

## UNIQUE DEVELOPMENT OF ESTONIAN STARTUP COMPANIES

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### INTRODUCTION

Estonia has a thriving tech startup scene. Inspired by the great success of Skype, new tech companies have emerged one after another, and some of them, namely TransferWise and Taxify, have achieved unicorn status. This report examines the country's sources of strength in software and other technology fields as well as its startup ecosystem in the capital city Tallinn.

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### ESTONIA ESTABLISHES ITSELF AS AN E-NATION

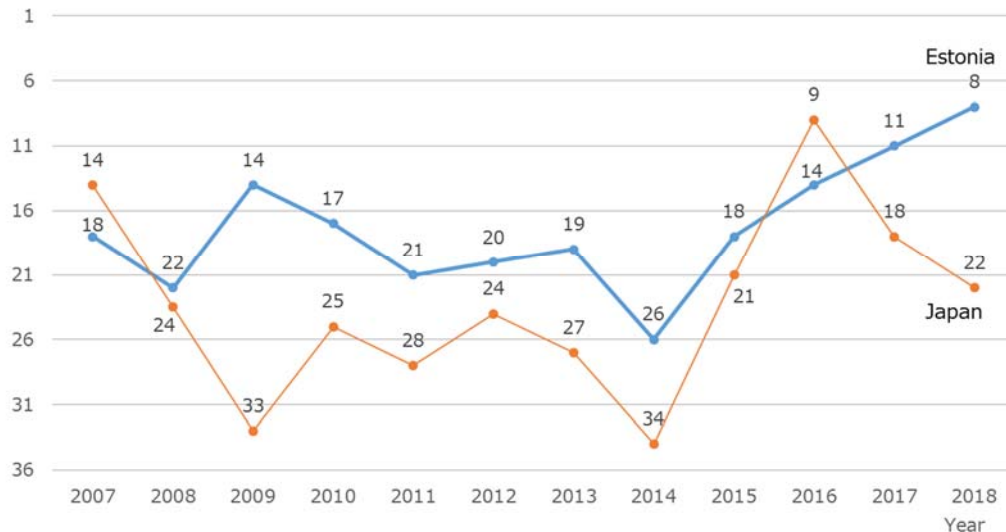
Estonia restored its independence from the former Soviet Union in 1991. It is a small country with a population of about 1.3 million. Among the EU member countries, Cyprus, Luxemburg, and Malta are the only countries that have smaller population than Estonia. However, the total land area of each of these countries is less than 10,000 square kilometers (vs. 45,000 square kilometers for Estonia).

At the time of its independence, Estonia did not have key industries or ample resources. As such, the government decided to invest in information and communication technology, because it was not capital- or labor- intensive. It then pushed forward its e-Estonia (electronic government) initiative. During the Soviet period, the Council for Mutual Economic Assistance (COMECON) was formed to facilitate and coordinate the economic development of former Soviet Union states and Eastern European countries. COMECON promoted industrial specialization among the member countries, and Estonia was in charge of the information and communication industry. Such background also helped Estonia secure human resources in this area. Back then, there was a research institute that studied artificial intelligence and other state-of-the-art technologies (the Institute of Cybernetics of the Academy of Sciences of Estonia). The applied research unit of the institute later became Cybernetica, which offers the X-Road platform, a core technology in e-government projects. As the e-Estonia project adopts a distributed architecture, which can be operated at low cost, the X-Road platform allows the country's various e-Service databases to link up and function in harmony. Today, X-Road is used for more than 2,000 kinds of services.

One of factors behind the country's advanced efforts to implement e-government services is a large-scale cyberattack, allegedly by Russia, in 2007. The Estonian government is said to be the first government to use blockchain technologies, and Guardtime, one of the biggest blockchain players in terms of sales, was founded in 2007 in Estonia to develop a digital signature system based on blockchain technologies. Currently, 99.8% of the country's public services are available online. According the Estonian government, this has significantly reduced inefficiency in such area as over-the-counter services at local government offices, which is caused by the country's low population density, leading to cost cuts equivalent to 2% of GDP.

