated issues such as diminishing investor interest, lack of late-stage VC and fluctuations in Türkiye's country risk profile. An opportunity in this regard is further integration with the European startup ecosystem, leveraging the advantages found in the Turkish and European contexts. To this end, we center our policy recommendations on Türkiye-EU digital cooperation.

SNAPSHOT OF THE ECOSYSTEM

A. STARTUPS

Türkiye's large domestic economy and strong technical talent base have made it a breeding ground for ambitious tech startups addressing large global or regional markets. The ecosystem is flourishing with more than 500 new startups founded each year, although women made up around 16-18% of founders over the last five years. Since 2020, the valuations of the country's tech companies have begun vaulting above the billion-dollar mark despite challenges from the coronavirus pandemic and

[7] *TÜİK. 'Araştırma-Geliştirme Faaliyetleri Araştırması, 2020', 2020. https://data.tuik.gov.tr/Bulten/Index?p=Arastirma-Gelistirme-Faaliyetleri-Arastirmasi-2020-37439.*
[8] *'EU Support to IPA Türkiye Future Fund (TFF)'. European Commission, 2019. https://ec.europa.eu/neighbourhood-enlargement/system/files/2019-12/c_2019_8726_ad_tff.pdf.*
[9] *'Global Innovation Index 2021 - Türkiye'. WIPO, 2021. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/tr.pdf.*

currency volatility. The key actors of this growth have been the gaming, delivery and logistics, fintech and artificial intelligence segments, prompting the prevalence of these verticals as the most preferred ones among founders seeking to take advantage of the dynamism brought on by successful exits to establish prosperous ventures. Peak Games represented the largest VC-backed exit in Europe in 2020, while also becoming Türkiye's first official unicorn, 10 years after its establishment. Once Peak broke the ice, several other gaming companies followed suit and Dream Games, established in 2019, became the fastest-to-unicorn startup in under two years.

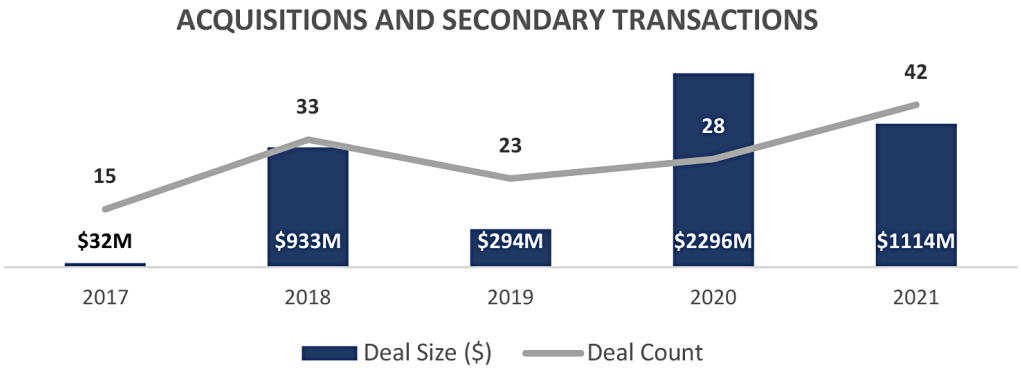
In 2021, a $1.5 billion funding round made the e-commerce giant Trendyol Türkiye's first decacorn and one of the highest-valued private tech companies in Europe, months after majority backer Alibaba invested $350 million in the company at a $9.4 billion valuation. With this valuation, Trendyol has surpassed legacy market leaders to become the most valuable company in Türkiye. The same year saw another landmark occasion for the ecosystem, when Hepsiburada.com, an online shopping platform, became the first Turkish firm to go public on Nasdaq with a valuation of $3.9 billion after more than doubling revenue during the pandemic lockdowns. Istanbul-based Getir, a technology company operating in the retail and logistics sectors, became the pioneer of ultrafast grocery delivery globally. The company started its overseas operations when it entered the UK market in January 2021 and quickly expanded into Germany, France, Spain, Italy, Netherlands, Portugal and the USA. Getir currently serves more than 40 million users in 129 cities in 9 countries across three continents through its 1,100+ warehouses. In 2022, Getir reached a valuation of 11.8 billion dollars with an investment of 768 million dollars in its last investment round[10]. With the latest valuation, the company became Türkiye's second decacorn to date, #4 in the list of unicorn companies in Europe and 36th among 1,052 unicorn companies in the world. The investment will help the firm to expand its service area in the countries where it operates.[11]

In 2022, Insider, a Türkiye-born and female-led software company that has helped more than 800 global brands in 25 countries accelerate their digital growth with AI-powered technology, became Türkiye's first unicorn in the vertical after securing 121M USD in Series D funding[12].

[10] *Ulukan, G. (2022, March 17). 768 milyon dolar yatırım alan Getir, 11.8 milyar dolar değerleme ile decacorn oldu. Webrazzi. https://webrazzi.com/2022/03/17/768-milyon-dolar-yatirim-alan-getir-118-milyar-dolar-degerleme-ile-decacorn-oldu/*
[11] *Getir - Headquarter Locations, Competitors, Financials, Employees. (2022). CB Insights. https://www.cbinsights.com/company/getir*
[12] *İçözü, T. (2022, March 12). Unicorn olan Insider'ın kurucularından Hande Çilingir, Arda Kutsal'ın konuğu oldu. Webrazzi. https://webrazzi.com/2022/03/08/unicorn-olan-insider-in-kurucularindan-hande-cilingir-arda-kutsal-in-konugu*

Among the current top ten startups in Türkiye, while five of them are acquisitions, three of them are in the early VC stage. Most of the startup exits in Türkiye have occurred via acquisitions.

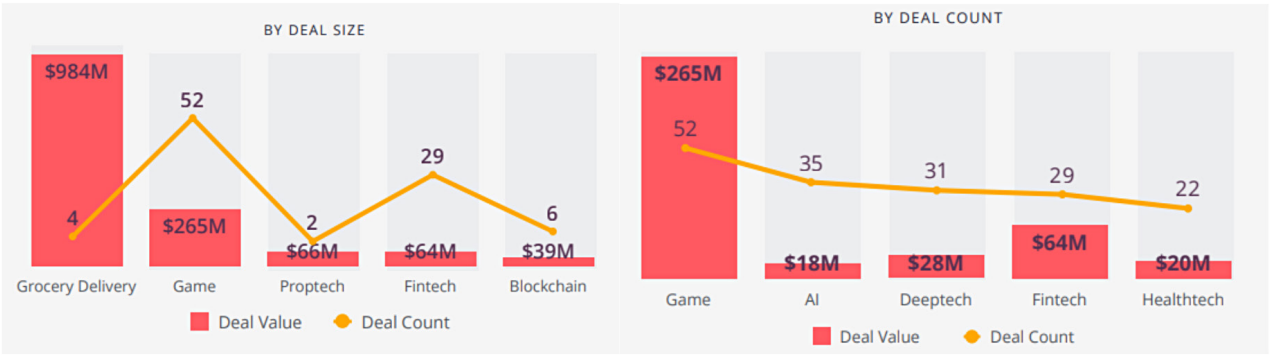
During the early 2010s, most of the exits were driven by bootstrapped startups, however, this trend has shifted since 2015, with VC-backed startup exits taking the lead role.



Sectoral Distribution

Examining the sectoral distribution, startups in grocery delivery, gaming, SaaS and AI lead the way in terms of funds raised in the market.

Top 5 Funded Verticals in 2021[14]



Focus: Gaming

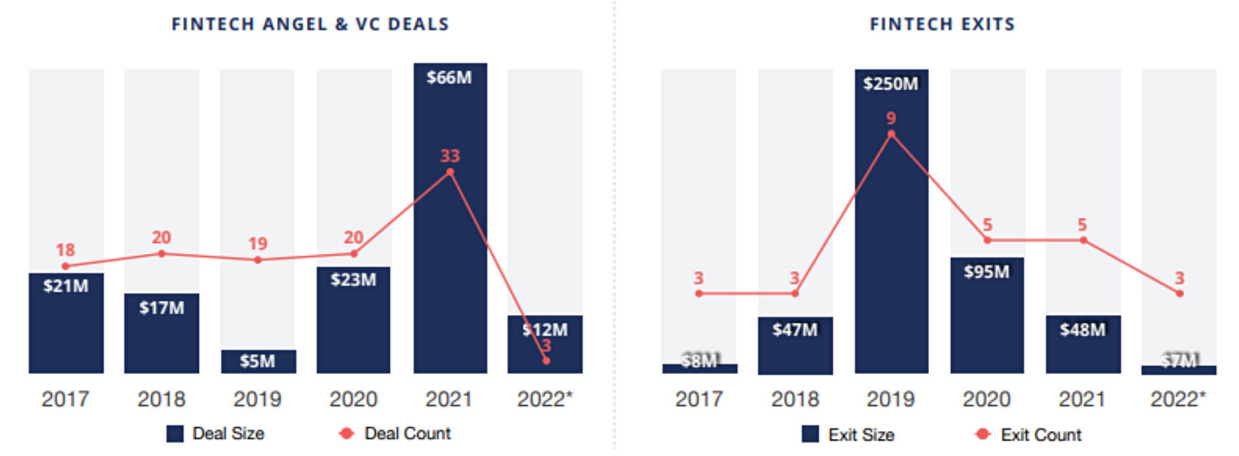
Türkiye is rapidly becoming a global gaming innovation hub, with the already prospering industry thriving further during the pandemic as a result of inflated consumption activity and the stickiness of Turkish gaming products among consumers. Gaming has topped the list among the most preferred areas for new entrepreneurs since 2018, and there are currently 509 active game startups in the ecosystem. With 52 deals totaling $265M in capital raised, the gaming vertical took center stage in 2021, following the establishment of gaming-focused funds. In other words, every fifth dollar of venture funding in the country was invested into gaming, which furthermore, stands out from other verticals with a number of successful ventures scattered across the country geographically, rather than being clustered in Istanbul. Whereas in 2017 average seed-stage valuations were $900K, the demonstrated exit and cash generation potential raised the profile of the sector. In 2019 average valuations reached $2.7M and in 2021 $3.6M. Players have taken notice of this development, with PE funds making investments into early-stage gaming startups and technoparks and municipalities developing new programs to help gaming studios discover new talent.

[13] *Year in Review 2021, Startups.watch (2022)*
[14] *Year in Review 2021, Startups.watch (2022)*

Focus: Fintech

Source: startups.watch[15]

Türkiye is one of the leading countries in terms of banking, with 70.3 million active digital banking customers. As of December 2021, there are 555 active fintech startups and 56 accredited payment and e-money companies in the market, and on average, 9% of all new Turkish startups are fintech startups each year[16]. In the biggest fintech round with the participation of foreign investors marked to date, Colendi raised $ 30 million in a Series A round led by RePie Asset Management. With the investment, the company moved its headquarters to the U.K. as a strategy to become an international company. Recent regulations regarding equity-based crowdfunding, open banking, banking as a service, digital banking and digital onboarding are creating new opportunities for emerging fintech companies to follow suit. The government has set a target to transform Türkiye into a regional and global fintech center, and in line with this objective, the Istanbul Finance and Technology Base tasked with supporting startups and scaleups is in the making to meet the needs of financial technology entrepreneurship. The National Fintech Strategy Document is expected to be published in the first months of 2022, laying out an action plan for further growth in this area.



Focus: Deep-tech

Source: startups.watch[17]

Deep-tech first began to emerge as an up-and-coming vertical in 2015. Since then, the establishment of two deep-tech-focused VC funds, the launch of deep-tech specific accelerator programs and incubation centers, and the emergence of successful deep-tech startups have made this one of the hottest verticals to watch in Türkiye.

[15] *Game Snapshot for Türkiye, Startups.watch (2022) https://startups-watch-production.s3-eu-central-1.amazonaws.com/uploads/documents/2588/Game_Snapshot_v0.8.pdf?X-Amz-Expires=3600&X-Amz-Date=20220302T044923Z&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIJVM3YYYR2ZQJJSQ/20220302/eu-central-1/s3/aws4_request&X-Amz-SignedHeaders=host&X-Amz-Signature=e6b6d7a1633311e07db2085ef40ec6ca54eccfe7bd1f8e89f0ccb0576254507f*

[16] *The State of Fintech Ecosystem in Türkiye 2021, startups.watch - Presidency of the Republic of Türkiye Finance Office*

Investment Stage

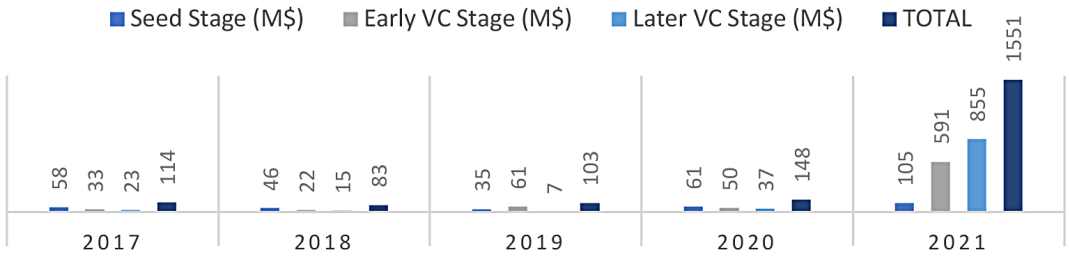
Year-on-year growth has been remarkable across stages over the last few years, both in terms of the number and size of deals. Prominent global investors are taking note of the ecosystem, reflected in the increase of early-stage investments where VCs looking to penetrate the opportunities in the market appear as participants. There is more than $ 500 million in dry powder still waiting to be deployed over the next couple of years, presenting a great opportunity for early-stage companies.

Investments are distributed unevenly on the supply side across the life cycle of a company, with seed and early-stage investments accounting for the vast majority of investments. Türkiye, much like the rest of Europe, suffers from a clear deficit in follow-on and later-stage venture capital, which traditionally comes from overseas investors. It is therefore crucial for Turkish VCs to leverage and share their fundraising know-how and make introductions to international VCs as follow-on investors. Trendyol raised the highest investment ever recorded at the maturity stage through two deals worth $350M and $1.5B respectively in 2021.

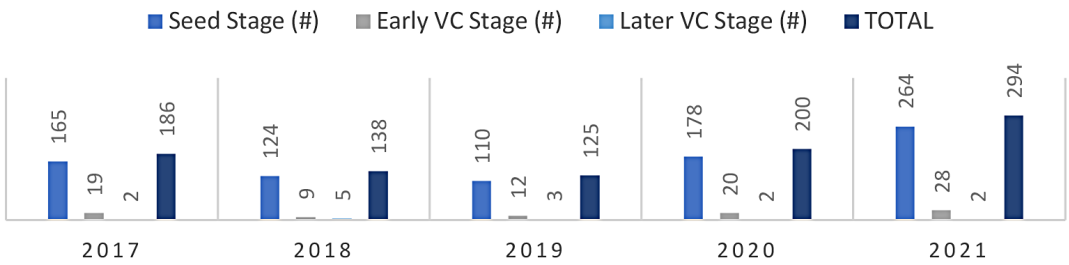
Buoyant activity in seed and early stages is indicative of the vibrancy of the ecosystem, with many new players, both startups and investors, entering the market each year where furthermore small amounts in $-terms can go a long way. In 2021, of the 294 deals, 105 of them raised $100k or less, and more than 75% of the investments were under $1M[18] . 13 deals were surpassing $10M in capital raised, but 50% of the recipients already had international operations or earned revenues internationally, 40% raised money to start their international operations, and 10% raised money to expand their Turkish operations.

Individual success stories have helped improve the lack of growth funding and support the maturation of the ecosystem, but structural factors sustain reluctance in further investments by foreign capital. Türkiye's non-investment grade prevents overseas institutional investors from participating in the funding rounds and makes investments risky for private venture capital that already lacks a mandate to eye opportunities in the market. Companies may well be marking an impressive growth, but the impact of currency fluctuation hurts the charts on paper when ambitious founders pitch to foreign investors. At the same time, it has complicated the prospects for return on investment given that most startups preferred to follow growth strategies oriented towards scaling in the domestic market until recently. As a result, fast-growing scaleups have begun to relocate their legal structures to the United States and European capitals in order to enter the radar of a wider pool of VC firms that can back their endeavors.