Estonia's strength in mathematics and science is evidenced by the results of various surveys. The World Economic Forum's Global Competitive Index shows that the country is ranked eighth in the Quality of Science and Mathematics Education in 2018 (Chart 1). The recent results of the Programme for International Student Assessment (PISA) tests conducted by OECD also show that it is ranked third in science and eighth in mathematics. There are seven universities in Estonia. Among them, Tallinn University of Technology and University of Tartu, which is located in the country's second largest city Tartu, in particular, have high reputation in the field of science, and are the major sources of talent in math and science.

Chart 1: Rankings of Quality of Science and Mathematics Education, Global Competitive Index



Source: Compiled by MGSSI based on World Economic Forum data

## STARTUP ECOSYSTEM IN ESTONIA

The Estonian government has helped startup companies to promote innovation, through corporate tax exemption and other measures. If the portion of profit reported is reinvested, and not distributed as dividends, that amount will be exempt from corporate taxes. The county was able to develop such a tax system to facilitate further growth, as its ratio of government debt to GDP is by far the lowest among EU countries (only 9.0% in 2017). While the portion of profit allocated for dividends is taxable, the corporate tax rate is low at 14-20%. In addition, property is also exempted from taxation. US-based independent tax policy research agency Tax Foundation ranked Estonia's tax system as number one in International Tax Competitiveness Index 2017.

As for financing, banks and government-owned financial institution KredEx support startup companies by offering preferential conditions for loans and credit guarantee. KredEx, together with Latvian financial institution ALTUM, Lithuania-based Invega, and the European Innovation Fund, operate and manage the Baltic Innovation Fund, the largest fund-of-funds investment initiative in the Baltic States. Through this fund, KredEx invests in private equity and venture capital funds to help their financing. It also invests in venture companies, especially those in their early stage, through its subsidiary SmartCap.

Despite the size of its economy, Estonia has attracted a relatively large inflow of capital into the venture capital sector. This is partly thanks to the success of Skype and international money transfer service provider TransferWise. In 2017, such capital inflow was 57 million dollars, accounting for 0.24% of its GDP. The ratio to GDP surpassed those of the UK and Finland, and it was only second to Sweden in Europe.

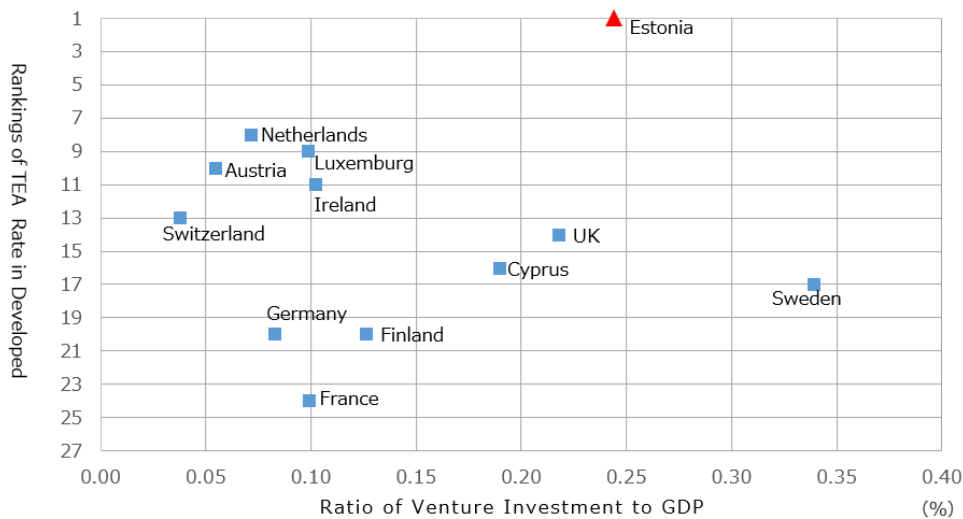
According to the Estonian Investment Agency (EIA), 92% of the capital invested in venture companies in the period between 2006 and mid-2018 was from overseas, mainly other European countries. Although it is difficult to show the breakdown of industries of startup companies, many Estonian firms apparently provide practical