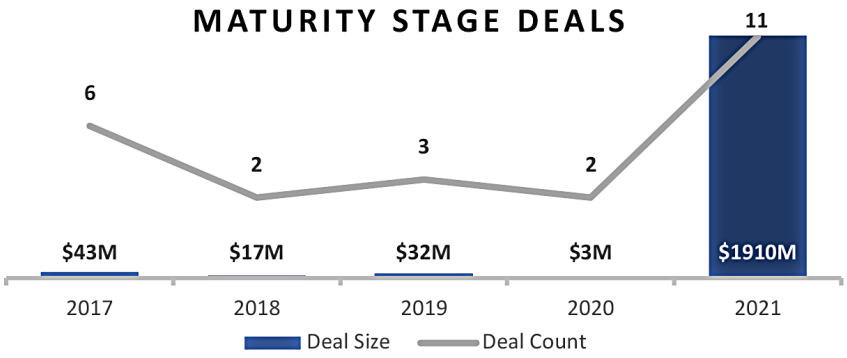
TÜRKİYE YEARLY DEAL ACTIVITY BY STAGES ($)



TÜRKİYE YEARLY DEAL ACTIVITY BY STAGES (#)



[17] *Fintech Snapshot for Türkiye, startups.watch (2022)*
[18] *Year in Review 2021, startups.watch (2022)*



Source: startups.watch [19]

B. INVESTORS

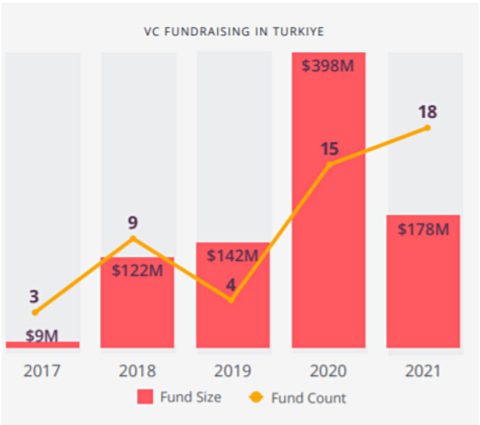
With the spotlight on Turkish tech's success stories and talented workforce, the ecosystem is attracting an influx of capital from an increasingly more sophisticated community of investors internationally. A significant amount of funds is being channeled into the market from a variety of actors, ranging from Development Financial Institutions (DFI) to Venture Capital firms (VC) from all around the world.

Angel Investors and Angel Networks

The first angel investor network entered the market in 2007, and currently, there are 34 angel networks with active investments in Türkiye, around half of which are based in the country. As of 2021, there were 13 business angel networks and 674 accredited business angels based in Türkiye.[20] Despite the downfall from the pandemic, angel investors and VCs made up 82% of the total financial investor deals and 44% of the overall M&A deals in the country in 2020[21] .

Venture Capital Funds

Since 2012, when the first local VC fund was established, the investment appetite and the total number of local VC funds have drastically increased, fueled by the growth of the ecosystem and a series of successful exits. The dissemination of the venture capital investment fund (GSYF) format sustained the proliferation of new funds by a variety of new players that arrived on the scene. Banks, for instance, have shown a strong interest in establishing locally based venture funds that incorporate mentorship programs and accelerators at the service of entrepreneurs. The entrepreneurs that made Türkiye's most successful exits possible increasingly participate as investors and mentors in new or existing funds. In previous years, technoparks had participated in venture funds as a Limited Partner, but Bilişim Vadisi GSYF starting their own fund attracted a lot of attention to their role as investors. 18 new VC funds kicked off in 2021 alone, injecting $178M[22] into the market. All of these were GSYF except for one, which was a venture capital investment partnership (GSYO). Among these was the first fund to be started by a sports club and the first to be founded by a fintech; both of which constitute landmark occasions for the ecosystem. There has also been an increase in thematic funds focusing on specific verticals, namely in the gaming space, followed by fintech and deep-tech. The buoyancy of the last few years in the ecosystem has also helped Türkiye's seasoned VCs successfully raise their second funds, with local VCs raising a total of $850M in funds between 2017 and 2021. Since 2019, VCs have raised more than the total amount raised between 2011 and 2019. As a result, the dry powder available for early-stage investment has soared to $680M.



Source: startups.watch[22]

[20] *"Turkish Startup Ecosystem Map v7.1." startups.watch, 2021.*
[21] *Deloitte Annual Turkish M&A Review, 2020*
[22] *Only fund amounts reserved for Türkiye are counted. Year in Review 2021, startups.watch (2022)*

CVC's participation in deals is also on an upward trend. Of the 294 deals made in 2021, a corporation or a CVC participated in 87. There is no clear distinction between VC and PE investments in Türkiye from a legal standpoint. While the PE activity in the market remains limited, it made up about 12% of the total financial investor deals in 2020 by number. In line with global developments, Private Equity funds show a growing interest in early-stage investments. One of Türkiye's leading PE funds, Actera Group, made 5 early-stage investments in 2021, primarily in gaming, giving a boost to the size of investments and the valuations in the segment. The absence of legal labelling of VCs, and the interest of traditional PE funds in early-stage investments makes it challenging to provide a definitive breakdown of fund types and numbers. However, based on startups.watch's unofficial breakdown, there were 62 VCs (including CVCs) and 14 PE funds in Türkiye as of October 2021.

Development Finance Institutions (DFIs)

DFIs, notably the EBRD, are among the leading institutional investors in Türkiye's startup ecosystem, providing funds to innovative companies and venture capital funds through direct and indirect investments, often through frameworks that specify impact or policy goals per investment.

Over the last decade, DFIs have made considerable investments in Limited Partnerships with venture funds that make equity and equity-related investments in lower and mid-market companies and SMEs operating in Türkiye. The EBRD has invested in nine Türkiye-focused equity and venture capital funds enabling them to invest €1.1 billion in local firms. Several regional funds where the EBRD is a limited partner have invested almost €800 million in equity of Turkish businesses. The International Finance Corporation (IFC) has invested more than $20 million in early-stage VC funds focusing on seed-stage technology companies, through the IFC Startup Catalyst Program in 2021.

Although much less prevalent, the EBRD has also made direct equity investments as a minority shareholder in about 30 Turkish companies over the last decade. In an important milestone for the fintech industry, EBRD became an equity investor alongside Goldman Sachs in DgPays, a leading digital payment service provider, with a valuation of over $300M in March 2021 . In 2019, the Bank took a minority stake in Turkish modest fashion e-tailer Modanisa for an undisclosed sum alongside Goldman Sachs and Wamda Capital, raising the valuation of the company from 15 to 435 million $.

DFIs have also been a leading force in developing Türkiye's VC through the reinforcement of public sector initiatives. The European Investment Fund (EIF) has supported The Istanbul Venture Capital Initiative, Türkiye's first-ever dedicated fund of funds and co-investment program established in 2007, which has been fundamental to the launch of the local venture capital sector. Building on the successful implementation of the IVCI, a second initiative, The Turkish Growth and Innovation Fund (TGIF) was set up in 2016, to invest in fast-growing innovative companies. EIF's role was fundamental in driving this process, with its expertise and commitment of EUR 60 million for a total fund size of EUR 200 million .

Public Funds

The Small and Medium Enterprises Development Organization of Türkiye (KOSGEB), The Scientific and Technological Research Council of Türkiye (TUBITAK), Regional Development Agencies and the Ministry of Treasury and Finance (MTF) are the top state organizations continuously supporting startups and investors in the ecosystem.

[23] *"Investors in Türkiye" startups.watch, 2021.*
[24] *https://www.ebrd.com/news/2021/ebrd-to-invest-in-turkish-fintech-firm-dgpays-.html*
[25] *https://www.eif.org/what_we_do/equity/news/2016/turkish_growth_innovation_fund_launched.htm*

The Technology Transfer Accelerator (TTA Türkiye) Initiative, designed by the European Investment Fund (EIF) in cooperation with the Ministry of Science, Industry and Technology, the Delegation of the European Union (EU) to Türkiye and the DG Regional Policy of the European Commission, established two funds (ACT Venture Partners € 25M, DCP € 30M) in 2015 to provide early-stage investment to deep-tech, intellectual property-based startups in Türkiye. TUBITAK and MTF launched a fund-of-funds program worth TRY 500 million, TechInvestTR, to support the formation of new Venture Capital funds and provide capital to early-stage corporates in the process of commercialization of their newly developed R&D products in 2018. A TRY 250 million funds of funds, the "Regional Development Fund", was established in 2020 by the Istanbul Development Agency with this purpose and has supported 17 funds so far.

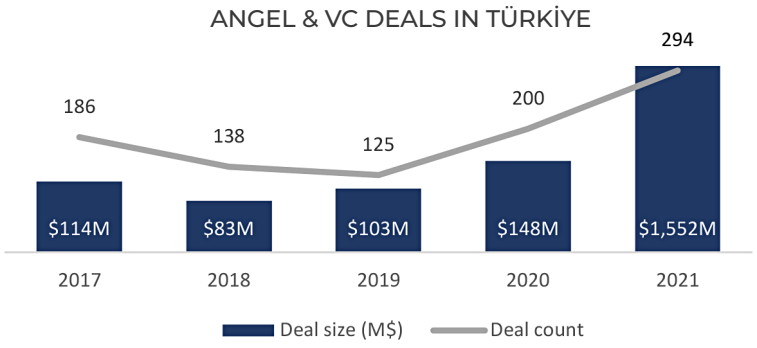
The public sector, notably TÜBITAK, has consistently prevailed as the biggest supporter of entrepreneurs at the idea-stage, through the various programs run by its Technology and Innovation Support Programs Presidency (TEYDEB). The funding allocated to TEYDEB programs has remained intact despite the budgetary pressures resulting from Türkiye's macroeconomic challenges – manifesting the importance placed on developing the ecosystem. In the last five years, while investors invested in a total of 86 pre-seed startups, TÜBİTAK via their Techno-enterprise Capital Support Program (BIGG) program provides grant support to 500+ idea-stage startups each year[26]. In 2020, 531 Startups received $7M government grants, accounting for 88% of total investments at this stage. At the seed and early-stage, there have been a total of 760 investments over the past 5 years; meanwhile, TÜBİTAK's 1507 and 1501 programs provide over 1000 startups with support every year . In 2020, TEYDEB invested $47M in 1218 Startups at this stage, placing the share of government grants at 32% of total investments[27]. Despite this remarkable activity, ecosystem players reveal considerable inefficiencies and uncertainties with respect to the distribution of the funds. This is especially true for the role of the institutions charged with reviewing and approving the projects for eligibility, indicating a need to streamline and enhance the transparency of the procedures involved.

Crowdfunding

Crowdfunding is a relatively recent financing model adopted in Türkiye, which was incorporated into the Capital Markets Law with an amendment that entered into force in 2019. The communique was renewed to cover borrowing-based crowdfunding in 2021 and increase the maximum investment amount of real persons in a calendar year.

Although still nascent, an important milestone was reached in 2021 when Türkiye's first equity-based crowdfunding platform licensed by the Capital Markets Board (CMB), Fonbulucu, started a GSYF and began investments in 23 startups out of the 1400 applications it received within 6 months of establishment – placing it among the most active investors of the year. Fifteen equity-based crowdfunding platforms have applied for licensing by the CMB so far WITH Fonbulucu being the only one operational.[28] The third quarter of 2021 saw the first equity-based crowdfunding deals in Türkiye with 13.271 investors raising $ 12.750 in total for 18 startups.

Volume of Investments



[26] *Year in Review 2021, startups.watch*
[27] *"Türkiye: Destination for Early Stage Investments."Presidency of the Republic of Türkiye Investment Office, 2021.*
[28] *"2021 Türkiye Startup Ekosistemi Yatirim Raporu." Startup Centrum, 2021.*

Turkish startups notched up unprecedented volumes of funds in 2020 and 2021. In 2021, both the number of deals and the total investment have reached an all-time high, with 294 deals concluded, totaling $1.552B[29]. Compared to the previous year, total investment increased by 948% in 2021, while the number of deals increased by 47% - driven in large part by Getir and Dream Games' mega-deals, the growing appetite for investment into the vibrant gaming sector, and the number of investors in the ecosystem reaching record levels. Getir alone raised $983M, and only 10 startups accounted for 90% of total investments. Even discounting Getir's mega-deal, the remaining $569M is nearly triple the amount raised in 2020 and more than the total amount invested during the five previous years combined.

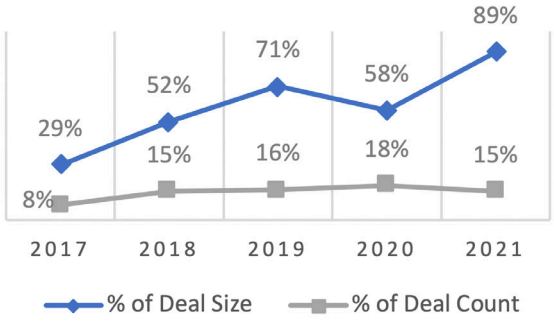
In 2021, 59% of the investments were made to startups that had just received their first investment[30]. More than 75% of the investments were under $1M, reflecting the activity of new investors and the impact of currency fluctuation, which has enabled smaller funds to go a long way in terms of impact on business growth. The average amount of investments has multiplied across stages as well. While the average seed-stage amount was $246,000 in 2020, this figure increased to $621,900 in 2021. Similarly, in early-stage investments, the average investment amount, which was $2.7 M in 2020, has soared to $10.4 M the following year[31].

This activity has carried Türkiye to the "super league" for total investment raised for the first time, placing the country as #2 in the MENA region behind Israel and #10 in Europe in 2021. Although capital is flowing into the market, there is still room for more funding as performance in investments continues to lag on a per capita basis. Türkiye currently ranks 21st in Europe and 4th in MENA in terms of per capita investments, realized at less than around $2 M.

Investors by Origin

The interest from international investors has also increased year-over-year. Despite the negative impact of a challenging macroeconomic context on the valuations and the growth charts of successful players in the ecosystem, Hummingbird's Gram Games and Tiger Global's Trendyol exits have encouraged international investors' risk appetite toward the country.

FOREIGN INVESTOR PARTICIPATION (ANGEL AND VC DEALS)



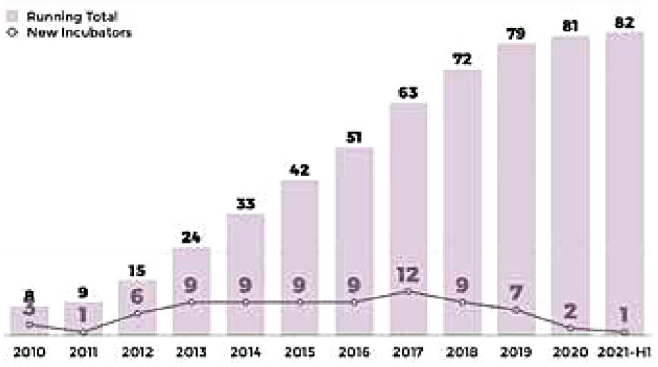
[32]F.I Participation	2017	2018	2019	2020	2021
Deals participated ($)	33M	43M	73M	86M	1374M
Total deal size	114M	83M	103M	148M	1552M
Deals participated (#)	15	21	20	35	44
Total deal count	186	138	125	200	294

[29] *Year in Review 2021, Startups.watch*
[30] *2021 Türkiye Startup Ecosystem Investment Report, Startup Centrum*
[31] *2021 Türkiye Startup Ecosystem Investment Report, Startup Centrum*

C. SUPPORT SYSTEMS[33]

A chief catalyst in the evolution of the entrepreneurship ecosystem has been the expansion of public and private support mechanisms designed to centralize know-how and help entrepreneurs scale their businesses and prepare for the international market. Türkiye currently boasts 82 incubators, 69 accelerators and 76 operational special technology development zones at the service of startups at varying stages of development.

I. Incubators



Incubation centers foster the business development and investment processes of companies by providing a variety of support mechanisms, including funding, office space, payment systems, and mentoring and networking opportunities. Driven by dynamic demand, the number of incubation centers in Türkiye has reached 82 in 2021, up from 9 a decade prior.

Most of Türkiye's incubators have been established under technoparks, namely, within or around universities. This organic relationship between higher education institutions and incubators allows prospective entrepreneurs to begin prototyping and commercializing their ideas while still in education. As part of a new regulatory framework in 2021, technoparks have started to establish incubation centers outside of their current zones, which will diversify the options available for startups to choose from in line with their needs. While incubation centers established within universities tend to be more advantageous in terms of reaching information and knowledgeable people, those founded by the private sector reportedly offer better networking opportunities.

[32] *Year in Review 2021, startups.watch (2022)*
[33] *"The State of Turkish Startup Ecosystem." Startupswatch, Invest in Türkiye, 2021.*

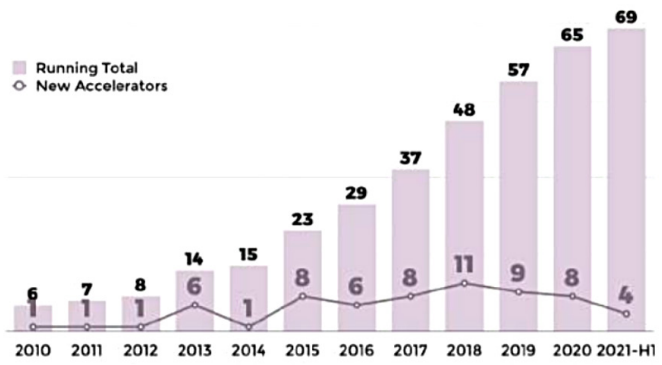


Chart 1 - The Number of Startup Accelerators in Türkiye

II. Accelerators

Turkish startups increasingly avail of accelerators as growth pods that match them with the right resources, mentors, network, and funding in limited, high-paced programs. Accelerators have been essential in helping companies reach the scale up stage and prepare for seed or Series A funding from VCs. Whereas in 2010, Türkiye had as few as 6 accelerators, as of the first half of 2021, the number has galloped to 69. Despite the adverse impact of the pandemic on the number of programs run, many accelerators successfully carried their activities to online

platforms and continued preparing entrepreneurs for raising investment and meeting with investors. 30 demo days took place digitally across the country in 2020 alone, which allowed hundreds of startups to pitch to investors. The last few years have seen accelerator programs become more specialized in verticals with high-growth potential. Gaming has prevailed as the center of attraction, with the number of programs geared towards the space rising by 33% from 2020 to the first half of 2021. The same period also saw the dissemination of programs designed for scaleups and internationalization, addressing an emerging need that has developed as companies shift their focus toward outward expansion. The amount of investment and equity varies but as a general figure, accelerators tend to take between 5% — 10% equity in the startups they support, without taking board seats in the companies. While many of the most acclaimed programs still follow this model, ecosystem players report a shift towards equity-free acceleration, closer to the operational mode of more mature ecosystems with greater VC interest.