technologies and services, unlike those in Silicon Valley and Israel, which tend to show off cutting-edge technologies. Angular Ventures' Venture Capital in Europe & Israel report shows that in 2017, US venture capital was invested in only two startup companies in Estonia compared to 67 in Israel and 41 in the UK. Estonia's startup ecosystem seems to have an environment and culture where companies can grow their business from a long-term perspective by developing final products/services and acquiring customers, not by selling element technologies over the short term. The limited inflow of US venture capital is probably one factor behind the features of Estonia's startup ecosystem.

In Estonia, there are also many successful cases in which the formation of startup communities and business-to-business support networks help startup companies get on track. The country has thus increased its presence as a startup hub, especially in the technology field. What plays a key role here is co-working spaces, such as LIFT99 and Spring Hub, which host various events for investors and startup companies, providing opportunities for networking. Furthermore, there is an annual meet-up event in Estonia, called "Latitude59", and a total of about 2,000 entrepreneurs and participated in 2018. Such events also provide a platform to connect and network.

Of note, such startup ecosystem is underpinned by Estonian people's high spirit of entrepreneurship. According to the Global Entrepreneurship Monitor, a study conducted by researchers from Babson University in the US and London University in the UK, the Total early-stage Entrepreneurial Activity (TEA) rate was the highest in Estonia, not only in Europe, but also among developed countries including the US and Israel. Estonia's score also topped those of China and India, although the rate tends to be high in developing countries. The relatively large amount of funds invested in venture companies in Estonia apparently reflects such active entrepreneurship.

Chart 2: Rankings of TEA Rate, Venture Investment in Developed Countries (Europe)



Note: TEA (Total early-stage Entrepreneurial Activity) rate is the prevalence rate of individuals in the working age population who are actively involved in business start-ups and shows the national level of entrepreneurial activity. We divided the TEA rates into three groups based on each country's economic development stage and ranked those of developed nations. The above chart only shows those in Europe. 2016 TEA figures were used where 2017 data was not available.

Source: Compiled by MGSSI based on data from Global Entrepreneurship Monitor, Venture Capital in Europe & Israel

## SUCCESSFUL COMPANIES IN ESTONIA

Skype is probably the most well-known successful company in Estonia, and its success has boosted the motivation of entrepreneurs. The group of prospective companies in Estonia is called the "#EstonianMafia". The term was coined by Dave McClure, the founder of major venture capital firm 500 Startups, and it is used as a marketing tool to raise the profile of Estonian startup companies. Among the "#EstonianMafia", 18 tech companies are currently represented on the Wall of Fame, with the inclusion criteria based on (1) funding of \$5 million or more (and/or annual revenue of \$3 million or more); (2) annual revenue growth of 80-100%; and (3)

high taxes paid to the Estonian government (Chart 3). Of note, founders of the Wall of Famers provide funds and know-how to startup communities in the capital city Tallinn and other cities in Estonia, creating a positive cycle where successful entrepreneurs help develop other successful business. Not only active government support but also successful companies' generous stance of giving something back to the local community are remarkable features of the Estonian startup scene.