A big trend in recent years has been the pivot of Turkish startups to benefit from the services of accelerators that originate abroad, most often in Europe and the United States, to gain access to a larger pool of investors and mentors. The enabling digital policies implemented by Estonia have recently positioned the country as a top target for firms that wish to build ties with European VCs and enter the single market.

III. Co-working Spaces

Türkiye's startup ecosystem has had great luck with the rise of the co-working culture, which emerged in 2010 and became a widespread trend by 2016. Türkiye currently boasts 38 spaces that offer various resources fast and affordably, in physical and virtual offices dedicated to improving productivity and providing a vibrant community experience.

IV. Mentor Platforms

Structures that provide entrepreneurship mentoring services in Türkiye take the form of non-governmental organizations, private companies, independent structures within technoparks, or digital infrastructures that serve globally. Academicians and corporate managers often perform this service at their individual initiative, mostly to companies in which they hold investments or with the identification of investment opportunities in mind. Ecosystem players cite the inability to allocate a sufficient budget for mentoring in entrepreneurship programs and the difficulties in matching mentees with the right mentor as the biggest obstacles to the effectiveness of this

mechanism. TÜBİTAK has recently taken a very important step in terms of institutionalization and development of entrepreneurship mentoring and designed a mentoring program called BİGG (+) 1601, to be managed by interface organizations, which provides financial support for up to 40 hours of mentoring per enterprise for one year. In 2021, 11 interface organizations were entitled to benefit from this program.

There is a continued need for venture centers to expand their mentor pools, optimize matchmaking mechanisms and encourage venture center-corporate collaborations, where the latter promotes active participation of their senior management in mentorship platforms. Several organizations are already experimenting with new models to this end. Mentor Effect, for instance, assigns entrepreneurs "a lead mentor", who can pinpoint their needs, and guides them toward "sub-mentors" who have experience in exactly what they require for rapid growth.

V. Technoparks

Special Technology Development Zones, also called technoparks, are a central pillar of Türkiye's innovation strategy. Technoparks are centralized hubs for research and businesses to scale their solutions that encourage collaboration by offering access to academic, economic, and social infrastructure. Various shared facilities are put to the use of local innovators in technoparks, including 3D printing labs capable of producing high-quality hardware.

Companies that reside in technoparks enjoy subsidized access to high-quality infrastructure and benefit from various fiscal and tax incentives designed to boost their growth, including exemptions from corporate and income tax and VAT, notably on software exports.

Technoparks in Türkiye are usually located in or around university campuses to leverage academy-industry cooperation towards technological innovation and higher-value-added exports. Some among them, such as ARI Teknokent, have offices in the USA and the EU established intending to promote the commercialization and internationalization of projects. Since the turn of the century, the number of R&D technology parks has risen rapidly across the country. Türkiye currently boasts 92 of these zones, 16 of which remain under construction. As of January 2022[34] 7,419 technology firms reside in one of Türkiye's 76 operational technoparks. The total number of R&D projects (completed and ongoing) in technology development zones has reached 56,318. Resident firms employ a total of 76,584 people, 83% of which work as R&D personnel, and generate $ 6,9 billion in exports. Of these companies, 47% are involved in software development and ICT, while 6% operate in engineering, followed by biotech, energy, chemistry, food, defense, automotive and agriculture.

While most early-stage startups in the country tend to prefer incubation centers, co-working spaces, and accelerator programs, tech scaleups overwhelmingly favor establishing offices in technoparks, manifesting the important role these clusters play in later-stage startup growth.

Focus: Opsgenie

Among the most striking success stories that originate in ODTU Technopark has been OpsGenie - a SaaS company founded by two ODTU students in 2012, that offers a smart notification solution for teams working on software that operates 24/7. OpsGenie warns the right people with the right communication methods in case of any disruptions and helps tech companies better plan for and reduce response times to service outages. Instead of growing via serial investment rounds, OpsGenie progressed by bootstrapping with its resources for a long time and found its place in the market with tight customer feedback loops and continuous iterations of the product. A Series A funding of $10M raised in 2016 helped triple OpsGenie's revenue within the same year. In 2018, Atlassian, a maker of programs for coordinating software development, acquired OpsGenie for $295 million as part of its strategy to expand its market share in competition with the market leader, ServiceNow Inc. OpsGenie began working with Atlassian's new information technology service management product, Jira Ops, which helps IT workers track outages and minimize downtime. As a result of the deal, Atlassian onboarded OpsGenie's 3,000 customers which included major operations such as 7-Eleven and Expedia Group Inc. OpsGenie became the first technology company of this scale to exit the Turkish market via acquisition.

[34] *T.C. Sanayi ve Teknoloji Bakanlığı. (2022, January). T.C. Sanayi ve Teknoloji Bakanlığı. https://www.sanayi.gov.tr/istatistikler/istatistiki-bilgiler/mi0203011501*

HOW THIS WAS POSSIBLE: BUILDING BLOCKS OF THE ECOSYSTEM

A. POLICY FRAMEWORK

I. Government Support

Government support played a significant role as a catalyzer, and is still key as the ecosystem continues to grow. Startups are explicitly mentioned in the Ministry of Industry and Technology's 2023 Industry and Technology Strategy. Released in 2019, this plan aims for 10 Turkish unicorns, or Turcorns, to emerge by 2023. [35]Though the government's focus on startups is relatively new, Türkiye has had a strategy of fostering small and medium enterprises (SMEs) for a long time. SME lending grew steadily between 2007-2018, reflecting this goal. The primary government body that executes SME policies in Türkiye is the Small and Medium Enterprises Development Organization of Türkiye (KOSGEB) under the Ministry of Industry and Technology. In 2018, this body adopted a vision to prioritize international-oriented, high-tech and innovative SMEs, reflecting the embrace of startups. In addition to promoting SMEs' access to technology, KOSGEB also launched programs aimed at fostering entrepreneurship [36]. Though KOSGEB is supporting the ecosystem in various ways, a key policy launched at the end of 2018 was the classification of certain types of SME's that are allowed to benefit from "investment, working capital, export and emergency support loan types with subsidized loan rates". Entrepreneurial Startups and Technology Based Enterprises are included in these classifications, showing that startups also benefit from this policy. [37] In 2019 KOSGEB provided funding to 417 idea-stage and 160-early-stage startups.[38]

The other state agency that is involved significantly in the startup sector is the Technology and Innovation Funding Programmes Department (TEYDEB) of the Scientific and Technological Research Council of Türkiye (TÜBİTAK), an autonomous public institution. TEYDEB focuses on R&D, innovation, and of financing entrepreneurial activities. Even though its support programs target the private sector in general, it also has 4 support groups aimed directly at the entrepreneurship ecosystem. These support groups are involved in areas such as entrepreneurship support, technology transfer, and venture capital.[39] Aside from the support programs, TEYDEB has been one of the major sources of funding for idea-stage startups since 2012. Besides direct funding, TÜBİTAK, together with the Ministry of Finance and Treasury, operate a fund-of-funds program to support new VC funds.[40]

Beyond government support, the role of private investment has been crucial in growing the tech entrepreneurship ecosystem in Türkiye. Whereas bootstrapping was the main mode of private financing for startups until 2010, private equity in the form of VC and angel investing has become the norm since then.[41] The total angel and VC deal volume rose from $ 20 million in 2010 to $ 146 million in 2020. Though government grants comprised 88% of idea-stage funding in 2020, this figure was 32% for seed and early VC stage with the rest occupied by private equity.[42] The first three quarters of 2021 proved exceptional with angel and private VC volume rising to over $ 1.4 billion, representing a year-on-year increase of 1170%.[43] Moreover, multiple deals were made via equity-based crowdfunding, revealing

[35] *Cakir, Merve Ozlem. "Varank'ın Turcorn Hedefine Melek Destek," September 23, 2019.*
[36] *OECD. Financing SMEs and Entrepreneurs 2020: An OECD Scoreboard - Türkiye. Financing SMEs and Entrepreneurs. OECD, 2020. https://doi.org/10.1787/061fe03d-en.*
[37] *Ibid.*
[38] *"The State of Turkish Startup Ecosystem." Startupswatch, Invest in Türkiye, 2021.*

the emergence of this type of funding.[44] It is clear that now all three types of startup investment types are now present in the Turkish ecosystem. These methods of financing rest on an underlying incentives-based regulatory structure.

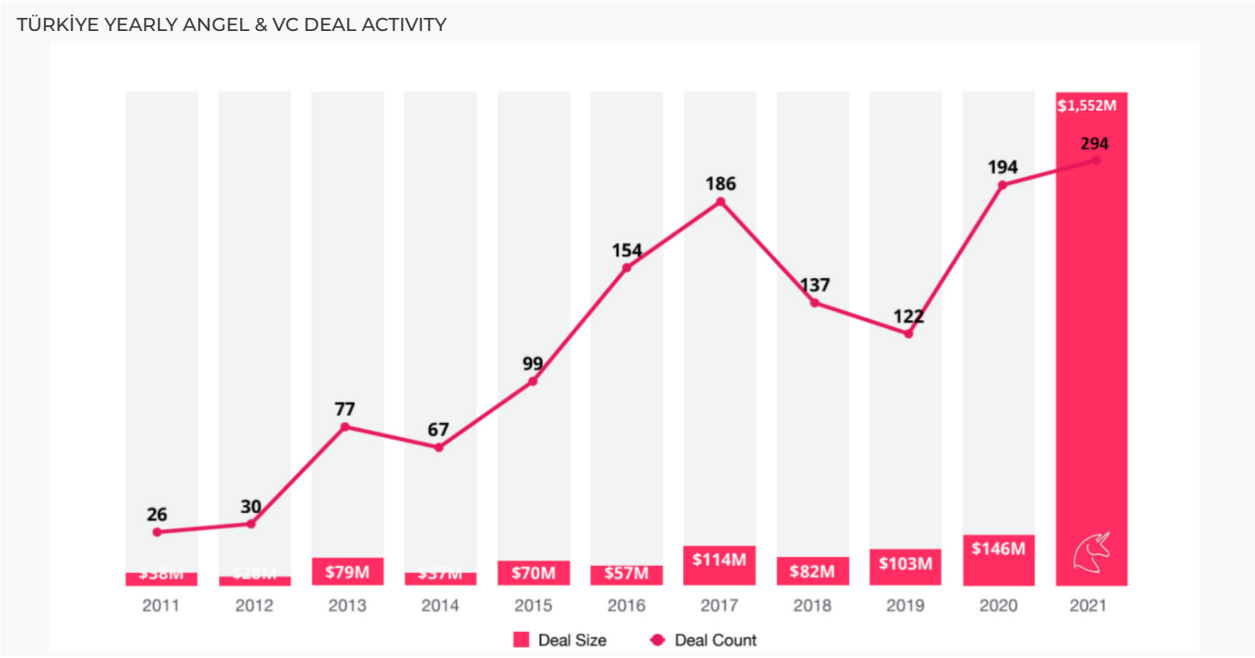
II. Venture Capital

Private equity represents investors acquiring the whole or a portion of a company, providing it with capital with an expectation that the future return on their shares will be higher as the company develops. Venture capital is a type of private equity where a dedicated VC fund obtains part of an early-stage startup with a pre-determined exit strategy in mind.[45] In addition to providing startups with capital, most VC funds also provide the startups they are invested in with advice and coaching.

The current VC framework in Türkiye is based on several key pieces of regulation. The first step in promoting VC was taken by the Turkish government in 1993 with the 'Communiqué on principles regarding venture capital investment trusts' However, the distinction in language between VC and private equity was dropped later on in the Capital Markets Regulation of 2012. Therefore, in legal terms, there is currently no distinction between VC and private equity in general. Any individual or commercial entity can participate in VC.

The Capital Markets Board of Türkiye defines two types of VC institutions. The first is venture capital investment funds (GSYFs) formed by portfolio management companies. These are temporary in nature and are unincorporated.[47] The second is the venture capital investment trusts (GSYOs). These are anonymous, incorporated partnerships set up with registered capital of which at least over half has to be invested.[48] There are currently 11 VC investment trusts in Türkiye.[49]

The government provides certain tax benefits as an incentive to draw funds to VC institutions. The most important one is that the earnings of both types of institutions are exempted from corporate tax.[50] Moreover,



Source: Startupswatch 2021 Q3 Report (Edited by author)

[39] *OECD. Financing SMEs and Entrepreneurs 2020: An OECD Scoreboard - Türkiye. Financing SMEs and Entrepreneurs. OECD, 2020. https://doi.org/10.1787/061fe03d-en.*
[40] *"The State of Turkish Startup Ecosystem." Startupswatch, Invest in Türkiye, 2021.*
[41] *Ibid.*
[42] *"Türkiye: Destination for Early Stage Investments."Presidency of the Republic of Türkiye Investment Office, 2021.*
[43] *"Quartertly Report Q3 2021." startups.watch, 2021.*
[44] *Ibid.*
[45] *Akcomak, Ibrahim Semih, Berna Beyhan, Dilek Cetindamar, and Vedat Sinan Tandogan, eds. Türkiye'de Yenilik Tabanlı Girişimcilik. Istanbul Bilgi Universitesi Yayinlari, 2021.*

these institutions are also exempt from withholding tax for distributing dividends and withholding tax on exits.[51] There are additional benefits for investors who wish to participate in VC through these institutions. To better differentiate and promote venture capital directed at startups, companies can separate up to 10% of their income subject to corporate tax in a fund to invest into GSYFs and GSYOs, which is deducted from their corporate income tax base.[52]

III. Angel Investment

For startups, reaching out to individual angel investors was practically the only way of securing investment a decade ago.[53] Angel investment has matured in line with the ecosystem in general since then. Ten years ago, when the startup ecosystem in Türkiye was in its infancy, there was no regulation dealing with accreditation or incentives for angel investment. There was also a lack of organization in terms of angel investor networks. However, in time, as benefits both for angel investors and founders became more evident, angel investing became more professionalized. Today, there are 13 business angel networks and 674 accredited business angels in Türkiye.[54] Angel investors are similar to VCs in certain aspects. They personally supply idea and early-stage capital for startups, and provide guidance and mentoring for the founders.[55] Their investment model also includes a pre-defined exit plan, though it is noted that their expectations for returns are lower than that of VCs.[56] Founders also benefit from angel investors as having an experienced industry professional associated with the new venture naturally increases confidence in the startup. An NBER study inspecting a multinational array of angel investors shows that startups funded through angel investment are 14% to 23% more likely to survive for the next 1.5 to 3 years compared to those that are not. Notably, funding

[46] *Ibid.*
[47] *Aydemir, Mahmut. "Girişim Sermayesi Yatırım Fonları ve Ortaklığı Nedir ? Vergisel Avantajları Nelerdir ?," 2018.*
[48] *Sermaye Piyasasi Kurlu. "Girişim Sermayesi (Venture Capital) Nedir?,"*
[49] *Ibid.*
[50] *Kurumlar Vergisi Kanunu, No. 5520, Item 5/1-d ().*
[51] *"Türkiye: Destination for Early Stage Investments."Presidency of the Republic of Türkiye Investment Office, 2021.*
[52] *Aydemir, Mahmut. "Girişim Sermayesi Yatırım Fonları ve Ortaklığı Nedir ? Vergisel Avantajları Nelerdir ?," 2018.*
[53] *"Turkish Startup Investments Review 2020." KPMG Türkiye, 212, 2020.*

Source: MFT Angel Investment Progress Report Q1 2019[60]

by business angels increases the chance of a successful exit by 10% to 17%.[57]

It is therefore not surprising that governments around the world are seeking ways to promote angel investment. Türkiye is no exception. The first step to professionalize angel investment was taken in 2013 with the 'Regulation on Angel Investments'. This regulation legally defined 'angel investor' and a licensing system was established. Wealth and experience criteria were included for licensing eligibility.[58] Between 2013 and the first quarter of 2019, 476 of such licenses were issued, and the total volume of investment conducted by licensed angel investors reached TRY 11.74 million.[59]

Tax advantages were legislated for angel investments as part of the government's efforts to promote this type of funding. Conditional on the angel investor holding their shares of the startup for at least 2 years, 75% of the investment amount can be deducted from the accredited business angel's personal tax base. In the cases where the startup is also supported by the government due to its innovative activities, the deduction becomes 100% of the investment amount.[61] Though these incentives have certainly led to the proliferation of angel investment, the state remains the biggest 'angel' when idea-stage funding is considered. As of 2020, TÜBİTAK TEYDEB provided idea-stage investment for 99% of the startups that received it. Of the total $ 8 million funding, $ 7 million was sourced by this organization.[62] Though the deal volume leans heavily toward private investment in seed and early VC stages, providing small-sized, idea-stage funding that is traditionally the domain of angel investors is still conducted mostly by government institutions.

IV. Crowdfunding

As opposed to the traditional methods of financing such as VC and angel investors, crowdfunding has been mostly absent in the Turkish ecosystem until recently. Globally, however, the crowdfunding industry has been growing significantly in the last decade. While the global volume of the crowdfunding industry was only $ 880 million in 2010[63] , as of 2020, it reached $ 114 billion.[64] Reasons for this astronomical increase lie in the changing nature of firms and the shortage of capital following the global financial crisis. [65] This is especially true for startups as they

[54] *"Turkish Startup Ecosystem Map v7.1." startups.watch, 2021.*
[55] *Akcomak, Ibrahim Semih, Berna Beyhan, Dilek Cetindamar, and Vedat Sinan Tandogan, eds. Türkiye'de Yenilik Tabanlı Girişimcilik. Istanbul Bilgi Universitesi Yayinlari, 2021.*
[56] *Ibid.*
[57] *Lerner, Josh, Antoinette Schoar, Stanislav Sokolinski, and Karen Wilson. "The Globalization of Angel Investments: Evidence across Countries." Working Paper. Working Paper Series. National Bureau of Economic Research, December 2015. https://doi.org/10.3386/w21808.*
[58] *Cetin, Nusret. "Türk Hukukunda Melek Yatırımcı." Mondaq, 2019.*
[59] *Akcomak, Ibrahim Semih, Berna Beyhan, Dilek Cetindamar, and Vedat Sinan Tandogan, eds. Türkiye'de Yenilik Tabanlı Girişimcilik. Istanbul Bilgi Universitesi Yayinlari, 2021.*

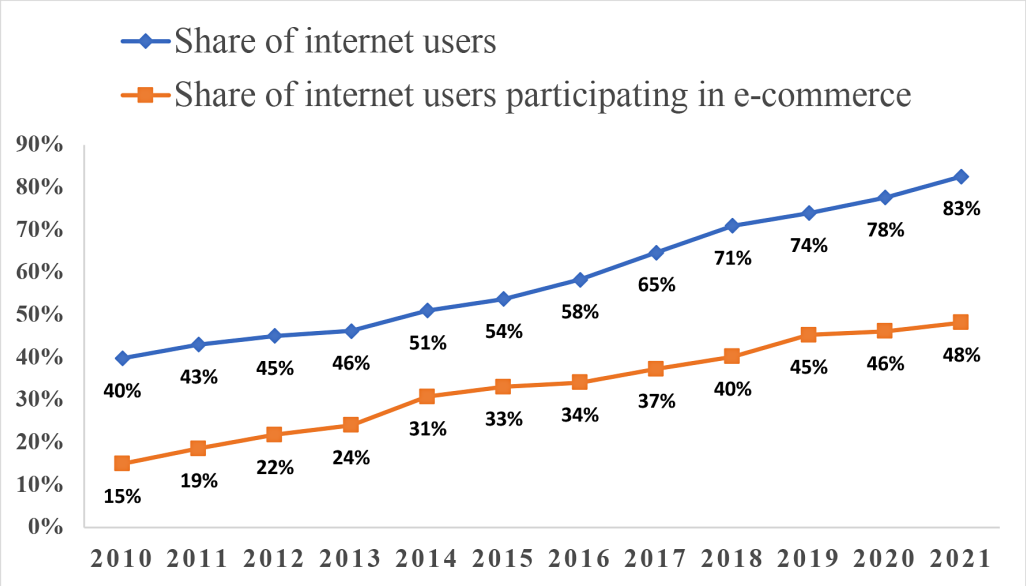
have to convince traditional investors at an early stage that their idea and business plan are sound. At the cost of greater risk, crowdfunding allows household investors to directly fund the startups they believe will succeed. For founders, this method allows them to raise capital while being in control of what benefits their investors receive, if any. There are three main types of crowdfunding. Donation crowdfunding where the funders receive no benefits, lending crowdfunding where funders lend funds in return for the product or interest later on, and equity crowdfunding where funders receive an ownership stake in the firm.[66] Crowdfunding was legally defined in Türkiye as a financing tool at the end of 2017 through an amendment to the Capital Markets Law.[67] Donation-based crowdfunding platforms that served not only startups had existed prior, but the regulatory attention the subject received has contributed to making crowdfunding for startups more mainstream. Most recently, in October 2019, equity-based crowdfunding was incorporated into law. [68]

A particular advantage of crowdfunding lies in its ability to expand access to capital for startups in smaller cities. Bilecik, for example, had its first startup invested in through crowdfunding.[69] In total, 10 startups from 4 cities outside Istanbul received investment with the legalization of crowdfunding, indicating that the method can prove beneficial in terms of alleviating the Istanbul-centrality of the ecosystem.

B. DEMOGRAPHICS

Türkiye's demographic structure has been one of the key factors that affected its digital startup ecosystem's growth. Among other parameters, the market accessible to tech startups is affected strongly by the demographic characteristics of the population that make up the customer base. In this regard, the Turkish market is characterized as an 'ideal test market for startups'.[70] The internal Turkish market presents startups with an environment to prove their ideas and business models. Though Turkish startups generally have to expand abroad to reach globally significant valuations, Türkiye in itself possesses attractive qualities in terms of market demographics.

The first of these is Türkiye's large, young and urbanized population structure. As of 2021, Türkiye has a population of 84.7 million, 76.3% of which inhabits urban areas.[71] The



Source: Turkstat

[60] *"BKS Ilerleme Raporu 2019 Yili Birinci Ceyrek." T.C. Hazine ve Maliye Bakanligi, 2019..*
[61] *"Türkiye: Destination for Early Stage Investments."Presidency of the Republic of Türkiye Investment Office, 2021.*
[62] *"The State of Turkish Startup Ecosystem." startups.watch, 2020.*
[63] *Paschen, Jeannette. "Choose Wisely: Crowdfunding through the Stages of the Startup Life Cycle." Business Horizons, Crowdsourcing, 60, no. 2 (March 1, 2017): 179–88. https://doi.org/10.1016/j.bushor.2016.11.003.*
[64] *Ziegler, Tania, Rotem Shneor, Karsten Wenzlaff, Krishnamurthy Suresh, Felipe Ferri de Camargo Paes, Leyla Mammadova, Charles Wanga, et al. "The 2nd Global Alternative Finance Market Benchmarking Report." SSRN Electronic Journal, 2021. https://doi.org/10.2139/ssrn.3957488.*
[65] *Paschen, Jeannette. "Choose Wisely: Crowdfunding through the Stages of the Startup Life Cycle." Business Horizons, Crowdsourcing, 60, no. 2 (March 1, 2017): 179–88. https://doi.org/10.1016/j.bushor.2016.11.003.*

median age is 32.7 [72] , and the youth population between the ages 15 to 24 is 12.9 million, representing 15.4% of the total population. Türkiye thus has a larger share of youth population compared to the EU countries.[73] As the youth is more likely to try and adopt new technologies and associated products, this large segment of the population presents startups with a solid domestic customer base. Moreover, this group, and the Turkish population in general, is highly connected. There are 76.9 million registered mobile connections in the country corresponding to 90.8% of the population, though it should be noted that many individuals possess multiple mobile subscriptions. On the side of internet usage, estimates range from 71% to 81% of the population. 94.2% of the internet users are reported to use mobile data on smartphones. On average, users aged 16 to 64 spend 4 hours 19 minutes using mobile internet and 7 hours 57 minutes using internet in general daily.[74] A final metric of interest is the online banking penetration, which measures the prevalence and ease of mobile transactions. The debit cards per capita figure is around 2. The same metric for credit cards is at 0.84. Strikingly, 69% of all payments were done through cards in 2019 and this is expected to reach 71% in 2023. Moreover, in 2019 Türkiye's Banking Regulation and Supervision Agency eased regulations around card use, further stimulating demand. [75] Most cards by default are authorized for online payments at this point. The share of population making online purchases reached 67% in 2020. [76] This high level of e-payment penetration was one of the drivers behind the success of e-commerce in Türkiye.

High connectivity, youth and the widespread adoption of online payment have resulted in a robust customer base that local startups can depend upon. This is most evident in the online gaming and e-commerce sectors which are central to the startup ecosystem; 61.1% of internet users use game apps at least monthly with the figure rising to 68.5% for shopping apps.[77] Additionally, the magnitude of this population allows startups to

gather and analyze sufficient amounts of customer and market data to optimize their operations further before expanding abroad if they wish to do so. Türkiye's demographic advantage is not limited to the demand-side, however. The Turkish startup ecosystem also stands out in terms of talent. A report by McKinsey & Company Türkiye from January 2020 predicts that AI, automation and digital technologies have the potential to create 3.1 jobs in the country in this decade. Moreover, 1.8 million jobs that currently do not exist may emerge, mostly in the technology-related sectors. This significant change in the nature of work will also bring about a shift in demand for skills. 21.1 million Turkish workers will have to improve their technical skills as they work, and 7.7 million new employees have to be educated accordingly.[78] Embedded strongly in the digital sphere, the startup industry can be seen as a vanguard of this change. In terms of tertiary enrollment rate, Türkiye is in fact ahead of the EU average.[79] 8 million people attend higher education, and around 98,000 STEM majors graduate every year, 35% of which are female.

The annual number of new tech talent is 26,000. This puts Türkiye above comparable countries such as Ukraine, Romania and Poland. Though the absolute number

[66] *Ibid.*
[67] *"Crowdfunding in Türkiye." Gurulkan Cakir, 2018.*
[68] *Akcomak, Ibrahim Semih, Berna Beyhan, Dilek Cetindamar, and Vedat Sinan Tandogan, eds. Türkiye'de Yenilik Tabanlı Girişimcilik.Istanbul Bilgi Universitesi Yayinlari, 2021.*
[69] *"Quartertly Report Q3 2021." startups.watch, 2021.*
[70] *Eryilmaz, Eda. "Why Türkiye Is an Ideal Test Market for Startups - KWORKS Blog." KWORKS Entrepreneurship Research Center (blog), September 3, 2021.*
[71] *Kemp, Simon. "Digital in Türkiye: All the Statistics You Need in 2021." DataReportal – Global Digital Insights. Accessed January 26, 2022.*
[72] *TUIK. "TURKSTAT Corporate," February 4, 2021.*
[73] *Eryilmaz, Eda. "Why Türkiye Is an Ideal Test Market for Startups - KWORKS Blog." KWORKS Entrepreneurship Research Center (blog), September 3, 2021.*
[74] *Kemp, Simon. "Digital in Türkiye: All the Statistics You Need in 2021." DataReportal – Global Digital Insights. Accessed January 26, 2022.*
[75] *"2020 E-Commerce Payments Trends Report: Türkiye Country Insights." https://www.jpmorgan.com/merchant-services/insights/reports/Türkiye-2020.*
[76] *Ibid*

of new talent is greater in India, Türkiye has a higher rate of new tech talent per capita.[80] The volume of the workforce with necessary digital skills is increasing in Türkiye, and the demand for tech talent remains high. A report by Re:Coded shows that 89% of tech organizations surveyed plan to recruit within the next 12 months, with the majority planning to hire an average of 5 new employees. More specifically, 93% of the organizations plan to recruit software developers. More than half have internship programs, and the demand for early-career professionals is also significant with 79% of surveyed organizations seeking to recruit junior developers.[81]

In addition to their quantitative advantage, Turkish software developers are also strong in terms of quality. They are fluent in most programming languages that are considered industry standards both for frontend and backend development. [82] This breadth of skills allows for a flexible workforce, spurring innovation further. Gulcan Yayla, founder of coding bootcamp Patika.dev draws attention to the heightened activity of Turkish software developers on GitHub. The number of users from Türkiye has increased ten-fold since 2018, and the country is among the top 10 that see the strongest growth in open-source contributions.[83] The growth of the overall tech ecosystem is also contributing to skills development. For example, Delivery Hero, which owns Yemeksepeti, will open its next Technology and Innovation Centre in Istanbul, connecting Turkish software engineers to its global network by fostering a team aiming to export software to 40 different countries.[84]

Another factor that makes Turkish talent attractive is the comparatively lower salaries. Average entry-level software developer salary is lower than the countries mentioned above in dollar terms.[85] This is especially advantageous for foreign firms seeking to employ Turkish talent, and Turkish startups that receive funding from abroad. Software development is among the sectors most compatible with remote work. Added to this the normalization of remote work during the pandemic and

Türkiye's geographical (thus time-zone) proximity to Europe, it has become very attractive to employ Turkish talent for foreign companies.

C. ENTREPRENEURIAL CULTURE

Türkiye's competitive and entrepreneurial culture is usually mentioned as a characteristic that shapes its startup environment. For instance, Bernard Kim, who led Zynga's more than $ 2.3B investments in Türkiye's gaming industry, stated that he liked the "very deep competitive energy" in the country.[86] Entrepreneurial culture can be thought of as a function of opportunity and motivation. Factors dealing with opportunity were evaluated in the previous sections; the policy, institutional and financial framework determine if an environment suitable for entrepreneurship is present. Motivation, on the other hand, is necessary for the potential entrepreneur to decide to participate in this environment. Therefore, it is determined by personal preferences.[87] In the Turkish context, the components that form entrepreneurial preferences have traditionally been ascribed to national culture and religion. The emergence of numerous successful Anatolian businesses

[77] *Kemp, Simon. "Digital in Türkiye: All the Statistics You Need in 2021." DataReportal – Global Digital Insights. Accessed January 26, 2022. https://datareportal.com/reports/digital-2021-Türkiye.*
[78] *"Future of Work: Türkiye's Talent Transformation in the Digital Era." McKinsey&Company, January 2020.*
[79] *The World Bank - Data. "School Enrollment, Tertiary (% Gross) - European Union, Türkiye | Data," September 2021.*
[80] *Gulcan, Yayla. "Türkiye: The Rising Tech Talent Hub." Patika.dev, August 2021.*
[81] *"Opportunities to Bridge the Skills and Talent Gaps in the Turkish Technology Sector." re:coded, September 2021.*
[82] *icanrecruit. "Software Developers Türkiye - Q3 2021," October 2021.*
[83] *Gulcan, Yayla. "Türkiye: The Rising Tech Talent Hub." Patika.dev, August 2021..*
[84] *Gozde, Ulukan. "Yemeksepeti ve Delivery Hero'nun Türkiye'de kuracağı Global Teknoloji ve İnovasyon Merkezi'nin CTO'su Umut Gökbayrak oldu." Webrazzi, August 24, 2021.*
[85] *Gulcan, Yayla. "Türkiye: The Rising Tech Talent Hub." Patika.dev, August 2021.*

in the last few decades has led analysts to frame the discussion on Turkish entrepreneurial culture in these terms.[88] However, this essentialist approach is unsuitable when the business culture in the context of the Turkish startup ecosystem is considered. Regardless, studies that evaluate cultural characteristics in relation to the contemporary entrepreneurial culture in Türkiye do exist. One such study identifies that Türkiye scores low in dimensions such as individualism and uncertainty avoidance.[89] Another calls to attention the paternalistic orientation in Turkish business culture, implying aversion to taking initiative, organizational loyalty and nepotism.[90] It is possible to find similar conclusions across throughout the scholarship on this matter. In general, Turkish business culture is pictured as not having the traits that facilitate the emergence of an innovative entrepreneurial culture.

Though national culture undoubtedly affects preferences for entrepreneurship, a one-way causal link, especially one formulated by analyses of businesses of a different kind, would not explain the current strengthening of entrepreneurial culture in Türkiye. Technological innovation, which is the main ethos of most startups, contains an inherent disruptive aspect. A quick look at founder profiles reveal that most are experienced professionals who left established organizations to create a startup in the same or similar sectors. It would not be far-fetched to say that these founders' preferences are shaped in a way that they assess the potential gains from innovative disruption as higher than a more secure position within the traditional Turkish business structure. Thus, when the relation between the traditional Turkish business culture and entrepreneurial culture is considered, an inverse dynamic should also be taken into account. Moreover, as new norms around entrepreneurship develops and best practices are established, entrepreneurial culture also evolves, gaining prevalence. The success stories of Turkish startups have influenced perspectives, leading the government, educational institutions, and private sector actors to prioritize and advocate for entrepreneurial activity. The creation of incubators in multiple universities exemplifies institutional willingness to permeate the entrepreneurial culture. Universities are also increasingly offering entrepreneurship courses, and in some cases majors.[91]

In addition to domestic cultural influences, the global diffusion of norms and practices around entrepreneurship cannot be discounted. Due to their overwhelmingly digital nature, startups are integrated strongly into global technology and business networks. Technological innovations, proven business models, and opportunities for disruption in one part of the world are recognized if not directly translated in other locations. The geographical fluidity of talent and capital only add to the intensity of cultural diffusion. Thus, though the fundamental characteristics that constitute entrepreneurial culture are acquired through familial up bringing[92], encounters with novel norms and techniques may facilitate a shift in business culture. Perceiving the globally prevalent entrepreneurial mindset to have the potential to yield higher benefits than following local business norms and practices can be the main driver of a cultural shift.

In sum, like the ecosystem in general, the entrepreneurial culture in Türkiye is also in a state of growth and

[86] *Bradshaw, Tim. 2021. "How Türkiye Became A Star Of European Tech". Ft.Com.*
[87] *Foreman-Peck, James, and Peng Zhou. 2011. "The Strength And Persistence Of Entrepreneurial Cultures". Journal Of Evolutionary Economics 23 (1): 163-187. doi:10.1007/s00191-011-0239-z.*
[88] *Serviere-Munoz, Laura, Handan Vicdan, and Anshu Saran. "Two Peas In a Pod? Exploring The Market Orientation, Innovation, And Dynamism Of Mexico And Türkiye's Entrepreneurial Culture." International Journal of Entrepreneurship 17, (2013): 77-98..*
[89] *Doğan, Ebru. 2016. "The Role Of National Culture On Entrepreneurship: An Assessment On The Entrepreneurial Culture Of Türkiye". Social Sciences Research Journal 5 (1).*
[90] *Serviere-Munoz, Laura, Handan Vicdan, and Anshu Saran. "Two Peas In A Pod? Exploring The Market Orientation, Innovation, And Dynamism Of Mexico And Türkiye's Entrepreneurial Culture." International Journal of Entrepreneurship 17, (2013): 77-98.*

maturation. The feedback loop between success stories created by experienced founders and the willingness of young aspiring entrepreneurs may continue entrenching an entrepreneurial culture in Türkiye given the regulatory and financial factors that allow for opportunities to persist.

D. IMPACT OF THE PANDEMIC

The current state of the Turkish startup ecosystem cannot be understood without factoring in the tremendous effects stemming from the pandemic. The human cost of Covid-19 has been devastating for all, and the economic recession that resulted from it impacted all sectors, workers and employers alike. Startups were not spared either. The rate of new business formation in Türkiye had declined by 58% in April 2020 year-on-year.[93] VC, the lifeblood for most startups, tends to decline dramatically during recessions. This trend was observed also in the current recession with early-stage investments involving more uncertainty. [94] On the other hand, periods of economic downturn can represent opportunities for entrepreneurs and new companies. Over half of Fortune 500 companies were founded in a recession or bear market, and over 50 tech unicorns were established between 2007-2009.[95] Turkish startups were also impacted by the health and macroeconomic consequences of Covid-19, yet the accelerated growth of the ecosystem continued during the pandemic period. The number of support organizations such as accelerators, co-working spaces and technoparks maintained its decade-long increasing trend since 2020. On the funding side, the steady growth since 2018 in equity funding by VCs and angel investors was also maintained with a noteworthy over ten-fold increase in 2021.[96] Overall, Turkish startups seem to have turned the pandemic-induced crisis into an opportunity. This contrarian outcome can be explained by factors on both the demand and supply sides.

As a result of lockdowns and health fears, consumer spending plummeted rapidly as the pandemic spread globally.[97] Most sectors that depended on in-person services such as hospitality, physical retail, restaurants and transportation were hit especially hard. On the contrary, certain sectors saw a boom in demand. Two such sectors are especially pertinent in the context of the Turkish ecosystem: gaming and e-commerce. Mobile gaming was an attractive mode of entertainment

[91] *Ubuz, Melike. 2019. "Üniversite Öğrencilerinin Girişimcilik Özelliklerinin Girişimcilik Eğilimlerine Etkisi". MA, Istanbul Üniversitesi.*
[92] *Tarhan, Murat. "Girişimcilik Becerisinin Kazandırılması Bağlamında Girişimcilerin Öz Yaşam Öykülerine Yönelik Bir Değerlendirme." Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi 21, no. 1 (March 15, 2021): 74–86. https://doi.org/10.17240/aibuefd.2021.21.60703-815358.*
[93] *Calvino, Flavio, Chiara Criscuolo, and Rudy Verlhac. "Startups in the Time of COVID-19: Facing the Challenges, Seizing the Opportunities." VoxEU.Org (blog), June 23, 2020.*
[94] *Bellavitis, Cristiano, Christian Fisch, and Rod B. McNaughton. "COVID-19 and the Global Venture Capital Landscape." Small Business Economics, September 4, 2021. https://doi.org/10.1007/s11187-021-00547-9.*
[95] *Gauthier, JF, and Arnobio Morelix. "The Impact of COVID-19 on Global Startup Ecosystems." Startup Genome, March 2020. https://portal.tamkeen.bh/files/The_impact_of_COVID19_ob_global_startups_ecosystems.pdf.*
[96] *"The State Of Turkish Startup Ecosystem." Startupswatch, Invest in Türkiye, 2021.*

during the lockdown due to its low cost and abundance of time spent indoors. E-commerce was boosted by similar dynamics as consumers preferred deliveries and contactless transactions due to health concerns.[98] Online shopping grew by 85% in 2020.[99] It was discussed in the above sections how these two sectors represent an avenue for growth for nascent startup ecosystems. It is therefore not surprising that Türkiye's first and second unicorns, Peak and Getir, were from casual mobile gaming and ultrafast delivery sectors, respectively. Both companies crossed the billion-dollar valuation mark during the pandemic. Three other unicorns followed, two of them in e-commerce, and another in mobile gaming.[100]

However, increased demand in these specific sectors was not the only factor that boosted the Turkish ecosystem in this period. On the supply side, though economy-wide disadvantages should not be disregarded, startups had inherent advantages that helped them bear the crisis. First, it was easier for digital startups to transition to online work as most of their operations already took place online, product and labor-wise. For example, an e-grocery startup could adapt more easily to the pandemic conditions compared to a traditional supermarket whose operations depend on the physical provision of goods and services. Moreover, startups had an advantage in managerial decision-making and implementation due to their smaller and simpler organizational structures. The flexibility resulting from digitalization and leaner decision making facilitated the adaptation of startups to the new economic normal.[101]

A similar dynamic can be observed in regards to the prioritization of quick and efficient solutions during the pandemic. The importance of rapid product and service deployment was better understood in light of the prolonged crisis conditions that may re-emerge as a result of potential future emergencies. This allowed the startup sector to penetrate industries traditionally dominated by large state and private institutions, such as healthcare. Though it is yet early to conclude that this aspect of the pandemic influenced the Turkish startup ecosystem in a tangible way, the emergence of Turkish

startups aiming for digitalization and efficiency in sectors such as renewable energy and healthcare may point out that Türkiye was also impacted.

Potential Challenges for the Ecosystem

In the previous sections we have discussed the reasons behind the recent acceleration of the Turkish startup ecosystem's growth. Its potential has started to be recognized by both domestic and international actors as evidenced by the historic exits and funding rounds. An analysis of this success would not be complete without a discussion of possible challenges, however. In this part, we aim to identify such potential pitfalls as to provide an analytical basis for our subsequent policy recommendations. Three main categories of potential challenges are recognized: Exhaustion of international interest, pitfalls resulting from macroeconomic and governance issues, and an exodus of startups and talent. It should be noted that these challenges parallel the factors that contributed to the ecosystem's success in the first place. Hence, this section draws attention to the hypotheticals where the Turkish ecosystem loses these

[97] *"The Consumer Demand Recovery and Lasting Effects of COVID-19," McKinsey&Company, 2020..*
[98] *Chandna, Asheem. "Covid-19's Impact On Startups: Assessing The First Few Months." Forbes, July 22, 2020.*
[99] *Sahin, Tuba. "Türkiye: Online Shopping Grows 85% in 2020," January 2021.*
[100] *"THE STATE OF TURKISH STARTUP ECOSYSTEM." Startupswatch, Invest in Türkiye, 2021.*
[101] *Sarioglu, Kubra. "COVID-19 Salgınının Türkiye'deki Girişimciler ve Faaliyetleri Üzerinde Etkileri: Nitel Bir Araştırma," 2020. https://dergipark.org.tr/en/pub/girkal/issue/60057/798797.*

advantages. Moreover, these categories are interrelated; the emergence of one set of shortcomings may trigger others.

The primary overarching risk for the Turkish ecosystem is the exhaustion of global interest in the Turkish ecosystem. Turkish startups first reached unicorn status through international exits, and the Türkiye branches of global VC funds play an increasingly central role in the ecosystem. This interest was attracted through the global success of Turkish mobile gaming, e-grocery and e-commerce startups. We explained the structural and pandemic-related factors that facilitated the success in those sectors in addition to the recent interest in fintech. For the attention of global VC funds and actors interested in acquiring Turkish startups to persist, the Turkish tech ecosystem should continue to advance at a sufficient rate. Primarily, the country should not lag behind significantly in adopting innovations that will shape the next major sectors suitable for startups. Availability of modern infrastructure such as a 5G network, sustained government and corporate support for R&D, and ensuring that professionals remain up to date with new technologies are among the necessary measures.

The key point here is that since the Turkish internal market is not large enough to generate unicorn and above level of valuations by itself, the country cannot afford to stay behind in terms of adopting globally relevant technologies. The internal market should be kept up to global technological and regulatory standards so that it can continue to serve as a staging ground for Turkish startups with globally applicable products and services.

A more subtle risk is related to the type of VC Turkish startups currently receive. Though the volume of VC has increased substantially, most of it is still comprised by seed and early-stage investment. In Europe, where the ecosystem is more mature, late-stage capital accounted for 73.6% through Q3 2021.[102] For Türkiye, the figure stands at 38% excluding Getir's extraordinary $ 550 million Stage D funding round. Indeed, for the past decade, the trend has been such that later stage VC occupied an important share in Europe, and a minor share in Türkiye. Two results can be drawn from this. First, it may be that the small volumes of investment in dollar terms are enough for Turkish startups that either cannot or do not desire to expand globally, causing them not to seek subsequent rounds of investment. On the other hand, this dynamic may also be reflective of the low-risk appetite of VCs. The latter case would not be sustainable for the ecosystem in the long run as it would cause the current trend of a handful of startups breaking through and the vast majority struggling to advance post early-stage and seed. Granted, it is a fact that most startups fail yet it remains essential to create a stable investing environment suitable for later-stage VC.

VC is, by essence, a relatively riskier form of investment. Thus, creating and maintaining conditions necessary to lower Türkiye's country risk is crucial to draw post-seed investment from both domestic and international investors. At present, the global outlook on Türkiye's investment climate is negative. In its 2020 report, the US State Department characterizes Türkiye's economic policymaking as opaque and unforeseeable, claiming that factors such as high inflation, exchange rate volatility and data localization measures impact risk perception negatively.[103] Moreover, rates of return for foreign direct investment in developing countries have diminished globally since the Great Recession, as noted by the 2020 report by the Turkish Presidential Investment Office. Combined with the pandemic induced recession, the gravity of the country risk becomes more pressing.

[102] *'Coming of Age amid Crises: A Year in Europe | PitchBook', accessed 19 April 2022, https://pitchbook.com/news/articles/Europe-private-equity-venture-capital-Brexit-pandemic-2021.*
[103] *'2020 Investment Climate Statements: Türkiye', United States Department of State (blog), accessed 19 April 2022, https://www.state.gov/reports/2020-investment-climate-statements/Türkiye/.*

However, it should not be forgotten that despite its global decline, VC inflows sharply increased for Türkiye during this unstable period. On a broader level, Türkiye recorded a successful recovery from the pandemic in terms of GDP and unemployment levels, being one of the few OECD countries to achieve positive growth in 2020. However, the World Bank notes that the continuation of the loose monetary policy could weaken investor confidence in the upcoming period. In addition to their direct effects, high inflation and volatile exchange rates render the country vulnerable to external shocks. Thus, Türkiye's investment climate can be improved by not compromising on the government's 3-year plan that targets lower inflation and a stable currency. Otherwise, the negative link between country risk and type of VC investment shows that the much needed later-stage capital may not arrive, or even cause the current VC to withdraw.

We have discussed in detail that Turkish startups that compete globally (and those that have the potential to do so) prefer to either expand to or relocate abroad in hopes of attracting global VC. Though this is usually seen as a positive development since it indicates the startups' potential, certain risks may appear if the desire to expand is overtaken by a drive to relocate, and in the case of talent, to emigrate. The aforementioned capital-related risk is one potential catalyzer for such a shift for startups. A scenario where the main motivation of Türkiye-based startups becomes to move abroad would harm the ecosystem greatly at this stage. While this may benefit relocated startups, and even increase Turkish founders' influence internationally, it would cause a dynamic similar to brain drain for the ecosystem.

The steps being taken by the government and other ecosystem actors to make entrepreneurship a vocation has been mentioned already, yet the cultural shift that will allow young professionals to see entrepreneurship as a valid career path has still not taken place. Thus, the relocation abroad of a significant share of startups may stifle the ecosystem's intake of new entrepreneurs by removing good examples alongside opportunities to gain experience for entrepreneur candidates. Moreover, the innovative potential of these startups would also be lost; even though Turkish consumers may still utilize their services, the technological progress fostered by startups relocated abroad would have to be re-imported, lessening their impact on domestic innovation. This should not be seen as a low-probability risk, either.

Countries with relatively more advanced and saturated startup ecosystems have already shown interest in importing Turkish startups. A report by the Netherlands Foreign Investment Agency not only draws attention to the potential of Turkish startups, but explicitly identifies the reasons that motivate them to move abroad, making the point that the Netherlands provides an ideal environment where such concerns can be overcome. A striking aspect of the report is that it was published in 2016, before the Turkish ecosystem achieved international fame. Similarly, on the side of talent, the benefit of relatively lower wages may turn against Turkish startups if either the talent moves abroad, or more likely, if the software developers decide to leverage their startup experience to move on to higher paid remote work for more established companies. Indeed, we see signs of this already starting to take place; local software developers are seeing increasing demand from technology companies in the USA and the EU. This situation poses challenges for Turkish technology companies in finding software developers. In order for this situation not to turn into a crisis, in the long run, companies in Türkiye need to open up to the international market. Therefore, the migration of software developers abroad is an important risk for the ecosystem on the one hand, but on the other hand, it creates a driving force for the globalization of companies in Türkiye due to the necessity of hedging against this risk.

In sum, excluding incalculable externalities, the identifiable potential challenges for the Turkish startup ecosystem reflect the downsides of the advantages it currently possesses. In order to ensure robustness against these possible issues, the ecosystem should continue to be supported by the state, corporate and other actors participating in the ecosystem under a well-defined and forward-looking framework. The policy proposals offered in this report also aim to mitigate such risks.

[104] *Presidency of the Republic of Türkiye Investment Office, 'Türkiye Destination for Early Stage Investments', March 2022, https://www.invest.gov.tr/en/library/publications/lists/investpublications/Türkiye-early-stage-investments.pdf.*
[105] *'Türkiye Economic Snapshot - OECD', accessed 19 April 2022, https://www.oecd.org/economy/Türkiye-economic-snapshot/.*
[106] *'The World Bank in Türkiye', Text/HTML, World Bank, accessed 19 April 2022, https://www.worldbank.org/en/country/Türkiye/overview.*

POLICY RECOMMENDATIONS FOR EU-TÜRKİYE INTEGRATION IN THE DIGITAL SPHERE

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CURRENT DEGREE OF INTEGRATION

A. EU INTERNATIONAL COOPERATION FOR DIGITAL DEVELOPMENT AND THE CASE OF TÜRKİYE

The European Commission has set an ambitious agenda to foster the EU's digital development. In the framework of its recent "Digital Compass: The European Way for the Digital Decade" initiative and the "The Digital Europe Programme", the EU has also emphasized that its effort should support developing economies in going digital and promote its standards internationally. The ambition is to achieve four major objectives: (a) improving the digital skills of citizens and professionals, (b) fostering sustainable digital infrastructures, (c) supporting the digital transformations of businesses and (d) advancing the digitalization of public services. In this framework, the European Commission has highlighted an international dimension of its vision. In this direction, the European Council has tasked the EU High Representative for Foreign and Security Policy to develop a communication on an EU global connectivity strategy by Spring 2022. As already communicated by the European Council, the underlying scope is to help third countries in the regulatory field, assisting them to establish regulatory frameworks through training, scholarships and exchanging information and best practices. In particular, the EU can promote its leading regulatory interventions such as the General Data Protection, the Digital Markets Act, the Data Governance Act and the Digital Services Act. Furthermore, an effort should be put into the telecommunications infrastructure side. In this case, the EU could help third countries to design and build secure data and telecommunication infrastructure. The EU could promote concessional loans, investment promotion and investment financing instruments to support such strategic investments. In this direction, in December 2021, the European Commission together with the High Representative for Foreign Affairs and Security Policy launched the "Global Gateway" initiative which aims to mobilize 300 billion euro in investments between 2021 and 2027. This initiative covers a broad range of priorities however a focus on digital infrastructure exists. The "Global Gateway" relies on the new financial tools in the EU multi-annual financial framework 2021-2027 through The Neighbourhood, Development and International Cooperation Instrument (NDICI)-Global Europe, the Instrument for Pre-Accession Assistance (IPA) III, Interreg, InvestEU and Horizon Europe.

International Partnerships for the Digital Decade

Actions
Setting a toolbox combining regulatory cooperation, addressing capacity building and skills, investment in international cooperation and research partnerships; • Designing digital economy packages financed through initiatives that bring together the EU, Member States, private companies, like-minded partners and international financial institutions; • Combining EU internal investments and external cooperation instruments; • Investing in improved connectivity with the EU's partners, for example through a possible Digital Connectivity Fund
Areas of strategic interest
• 6G • Quantum computing • Technology for climate change

Source: European Commission [107]

For example, within the IPA III framework, the EU acknowledges that digitalization is a key opportunity for growth and it should be addressed to avoid widening the gap between EU members and candidates. IPA III supports the model of innovation which encourages the interaction between academia, industry, government and civil society with a specific effort to establish mechanisms to create, support and promote startups oriented towards a circular and sustainable economy. Yet, the EU also stressed that "this will hinge upon the alignment with and the implementation of the EU acquis and the implementation of the Digital Agenda".[108] Not surprisingly, the EU called candidates to adopt the EU 5G toolbox to mitigate risks in the networks. This framework thus strengthens the importance of regulatory convergence in the digital space as a fundamental factor to push further ties.

After an intense discussion between the European Commission and the European Parliament's industry, research, and energy committee (ITRE), it was specified that the any third country's participation in the Digital Europe Programme "must be in the EU's interests, contribute specifically to cybersecurity goals, and not pose any security concerns". There are four categories of countries eligible for association with the program and considered as "third countries" (members of the European Economic Area (EEA); accession countries, candidate countries and potential candidates; European neighborhood policy countries; and non-EU countries and territories that fulfil a set of criteria related to their economic, political and research and innovation systems). This definition is applied to the eventual participation of third countries in both the Europe Digital Programme and Horizon Europe. Both have a strong focus on technologies. However, while the former is focused on digital capabilities and infrastructures, the latter is a research program ITRE voted on the Digital Programme and Horizon Europe in the same session. As an associated country to the Horizon 2014-2020 program, Türkiye received 280 million euro in net EU contribution, 4.59% of associated countries total, recording 820 grants. Most of the grants were allocated to private for profit organizations (excluding education) – 39% of the total funding – while 35.2% was directed to higher and secondary education, 12.7% to research organizations and 11.5% to public bodies (excluding education and research). Overall, the country

achieved a positive record, being fourth out of the sixteen associated countries by both the participation and the budget share ranks.[109] However, Türkiye performed poorly in comparison to other associated countries as its success rate was 9.91% against an average of 13.35% of latter countries.[110] From May 2021, the EU has started negotiations with third countries which have formally expressed an interest in joining the program. Türkiye was one of the countries that expressed interest in joining Horizon Europe. For the period 2021-2027, Türkiye has been granted association status with Horizon, and the EU research and innovation program. Türkiye has also expressed an official interest in joining Europe Digital Programme.[111]

B. THE EIB AND THE EBRD

The European Investment Bank (EIB) already operates in Türkiye. According to the latest figures, it has cumulatively invested over 30.4 billion euro in the country, funding 261 projects. Within the existing investment lines of the EIB in the country, a focus on SMEs and innovative companies exists. Türkiye has had access to the "InnovFin – EU Finance for Innovators" initiative, launched by the EIB in cooperation the European Commission under Horizon 2020, the EU Research and Innovation program for the budgetary period 2014-2020. The aim of the initiative was to ease and boost finance for innovative businesses. For example, in 2014 the EIB borrowed 55 million euro to Tofaş, a car manufacturer, which has been the first transaction in Türkiye supported by the "InnovFin – EU Finance for Innovators". This initiative, with the expectation of a few financial products, ended in December 2021. However, it can provide insights on how it supported innovation where it operated. According to its estimation, InnovFin supported more than 30,000 small and early-stage enterprises.

[107] *European Commission. 'Europe's Digital Decade: Digital Targets for 2030'. Text, 2021.*
[108] *European Commission. 'Commission Implementing Decision' p 43, 2022,https://ec.europa.eu/neighbourhood-enlargement/system/files/2022-01/C_2021_8914_COMMISSION_IMPLEMENTING_DECISION_PF_EN.pdf*

Among the range of instruments offered by the EIB to Türkiye as a candidate country for EU's enlargement, Turkish startups could particularly benefit from the equity and guarantees program provided by the European Investment Fund (EIF) – which is the arm of the EIB that invests in venture capital and private equity funds that support SMEs and innovation. It also offers finance risk products and equity and debt instruments to financial intermediaries with the aim of improving risk capital available for innovative SMEs. According to EIF's annual report, in 2020, Türkiye ranked 16th by total exposure of risks, up from the 25th place in 2019. For example, in 2020, the EIF closed an agreement with the Diffusion Capital Partners (10 million euro), a leading Turkish venture capital funds and with Kredi Garanti Fonu (21.6 million euro), a non-profit guarantee institution mainly funded by Turkish financial institutions. From a closer analysis of the yearly annual reports of the EIF, two remarkable trends are noticeable. First, the risk exposure to Türkiye of the EIF's portfolio seems to have decreased over time, from 3.8% in 2015 to 1.7% in 2018. Second, the fund were allocated to traditional Turkish financial institutions as well as to Turkish venture capital funds which could reflect a broader impact on SMEs and startups in the country.

EIF's Agreements with Turkish Counterparts:

2019

Actera Partners III (48.3 million euro)
Digital East Fund II (30 million euro)
Revo Capital Fund II B.V. (15 million euro)
ScaleX Ventures Angel Fund Cooperatief U.A (11 million euro)
Kredi Garanti Fonu - COSME LGF (20 million euro)
Fibabanka - EaSI – MF (1.6 million euro)

2018

Collective Spark Fund B,V, (15 million euro)
Fibabanka - EaSI – MF (1.6 million euro)
• **1.7% of risk exposure in Türkiye**

2017

CEECAT SEE Türkiye Lending Platform (40 million euro)
212 Regional Fund II S.C.S (20 million euro);
ACT Fund Cooperatief UA (5 million euro);
Diffusion Capital Fund Coperatief U.A (6.7 million euro);
• **2.7% of risk exposure in Türkiye**

2016

Taxim Capital Partners I LP (30 million euro)
Mediterra Capital Partners II (40 million euro);
Abraaj Türkiye Fund I (17.8 million euro)
Finansbank AS (8.4 million euro)
Finansbank A.S (4.9 million euro)
• **3.3.% exposure risk to Türkiye**

2015

Abraaj Türkiye Fund I (35.4 million euro)
Kredi Garanti Fonu (9 million euro)
Halkbank - GAGF

2013

Vakiflar Bankasi - GAGF2 2013 (2.3 million euro)
• **3.8% exposure risk to Türkiye**

Moreover, the EIF is the main investor, together with the KOSGEB, of the Istanbul Venture Capital Initiative (iVCi), in addition to being its advisor. iVCi has a total commitment of 160 million euro and, in 2018, it has raised funds for 1.5 billion euro. When established, the iVCi was one of the two independently managed VC/PE funds on the Turkish market. The OECD has praised the impact of the iVCI's impact on the Turkish market, as it is "crucial in maintaining financial discipline and efficient corporate governance within SMEs, two key traits for international competitiveness". iVCi has signed ten commitments including a co-investment amounting to EUR 160 million. By December 2018, iVCi's net aggregate investments reached EUR 129.5 million, targeting 74 companies. Most of the iVCi committed funds go to innovative and early-stage firms including 39 SMEs and 12 hydro, wind and biomass small-scale clean energy projects. By December 2018, iVCi's net aggregate investments in SMEs reached EUR 61.5 million, leveraging EUR 504 million of investment of the portfolio funds into these SMEs.

Furthermore, the EIF has launched, together with the Undersecretariat of Treasury, Small and Medium Enterprises Development Organization of Türkiye (KOSGEB) and the Industrial Development Bank of Türkiye (TSKB), the Turkish Growth and Innovation Fund (TGIF) in May 2016. Its total fund is around 200 million euro of which 60 million euro are allocated by the EIF. TGIF aims at investing in innovative Turkish companies. TGIF aims at investing 40% of its aggregate commitments in funds that finance seed, early-stage and startup businesses and accelerators, while the remaining 60% in funds with a focus on expansion capital, replacement capital and buy-out stage investments. However, according to the OECD, the TGIF is still underdeveloped. It has only signed five commitments since its establishment and, by the end of 2018, the amount invested by the underlying funds reached 34 million euro through 12 investments. There is then room to improve the operations of the TGIF. In addition, the EIF contributes to the G43 Anatolian Venture Capital Fund (G43 VC Fund) which is a project developed under the IPA (Instrument for Pre-accession) funds. The EIF, through a Contribution Agreement, is the trustee administrator of the EIF-IPA Commitment and acts as an implementing body for the creation of a new SMEs risk capital fund targeting Türkiye's most disadvantaged regions. KOSGEB is responsible however for the management and performance of the G43 VC Fund operations. The focus of the fund is to invest in SMEs in South-eastern Anatolia Region and it began its operation in 2012. Regions targeted by the G43 Fund Project are characterized by having a per capita income lower than 75% of the Turkish national average according to 2001 statistics. 85% of the Instrument for Pre-Accession Assistance (IPA) funds are provided by the European Union, and the remaining 15% by the Republic of Türkiye. By 31 December 2017, the project came to an end and the fund had invested in 3 companies.

The EIF has also launched in 2014 the Technology Transfer Accelerator Fund (TTA Türkiye) with the EU and Türkiye's Ministry of Science, Industry and Technology (MoSIT) under the regional development component of the country's Instrument for Pre-Accession Assistance (IPA) funds. Diffusion Capital and ACT Venture Partners, the first two funds supported under TTA Türkiye, invested altogether in 27 proof-of-concept projects, startups and early-stage enterprises. The European Commission also cooperates with the KOSGEB through the European Commission's Programme for the Competitiveness of Enterprises and SMEs (COSME). In this framework, QNB Finansbank and the EIF closed guarantee agreements so that the former could provide 750 million Lira (or 228 million euro) of loans to over 37.000 small businesses in Türkiye. Moreover, KGF, through the Credit Guarantee Support of COSME, signed another guarantee agreement with the EIF which allow Turkish SMEs to use credit – up to 1 million Lira with a term of sixty months and with a guarantee period of 12 months. The program is expected to provide more than 3 billion Lira to Turkish SMEs.

Türkiye has been a country of EBRD's operation as well as a donor since January 2019. In the country, the EBRD has funded more than 350 project with a cumulative investment of around 14.1 billion euro. 19% of the EBRD's Equity Funds portfolio and 13% of the EBRD's Equity program has been invested in Türkiye. According to the EBRD's strategic priorities in Türkiye for 2019-2024, a focus on

[109] *European Commission. 'Türkiye Horizon 2020 Country Profile', 2020. https://webgate.ec.europa.eu/dashboard/extensions/CountryProfile/CountryProfile.html?Country=Türkiye.*
[110] *European Commission. 'H2020 Country Profile - Key Figures - Türkiye'. https://webgate.ec.europa.eu/dashboard/sense/app/a976d168-2023-41d8-acec-e77640154726/sheet/0c8af38b-b73c-4da2-ba41-73ea34ab7ac4/state/analysis/select/Country/Türkiye.*
[111] *European Parliament. 'Proposal For a Regulatıon Establishing the Digital Europe Programme 2021-2027'. https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-mff-digital-europe-programme*

"fostering Türkiye's knowledge economy and higher value-added activities" exists. In this direction, the EBRD has launched the "EBRD Star Venture Programme" which aims to help startups to access finance and provide them with advisory services. However, according to the latest information released by the Bank, no Türkiye startup has been included in the program. It seems that the Turkish startups ecosystem still has much potential to extract from the current programs launched by the EBRD. For example, within the "Start Venture Startups" program, in comparison to the other participant countries, it appears that Türkiye is lagging behind.[114] A better scenario stands out considering two other lines of the EBRD's activities for startups. The EBRD also invests in selected venture capital funds through the "Early-Stage Innovation Facility" while, through the "Venture Capital Investment Programme", the EBRD can co-invest directly in innovative companies. The latter has invested in six Turkish companies: Hazelcast, Marti, Modanisa, Obilet, Onedio, DgPays and Trendyol. The most recent has been the early VC stage investment into DgPays, a promising Turkish fintech startup.

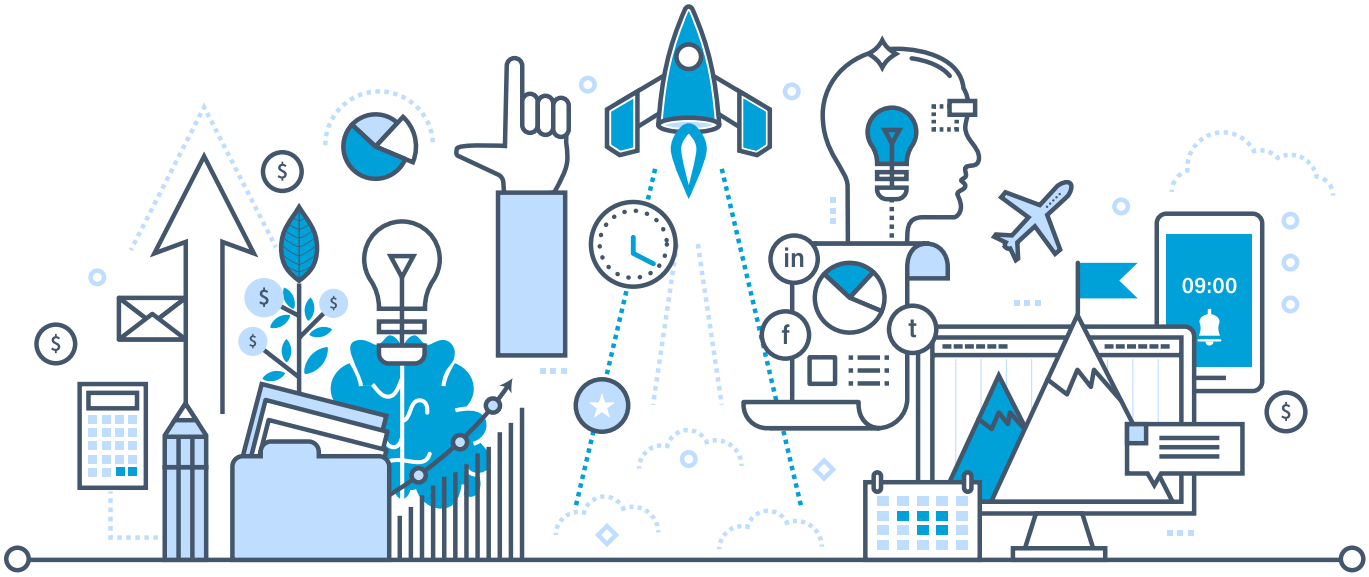
Despite not being solely directed towards digitalization and startups, the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME) program is worthied to be mentioned as it could provide interesting opportunities. The aim of the program is to promote entrepreneurship and improve the business environment for SMEs to empower their business models. COSME had a budget of 2.3 billion euro in the period 2014-2020. Türkiye participated in the program since its launch in 2014. COSME promoted, for example, the Europe Enterprise Network which helped SMEs cooperation across borders as well as fostered advisory services among them. However, according to an interim report commissioned by COSME, in the period 2015-2017 only 1% of the funds was allocated to third countries.[115] As showed by the COSME dataset, Türkiye received only 14 million euro for 73 projects of which most to fund Turkish SMEs in the Europe Enterprise Network.[116] In the 2021-2027 MFF, COSME activities will be included in the Single Market Programme (SPM) which is an EU larger initiative to improve the functioning of its internal market.

[112] *OECD. Financing SMEs and Entrepreneurs 2020: An OECD Scoreboard - Türkiye. Financing SMEs and Entrepreneurs. OECD, 2020. https://doi.org/10.1787/061fe03d-en.*
[113] *See the current portfolio of the Programme: https://www.ebrd.com/starventure/startups*
[114] *Seee a list of the current projects by country: https://www.ebrd.com/starventure/startups*
[115] *European Commission, Technopolis Group. 'Interim Evaluation of the COSME Programme', 2017. https://www.technopolis-group.com/wp-content/uploads/2020/02/Interim-Evaluation-of-the-COSME-Programme.pdf.*
[116] *'COSME Data Hub', https://cosme.easme-web.eu/.*

FOCUS ON EU'S STARTUP ECOSYSTEMS: CURRENT TRENDS, EXISTING CHALLENGES AND FUTURE DEVELOPMENTS

EU's startup ecosystem is currently underweighted in comparison to the bloc's global economic development. According to a McKinsey report, despite generating 36 percent of the world's startups, it comprises only 14 percent[117] of the world's unicorns and, if adjusted for population and GDP, the number of seed-stage startups that Europe generates is only 40 percent of that generated by the United States. Moreover, European startups were 30 percent less likely to progress from seed to a successful outcome (defined as securing Series C funding or beyond, going public, or being sold), as compared to startups that raised seed funding during that time in the United States.[118] This megatrend is also noticeable in the development of startup ecosystems. According to the Global Startup Ecosystem Report 2021, out of the top 30 existing hubs, only four are located in the EU - Paris (#12), Amsterdam (#13), Stockholm (#17), and Berlin (#22).

However, the European startup ecosystem has been showing great growth and dynamism over the past years in terms of investments and new initiatives, recording a growth of 78% in venture capital funding between 2016 and 2020 and registering ten out of thirty of the top 30 emerging ecosystems.[119] EU startup ecosystems currently face remarkable challenges in scaling up their business. Most of the existing literature agree that the underdevelopment of EU's startups is mainly linked to three structural factors: (i) low integration in services and digital markets, (ii) underdeveloped venture capital markets and (iii) lack of staff with the right skills and low capacity to retain top talent. [120]



[117] *Source: https://europeanstartups.co/ , privately held innovative company with a value of more than 850 Mio EUR (corresponding to approximately 1 billion US dollar) headquartered in the EU (not acquired and not public). 12 April 2021*
[118] *Baroudy, Kim, et al. 'Europe's Startup Ecosystem: Heating up, but Still Facing Challenges | McKinsey'. McKinsey, 2020. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/europes-startup-ecosystem-heating-up-but-still-facing-challenges.*
[119] *'GSER 2021'. Startup Genome, 2021. https://startupgenome.com/report/gser2021.*
[120] *See: https://www.eib.org/attachments/efs/economic_investment_report_2019_key_findings_en.pdf; https://institutdelors.eu/wp-content/uploads/2020/10/5-DIGITAL-Dittrich-1-1.pdf; Baroudy, Kim, et al. 'Europe's Startup Ecosystem: Heating up, but Still Facing Challenges | McKinsey'. McKinsey, 2020. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/europes-startup-ecosystem-heating-up-but-still-facing-challenges.*

Despite the EU having, in theory, a digital single market, the union is still highly fragmented and diverse. Its members differ in terms of cultures, governments and languages. These differences can significantly affect consumer behaviors. For a European startup to address a market that is similar in size to that of the United States, it would need to enter twenty-eight heterogeneous countries. Furthermore, there are still relevant differences in the regulatory landscapes adopted by EU members. This issue is particularly noticeable in the digital space where the EU single market appears to be not well integrated. The fragmentation of the internal market also undermines the establishment of "superhubs" which can foster positive effects by concentrating capital, knowledge and talent. While in the US almost half of the startups are located in superhub, in the EU this share drops to about 30 percent. With Brexit, the EU has also lost its biggest hub, potentially increasing its gap globally.

Leading Startup Cities in Europe from 2015 to 2020, by Number of Investments [121]

City	2016	2017	2018	2019	2020
London	263	547	624	598	1,370
Paris	341	364	366	433	351
Berlin	219	232	244	261	313
Zürich	-	26	92	114	168
Stockholm	69	169	165	163	154
Munich	56	57	97	91	130
Amsterdam	49	50	79	58	127
Barcelona	63	73	89	83	116
Dublin	76	46	65	50	96
Copenhagen	23	55	64	47	95
Vienna	9	23	43	46	92
Tallinn	-	-	-	21	84
Helsinki	31	51	63	47	83

Another key challenge is related to private funding. The low levels of venture capital investments have been historically an issue for European companies. European startups experience considerable barriers to raise large funding rounds, which result in remarkable gaps in the Series D and E stages. According to a PWC survey, in 2018 the major source of funding for European startups was self-funding (66.5%) followed by business angels (8.7%), venture capital from other companies (7.1%) and venture capital from Private Equity Firms (6.3%).[122] Nine years after foundation, a European startup has attracted around 54% less funding compared to a US startup.[123]

Despite the historical risk aversion of European investors, 2.3 times more pension funds were committed to European venture capital in 2018 compared with the four previous years. In 2019, capital invested in rounds of $100 million and more in Europe was four times that of 2014. The continent also saw an increase in mega-funding rounds of $100 million and more, and even six $500 million–plus

[121] *Statista. 'Europe: Biggest Startup Cities 2015-2020', 2022.*
[122] *PricewaterhouseCoopers. 'European Startup Survey'. PwC, 2018. https://www.pwc.com/gx/en/services/entrepreneurial-private-business/small-business-solutions/european-startup-survey.html.*
[123] *European Investment Bank. From Starting to Scaling: How to Foster Startup Growth in Europe. LU: Publications Office, 2020. https://data.europa.eu/doi/10.2867/42527.*

rounds, in 2019. Despite this positive trend, the financing gap remains remarkable.

Lastly, even though the EU has a tech talent cost advantage compared to the US, it seems that the EU countries experience remarkable troubles in retaining talents and in finding staff with the right skills. European startups perceive as a higher barrier the lack of availability of staff in contrast to US counterparts (34% against 15%).[124] European startups might meet these issues as in many EU countries there are unfavorable equity and stock-option rules, which combined with lower wages, could make these companies less appealing to high-qualified talents. EU national governments and European institutions have been putting an effort to promote and sustain the development of domestic startups. Since 2016 with the "Europe's Next Leader: the Startup and and Scale-up Initiative", the European Commission has attempted to mitigate the structural issues anchoring down the development of startups.[125] The recent "Communication on the Digital Compass" has set the target to double the number of unicorns in the EU by 2030. To achieve this ambitious goal, the European Commission has launched several initiatives under the broad umbrella of the "Startup Europe" initiative. Among these initiatives, the "EU Startup Nation Standard" appears to be a key policy action. It aims at promoting common practises across the bloc at local, regional and national levels to ease growth and scaleup of startups in the continent. The[126] "Startup Europe Partnership"[127], which is an open platform dedicated to supporting the growth and sustainability of European startups able to compete and raise funds internationally, and the "Startup Europe: Building Ecosystems"[128], which tries to connect and consolidate synergies across EU members, are also relevant initiatives put in place by the EU Commission.

[124] *Ibid.*
[125] *Svensson, Erik. 'Europe's next Leaders: The Startup and Scale-up Initiative'. European Economic and Social Committee, 2017. https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/europes-next-leaders-start-and-scale-initiative.*
[126] *EU Startup Nations Standard. 'Startup Nations Standard', 2020. https://startupnationsstandard.eu/.*
[127] *European Commission. 'Startup Europe Partnership | Shaping Europe's Digital Future'. https://digital-strategy.ec.europa.eu/en/policies/startup-europe-partnership.*
[128] *https://digital-strategy.ec.europa.eu/en/policies/startup-europe-building-ecosystem*

Policy Recommendations

Recommendations for the EU

Bottleneck	Causes	Solutions	Methods	Rationale
Difficulties finding suitable partners for collaboration	Lack of familiarity with the market High-risk perception Lack of opportunities to showcase collaboration potential Difficulty reaching information	Facilitate exploration and matchmaking between entities	Establish an EU-TR Startup Hub	Acclimatizing entities from both sides can encourage joint innovation and unlock lucrative partnerships that support efforts to scale up, internationalize and develop sophisticated capital-intensive technologies
Sub-optimal participation in ongoing EU programs	Over-bureaucratized application procedures Deep R&D requirements that lack commercial perspective	Simplify and streamline procedures	Review application procedures Establish green lanes linked with policy priorities Integrate a commercial perspective in existing instruments and programs Fund facilities and workshops in Turkey aimed at enhancing applications	Improving the application procedures and integrating a commercial perspective would result in more efficient and mutually beneficial use of EU funds allocated to partnerships between the two markets' entities
Unrealized potential of European private investments in Turkey's startup ecosystem	High risk perception due to macroeconomic volatility, political and rule of law issues and Turkey's lack of investment-grade	Increase and enhance support in financing Refine existing financial instruments and programs to better fit Turkey's risk profile	Better endowments and Turkey focused facilities in European financial institutions Risk-sharing through blended finance, guarantees and hybrid instruments Co-invest in funds with asymmetric return profiles	De-risking investments and crowding in private capital can allow Euopean investors to acclimatize with the market, unlock lucrative deals for European investors and Turkish startups and enable joint innovation notably in deep technologies
Digital transformation and large-scale skills upgrading moving out of reach	Lack of concerted efforts toward skills upgrade Room for growth in peer-to-peer learning and innovation opportunities	Invest in human capital Enable innovation exchanges between researches and entities	G43 VC Fund ESF+ for skills upgrading in candidate countries ENP Talent events Greater funding in TÜBİTAK toward partnerships in aligned research areas	Eradicating the urban-rural divide and closing the digital skills gap in Turkey are in line with the EU's goals in the country

Facilitate exploration and matchmaking between entities of the two markets

Network connectivity within and between innovation ecosystems greatly contributes to sustainable business growth with high societal value. A chief grievance of scaleups from both markets is the difficulties in identifying suitable partners for their endeavors. Establishing an EU-Türkiye Startup Hub, funded under the CONNECT and SCALEUP [129] actions of the Horizon Europe program, would help unlock partnership opportunities and joint innovation between the markets by providing the conditions for value creation to flourish. The main objectives of this undertaking would be to facilitate collaborations between startups, investors, incubators, and aspiring entrepreneurs from both markets; provide the requisite resources for market entry; offer networking opportunities and links with potential partners and produce pilot opportunities for companies. If a gradual approach is preferred, the priority should be bringing VCs from Europe and Türkiye together to encourage learning from an investor perspective and facilitate sourcing deals.

In tandem with these goals, the hub should be equipped with a one-stop digital platform that incorporates networking tools and accessible information on a wide range of topics. These topics can include the application procedures of European programs targeting third-party startups to complete and up-to-date guides on regional and domestic regulations that pertain to market entry. A later update could feature market validation tools that provide a broad look into the fit between products and markets. It would also be beneficial to organize an annual flagship gathering under the auspices of the hub, in addition to thematically or sectoral focused meetings that bring together the relevant operators and hackathons and challenges that invite joint innovation to resolve challenges that resonate with both markets.

For European investors, such a medium would breed familiarity with market dynamics, empowering informed decisions that rest upon a solid contextualization of the risk factors against the market's strengths. This would afford the first-mover advantage in identifying lucrative opportunities in the vibrant Turkish ecosystem beyond the segments that have already lured interest with the recent success of Turkish ventures. For companies, the hub would alleviate the hurdles of matchmaking and exploration processes and facilitate the identification of suitable business partners, investors, and the appropriate support mechanisms for the value creation potential to materialize. The public sector would also benefit from this endeavor, harnessing the energy and resources of a larger pool of innovators to tackle shared challenges, ranging from wildfire management and the development of smart cities to the enhancement and security of civic processes.

Optimize the use of available mechanisms

The EU should ease the application and allocation of its current financial instruments (within the IPA III and EIF frameworks), notably when business opportunities are coupled with policy targets – such as female entrepreneurship, sustainability, or digital gaps. IPA III and the EIF should develop specific programs to support identified startups in the application process and implementation phase.

To maximize the impact of the Horizon initiative, the EU should actively fund facilities and workshops established in Türkiye in which academia, institutions and the private sector could gain practice, and knowledge on standards, rules and criteria when applying for funds. These appointments could also be used to promote a dialogue among EU and Turkish counterparts to foster synergies and cooperation to incentivize consortiums with actors from both sides.

Increase and enhance support in financing

While European, national, and regional promotional institutions are already active in increasing the availability of equity capital through direct and indirect investments, there remains a significant need for more equity financing and more effective public instruments. There are clear gaps in the availability of investments across the life cycle of an enterprise, most notably in growth and maturity stage funding. A core factor that underpins this picture is Türkiye's investment grade and subsequent risk profile. European financial institutions are well placed to resolve this challenge to the benefit of European investors and Turkish startups alike, by de-risking investments and crowding in private capital if provided with better endowments and targeted facilities with a focus on Türkiye.

[129] *'More than €90 Million Available under the First Calls of the European Innovation Ecosystems Work Programme', accessed 15 April 2022, https://eic.ec.europa.eu/news/more-eu90-million-available-under-first-calls-european-innovation-ecosystems-work-programme-2021-07-13_en.*

One policy direction to improve the venture capital ecosystem in the country could be allowing Turkish VCs to apply for IPA projects as an early-stage investment within the scope of thematic projects associated with specific policy goals as well as in helping fund other ecosystem institutions, such as incubators and accelerators. At the same time, EIF and IPA III funds could be used to invest in connectivity infrastructure – such as data centers - if third country ensures the respect of standards in terms of security and protection of data.

Single Market Programme (SPM)

COSME, which will be included in the Single Market Programme (SPM), showed great potential. Building upon its Europe Enterprise Network, the Commission could create a specific program to promote startups' development in third countries. Within this framework, the program could establish initiatives of structured dialogues in Türkiye in which private sectors from both sides can work together and exchange ideas as well as develop business opportunities with the funds made available from SPM. A focus of this initiative should be to privilege investments in startups that aim at empowering female entrepreneurs and vulnerable groups, as well as to eradicate the urban-rural divide and to achieve SDGs.

Fund of Funds

A fund of funds has prevailed as the most convenient structure for blending resources from EU funds with contributions from IFIs, national public and private sectors, leveraging resources and increasing impact, ensuring efficiency and effectiveness, and directing public resources to profitable investments.

Building on the lessons from The Technology Transfer Accelerator Türkiye project (TTA), The IPA II Türkiye Future Fund (TFF) Action was launched in 2019 to encourage the commercialization of R&D activity and foster technology-based entrepreneurship in Türkiye under an initiative managed by the EIF. The TTF envisaged the establishment of a Fund of Funds that invests in Accelerators and Early Stage/Seed Stage Venture Capital Funds/Technology Transfer Funds with a strong focus on innovation. The EC and IFI's involvements have been essential in creating a signal effect for the market, contributing to the appetite for third-party investment in the fund. Against this backdrop, EC and IFIs should consider increasing both the contribution (notably in risk capital) and the expert support to the TFF to allow for greater opportunity for tech investments in the country and joint innovation projects between entities from the two markets.

Blended finance

The financial tools implemented alongside International Financial Institutions within the framework of IPA III, notably investment guarantees and blending, could help mitigate the high-risk perception shared among EU investors towards Türkiye and help mobilize private capital. The Conclusions from the 2016 Evaluation of Blending had recommended expanding the use of risk-sharing instruments to financial intermediaries selected for their strategy and policies. Among the types of grants covered under the blending framework, the extension of risk capital and guarantee mechanisms could make great strides in bringing Türkiye's risk profile to investment grade for private sector investors.

Blending has allowed the EU to engage with partners more broadly and with a strategic advantage. The increased use of blended finance would allow for European capital to acclimatize with the market, assess their risk more accurately, increasingly invest without public support and benefit from a first-mover advantage in verticals set to thrive in the near future. Blended finance structures could also incentivize the much-needed patient capital from the private sector, helping unleash the growth potential of Turkish startups and unlock win-win scenarios for both the investors and entrepreneurs of the two markets.

Guarantees

As was recently discussed between the delegations of Türkiye and the EU, the EC should consider extending the use of European Fund for Sustainable Development Plus (EFSD+) Guarantees, thus far focused on Africa, to Türkiye. This would leverage additional financing from the private sector cushioned by the backing of cash liquidity for startups whose activities could advance the Fund's goals. The EBRD and EIB's guarantee facilities could also be used to finance a combination of Technical Assistance to local partner financial intermediaries (PFI) and/or credit enhancement support for PFIs. One way of doing this may be adapting the model of the SME Finance Facility to benefit tech startups. Another direction could be using the guarantees to de-risk bank loans to tech ventures.

First-loss and second-loss facilities

Greater focus on European thematic investment funds on Türkiye's part, particularly those benefiting from first

loss guarantees, could de-risk LPs by providing partial loss insurance while also ensuring progress towards the fund's goals. A prime example of such funds is AgriFi which targets agri-entrepreneurs – a sector in which Türkiye and Europe share common objectives and commitments centered around the EU's Green Deal. European financial institutions could also consider establishing second loss facilities in collaboration with local and regional financial partners with a particular focus on the deep-tech space and key enabling technologies. Both markets would benefit from such a move because these areas constitute a strategic priority for the EU and Türkiye alike, and investment supply is particularly scarce in both markets, given the segment's characteristics of high capital intensity, high risk of failure and long pilot and commercialization lines before revenue uptake.

Co-investments as Limited Partner in VC, PE and banks

Through the Early-Stage Innovation Facility, the EBRD actively invests in Turkish VC funds and pursues co-investments as a limited partner providing risk-sharing facilities and loans to local PE funds and other strategic partners to make equity investments in innovative companies in the market. Building on the success of two rounds of investments in Türkiye's leading VC funds and a history of prosperous co-investments with strategic and financial investors, the EBRD and the EIB should increase the allocation of resources to entities that have proven to be efficient, transparent, and profitable in channeling funds to the most appropriate players and which have a solid portfolio of ventures and equity investments. A particularly beneficial direction would be the provision of funds specifically defined in scope for follow-on investments, to close the gap in later-stage finance available to local startups and encourage their efforts to scale up and internationalize.

Direct equity investments

As a shareholder in 30 Turkish companies, the EBRD should review its risk approach with a view of broadening the scope of its direct equity investments in Türkiye made through its Venture Capital Investment Programme. The Bank should consider participating in the seed and early-stage investments of startups in a wider range of sectors, with a track record of transparent disclosures and high growth potential. One way of defining a wider scope could follow the FMO Ventures Programme of the Dutch Development Bank, which allocates 50% of its budget to provide Series A/B with follow-on capital to innovative startups and scaleups in emerging markets active in the Fintech, Energy Access, and Agritech space.

Loan facility

Finally, a novel insight that prevailed through the interviews conducted with beneficiaries of Horizon 2020 in the context of this report, has been the loss of profitable partnership opportunities due to the support thresholds embedded in the framework, particularly those that pertain to R&D. In light of this finding, the EU should consider reviewing the deep R&D requirements with a view of giving space to a commercial interest-driven perspective and supporting projects with high potential of returns for collaborators on both ends even if the desired depth of innovation is lacking. If such a move is deemed incompatible with Programme objectives, then consideration should be given to establishing a separate loan or direct investment facility through the EBRD, EIB or EIF to service joint endeavors in highly remunerative activities, that do not meet the R&D conditions set under the Horizon framework.

Hybrid instruments: Mezzanine finance and venture debt

Mezzanine finance

Alternative debt instruments that may rebalance the risk-return equation, such as mezzanine debt with equity characteristics are also in insufficient supply in Türkiye. Structured funds with a focus on Turkish startups can allow other investors to invest in the mezzanine (public finance institutions) or senior tranche (private investors), such as the model implemented in the Microfinance Initiative for Asia (MIFA) Debt Fund (AIF/IFCA).

Venture Debt

Venture debt provides financing to higher risk, IP-rich companies by allowing creditors to partake in the upside. It is therefore a hybrid instrument combining debt and equity characteristics that can be applied earlier than commercial bank lending and later in the stage than equity. It has no dilutive effects and preserves the higher return rewards available to the original risk-takers, i.e., the founders and first investors. Examples of successful venture debt initiatives include SPRING's Venture Debt Programme in Singapore, and the British Business Bank's Help to Grow program in the UK. Venture debt is lacking in Europe in comparison to the US, yet of high interest to key enabling technology producing companies that

have demonstrated first revenues and the need to scale up. The EIB Group has recently introduced new hybrid instruments with the extension of InnovFin to include venture debt funds and the launch of the "European Growth Finance Facility", a quasi-equity type of debt under the EFSI umbrella. The use of these facilities could be opened to Türkiye, given the potential of EU-TR collaboration in the deep-tech space. These could be further enhanced through co-investments by the EIB Group into venture debt funds. These facilities could be fine-tuned to crowd in investors through co-investment models and/or the provision of guarantees.

Refine existing financial instruments and programs to better fit Türkiye's risk profile

While European financial institutions already invest significantly in Türkiye's venture capital ecosystem, they typically only increase the size of the funds but do not adjust the risk profile to attract the right investors. Co-investing in funds with Zcould support the involvement of additional private-sector investors and may be done at a limited cost. "Asymmetric return profiles" refers to investors having different return profiles (e.g. one having higher risk but higher return than another) while typically, investors in a VC fund share the same risks and potential returns. The use of such structures can help take advantage of the varying risk appetites of investors and thereby introduce a way to significantly expand the overall amount of venture capital available, especially for deep tech funds.

Such structures have successfully developed vibrant VC environments such as are present today in the US and Israel. Through its Small Business Investment Company program, the U.S. Small Business Administration essentially leverages smaller VC funds, thereby taking less risk (as it is paid back first) but enhancing the returns for investors. In Israel's Yozma program, launched in 1992, the funds were co-invested by public and private sector actors, but private investors had the option to buy back the government's investment after five years at a predefined cost, thus increasing the potential return of the investor while limiting its downside. In Europe, Sweden is exploring this option with the creation of Saminvest.

Invest in human capital and enable innovation exchanges

- Türkiye and the EU should form joint initiatives to re or up-skill workers and transform the education system to empower the youth to be ready for what the future brings. In this context, both parties should encourage partnerships that invest in human

capital between European and Turkish civil society organizations, by allocating public funds to adapt the model employed by Turkish civil society organizations in their collaborations with private actors, such as in the case of Girvak and Google's joint Game and Application Academy

- In line with the G43 VC Fund, the EIF could expand its scope by investing resources to help remote areas to tackle the urban-rural divide as well as the digital skills gap. In addition to what was implemented in previous years, it could also provide funding that can be used to offer free classes, digital skills, or entrepreneurship initiatives in remote areas. Attention must be paid to the skills upgrading to prepare today's youth for future challenges connected to the digital transformation.
- A specific effort could be addressed to improve cooperation between EU and Turkish educational systems, thus unifying the investments through Erasmus+ and Horizon activities with digital transformation.
- The EU could consider allocating an amount from The European Social Fund Plus (ESF+) for skills upgrading in candidate countries in line with its objective of supporting digital transformation

To benefit from a larger pool of innovators in joint projects:

- The EU should include candidate countries and the participants of the European Neighbourhood Policy in talent events and sector-specific innovation exchanges
- The EU and Türkiye should encourage local and regional authorities to work with higher education institutes and the local private sector to design PhD positions whereby a doctoral candidate's work would target commonly identified problems existing in local communities, among local enterprises or in value chains that bring together Turkish and European entities. A successful case of such collaboration is the PhD program sponsored by Rolls Royce at The University of Nottingham, created to 'address key challenges in manufacturing engineering'.

The EU and Türkiye should explore options to further collaboration between EU research institutes and corporate labs in capital-intensive research areas and qualified Turkish engineers and researchers who can contribute to the Horizon funding programs. This can be done via greater allocation of EU public funds in TÜBİTAK through EFIs, to be channeled towards expanding and broadening partnerships such as that undertaken in the framework of the Protocol on Cooperation in Science and Technology TÜBİTAK and the Slovenian Research Agency (ARRS)[130], whereby both Parties invite universities, private sector and research centers and institutes to submit joint proposals for scientific and technological research projects.

[130] *'Call for Proposals by The Scientific and Technological Research Council of Türkiye (TÜBİTAK) and Slovenian Research Agency (ARRS)', 2022, https://www.tubitak.gov.tr/sites/default/files/3125/2508_arrs_call_for_proposal_2022.pdf.*

Recommendations for Türkiye

Bottleneck	Causes	Solutions	Methods	Rationale
Difficulties finding suitable partners for collaboration and accessing reliable information on market entry requirements of EU countries	Lack of opportunities to showcase collaboration potential Lack of affordable venues to reach succinct and actionable information	Facilitate exploration and matchmaking between entities	Establish an EU-TR Startup Hub	Acclimatizing entities from both sides can encourage joint innovation and unlock lucrative partnerships that support efforts to scale up, internationalize and develop sophisticated capital-intensive technologies
Sub-optimal participation in ongoing EU programs	Information challenges Arduous and long application procedures Deep R&D requirements that ignore commercially viable partnerships	Optimize the use of available mechanisms	Undertake comprehensive M&E assessments Implement national surveys that form the basis of policy responses Further align TARAL and ERA Clarify S3 Formalize stakeholder engagement with ecosystem players	Identifying what works, what needs revision and which areas will receive priority in funding and non-financial support can enable a greater number of success stories that emerge from EU-TR collaboration
Fragmented innovation ecosystem	Lack of concerted action to address bottlenecks	Create an enabling market environment for tech entrepreneurship to flourish	Instate legal definition of startup Upgrade support mechanisms Design targeted incentives for startups at different stages Move to on-site technoparks	Improving the conditions of doing business, streamlining, and optimizing support mechanisms will enable a greater number of entrepreneurs to turn their ideas into lucrative business opportunities
Emigration of value creating startups	Gaps in the availability of finance across the life cycle of companies	Increase and enhance financing support Incentivize internationalization	Use public funds to crowd in private capital Strengthen first loss facilities Optimize and bring transparency to grant application procedures Encourage reinvestments by R&D assistance recipients	De-risking investments, simplifying grant application procedures and crowing-in private capital can improve access to finance for scale ups

Emigration of innovators and lagging large-scale skills upgrading	Macroeconomic and political challenges Greater opportunity for research, welfare improvements and skills upgrading abroad	Invest in human capital Develop incentives and improve conditions for innovators	Provide incentives for firms that offer ICT training to employees Subsidize self-learning tools and create Turkish programs accredited by global training providers Establish entrepreneurship cells in universities Incorporate digital, language and business skills in the national curriculum Enhance social protection for gig economy workers and individual entrepreneurs Review and expand fiscal and tax incentives for software developers and other key innovators	Encouraging skilled innovators to undertake value-creating projects in Turkey and ensuring continuous skills upgrading are essential to sustain the dynamism of ecosystem growth, adapt to the digital economy and produce increasingly sophisticated technology

Optimize the use of available mechanisms

Monitoring and Evaluation

Undertaking comprehensive monitoring and evaluation activities and incorporating insights from national surveys with ecosystem players are essential to make optimal use of extant mechanisms at the service of the Turkish startup ecosystem. Given this, Türkiye should:

- Assess its Horizon 2020 performance by putting in place high-quality data and information collection systems and adjusting its preparations for Horizon Europe with the necessary preventive and corrective actions to maximize the benefits of the EU R&I Framework programs,
- Conduct national innovation surveys as recommended by the OECD, and implement R&D monitoring and evaluation systems, for instance, following the example of the regularly published indicator system developed by the French Science and Technology Observatory,
- Establish a formal dialogue with ecosystem participants and devise policy responses to the shortcomings of the support mechanisms reported by firms residing in technoparks and within incubators and accelerators, to enable entrepreneurs to take full advantage of the structures in place.

Alignment of research areas

A series of measures launched in 2019 to boost the national research and innovation capacity and align the Turkish Research Area (TARAL) with the European Research Area (ERA) has been fundamental in increasing participation in Horizon 2020[131] . As such, Türkiye should continue the alignment of TARAL and ERA and finalize the update of the National Science, Technology, and Innovation Strategy to enhance the number of projects funded under Horizon Europe.

Smart Specialization Strategy

Türkiye has demonstrated its willingness to apply the Smart Specialization Strategy (S3) at national and regional levels. However, there is a need to enhance stakeholder engagement and carry out the implementation into a

[131] *'Türkiye Joins the Horizon Europe, Erasmus+ and Solidarity Corps Programmes | EU Delegation to Türkiye', 2021, https://www.avrupa.info.tr/en/pr/Türkiye-joins-horizon-europe-erasmus-and-solidarity-corps-programmes-10692.*

coherent and structured methodology to unleash the full potential of S3 and create signals for innovative ecosystem players to channel their efforts towards the strategic priorities. To this end, Türkiye should prioritize the mapping exercises, impact assessment and evaluation studies for the existing mechanisms, to be followed by efforts to improve information access surrounding the implementation.

Create an enabling market environment for entrepreneurship to flourish

The case studies undertaken in the context of this report have revealed several levers that require policy action to create an enabling market environment for entrepreneurship to flourish. For instance, Turkish legislation still lacks a clear definition for startups, which prevents assessments of the number of startups in the ecosystem, to what extent incentives target startups rather than R&D and measuring how efficient the incentives are. At the same time, support schemes are fragmented across numerous programs with a regional concentration of beneficiaries, lacking a territorially balanced approach. In light of this, Türkiye should:

- Instate a legal definition of 'startup' to form the basis of incentive schemes targeting the ecosystem,
- Simplify and digitalize procedures required to create, run, but also close a business, given the high risk of failure associated with the creation of highly innovative companies,
- Clarify legislation on employee stock option plans to allow entrepreneurs to motivate startup employees by aligning their incentives with the growth of the business,
- Facilitate the transfer of foreign exchange funds needed for high-tech imports or obtained through ICT exports, with measures that reduce the cost of the transfer,
- Remain abreast of globally relevant technologies and sustain ubiquitous connectivity through concerted investments in the ICT infrastructure. To ensure that interventions adequately address market failures, Türkiye should:
- Prioritize a full review of the coordination, complementarity, and distribution of the mechanisms central to its innovation action plan and simplify and streamline the configuration to amplify access for entrepreneurs around the country to support mechanisms. This is because while Türkiye appears to offer noteworthy incentives and funding to its entrepreneurs, our case studies evince confusion and inefficiencies surrounding the application procedures,
- Design tailored policies targeting different types of entrepreneurs, distinguishing between transformational versus subsistence entrepreneurs or startups at varying stages of development,
- Create hyper-incentive mechanisms that rest on fiscal and tax advantages for firms with legal structures in Türkiye which raise capital from global investors above a specified threshold to award fund-raising counted towards Türkiye and encourage internationalization efforts. To upgrade the support mechanisms available to startups in line with the ecosystem's needs, Türkiye should:
- Move to 'on-site technoparks', allowing tech startups residing outside of technoparks (e.g. in co-working spaces) to benefit from the same or comparable incentives, to balance out the waitlist of companies seeking to establish themselves in technoparks out of pure interest in incentives offered and to prevent the dilution of technoparks' raison d'etre into location services. Finally, the incentives and financing available at the early and seed stages are ample in Türkiye compared with many EU countries, which is an advantage in attracting high-potential endeavors from other countries in its neighborhood. As such, Türkiye should:
- Promote its startup ecosystem in focus markets identified as being less developed than that of Türkiye,
- Consider an e-residency model (such as that offered by Estonia) for startups and scaleups wishing to access the venture space and enter the Turkish market that ensures tax and legal liability without a physical presence.

Increase and enhance support in financing

The lack of sufficient financing options for maturity stage VCs is an important factor that motivates successful Turkish ventures to move their legal structures abroad to gain access to a larger pool of investors. To prevent the emigration of companies that have reached a level of success and begun to create economic value, Türkiye should:

- Encourage companies that receive R&D assistance to reinvest some of the aid they receive back into the ecosystem, within the framework of the Technology Zones law and prioritize the completion of the secondary legislation of the law enacted in 2021,
- Consider strengthening Türkiye's first loss facilities and refining their procedures with startup expansion in mind. A variation of this model that has been suc-

cessful in Israel is a return-booster as part of which a percentage of the returns that would be due to the concessionary layer of capital instead gets distributed to the other LPs, further improving the risk/return ratio.

Invest in human capital and address emigration

It is well-known that talent flows naturally to markets that create an environment for economic growth, make life easy for enterprise, attract and welcome investment, and nurture a culture of achievement. Türkiye is endowed with highly skilled software developers and researchers that are sought after by leading global innovation centers. It is crucial to continuously upskill the Turkish society and mitigate brain-drain to further Türkiye's adaptation to the digital economy, sustain the dynamism of the country's startup ecosystem and prevent dislocations from technological change. To empower the youth to become active participants in the digital economy, Türkiye should:

- Incorporate digital (such as coding), language (such as English) and business skills (such as business model development) in the national curriculum from the earliest stages of education possible,
- Subsidize English speaking youth's access to globally recognized certification providing self-learning tools,
- Create Turkish self-learning tools that cover a wide range of pertinent digital skills in partnership with global leaders in the area, and seek to establish accreditation and mutual recognition between the local programs and world-renowned providers,
- Establish Entrepreneurship Cells in collaboration with incubators at college campuses to encourage a culture of entrepreneurship among students and lift entrepreneurship into a respected line of employment in the society,
- Encourage private actors to fund contract-based scholarship opportunities conditioned on several years of employment in the country upon completion,
- Provide incentives for enterprises that offer ICT training to employees not only to gain new skills but also to ensure the maintenance of globally competitive skill levels.

To address the emigration of its high-skilled innovators, Türkiye should:

- Consider further developing mechanisms of providing social protection for gig economy workers and individual entrepreneurs working online without burdening them with excessive taxes,
- Review and expand the fiscal and tax incentives available to software developers based in Türkiye working with foreign companies on a contractual basis, and explore the option of offering similar benefits to other key players in the innovation ecosystem, identified through formalized stakeholder engagement processes with startups, investors, accelerators and incubators,
- Consider facilitating the provision of foreign-currency indexed salaries for software developers,
- Clarify its tax laws that pertain to Türkiye-based software developers selling services to EU and USA firms,
- Encourage the private sector to hold a greater number of community events such as bootcamps, meetups, conferences and maximize sectoral information sharing,
- Incentivize the establishment of communication-oriented company cultures and the provision of benefits at European standards (for example, improved work-life balance),
- Establish formal engagements between academia and the private sector to create links that allow new graduates and university students of STEM degrees to enter the sector faster and gain more sector practice during schooling years,
- Support the opening of local companies to global markets, thus enabling them to cope with the labor conditions provided by EU companies from an economic standpoint.

Further considerations

Although ecosystem players have described this as a secondary issue that has not thus far impacted efforts to scale up, a focal point in the internationalization of Turkish tech startups through the EU market will concern the assignment of Türkiye as a safe country for data transmission under the Union's GDPR and the EU Cybersecurity strategy. Moving forward, the actions taken by Türkiye in this regard may be a determinant factor in enabling companies with legal structures based in Türkiye to enter the EU market without having to move their headquarters. To support this effort, the EU could establish training, scholarships, and dialogues to exchange information on its regulations, for both public officials and private actors. This goal can be achieved through a structured engagement among public authorities and private business associations of the EU and Turkish counterparts.

NOTES


DEiK

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