**Chart 3: Companies on Estonian Mafia Wall of Fame**

Company Name	Outline	Total Funding (\$ million)	Valuation (\$ million)	Founded
1 TransferWise	Offers peer-to-peer international money transfer service in a secure, fast, and convenient way at low cost.	396.4	1,600.0	2011
2 Taxify	Provides ridesharing services in 27 countries (not only in Central/Eastern/Western Europe, but also in Africa and the Middle East). Global users top 2.5 million. Invested in by Didi Chuxing and Daimler.	177.3	1,167.5	2013
3 Pipedrive	Offers cloud-based CRM (customer relationship management) software designed to help sales teams manage intricate or lengthy sales processes.	81.3	625.0	2010
4 Skeleton Technologies	Manufacturers electric double-layer capacitors used as energy source for PHEVs and EVs. Signed a distribution agreement with Sumitomo.	51.0	182.1	2009
5 Adcash	Real-time advertising trading platform	26.3	175.1	2007
6 Starship Technologies	Manufactures self-driving delivery robots designed to deliver goods locally within 30 minutes.	42.2	166.7	2013
7 Monese	Offers a mobile banking app. Provides banking services for immigrants and expat workers across Europe.	16.0	66.7	2013
8 Fortumo	Provides mobile settlement services, data analysis on end-user spending, user authentication technology services.	10.0	66.7	2007
9 Lingvist	Developed an adaptive language learning tool. Rakuten has a stake.	9.5	53.3	2013
10 Guardtime	Key player in blockchain technologies. Its unique keyless signature technology is used to keep track of data and things, making real-time data tracking and high security possible.	18.3	53.3	2007
11 Testlio	Provides online mobile app testing solutions. Reviews from testers worldwide can be obtained instantly and utilized for product development.	7.5	41.7	2012
12 Bondora	Operates a peer-to-peer lending platform. For this platform, more than 9,000 investors from 37 countries have funded 35 million euros in loans.	8.8	33.6	2008
13 ZeroTurnaround	Offers effective solutions for Java software developers. In its early stage, the ownership stake was bought out by Bain Capital Ventures.	16.0	33.3	2007
14 Planet OS	Provides big data infrastructure to help renewable energy companies.	5.8	33.3	2012
15 Jobbatical	Operates a job site for globe-trotting tech talent looking for projects and places they like.	7.9	26.7	2014
16 Funderbeam	Offers equity-based crowd-funding platforms. It provides solutions to problems related to conventional crowd-funding systems (i.e., illiquidity for investors, time/costs necessary for dealing with a number of small investors for startup companies).	7.4	14.8	2013
17 Cleveron	Manufactures parcel delivery automation solutions. Automation of parcel delivery/collection has lowered delivery costs for companies, while enhancing convenience for users. The company also operates in the US, Brazil, and Germany.	2.5	n/a	2007
18 Toggl	Offers time tracking solutions including time management software to improve productivity at work sites.	Self-funding	n/a	2006

Note: Figures based on Funderbeam as of July 9 2018, except for TransferWise's valuation (we used \$1,600 million as media reported, not \$3,500 million as indicated by Funderbeam).

Source: Compiled by MGSSI based on data from Funderbeam, Crunchbase, CB Insights

Other than Skype and TransferWise, there are many promising companies in Estonia. For example, ridesharing service company Taxify has become a unicorn, with investments from Daimler and Didi Chuxing (China). Funderbeam, which offers equity-based crowd-funding platforms, is also attracting attention, as it provides solutions to problems related to conventional crowd-funding systems (i.e., illiquidity for investors, time/costs necessary for dealing with a number of small investors for startup companies), by using blockchain and other technologies. As mentioned above, Guardtime is a global player in the blockchain field and it offers the core security technology used in e-Estonia. Self-driving delivery robots maker Starship Technologies and parcel delivery automation solution provider Cleveron are also included in the Wall of Famers.

## ESTONIAN STARTUP COMPANIES TO EXPAND OUTSIDE EUROPE

Needless to say, such emerging companies in Estonia do not target the domestic market alone. They also target the European market with a population of more than 500 million. Some of them are expanding outside Europe.

For example, Taxify currently operates in 27 countries: 13 Central and Eastern European countries and six African countries including the Republic of South Africa, Kenya, and Nigeria. Taxify is one of a few ridesharing service providers that has moved into the black, although it is said to be difficult for such companies to turn profitable over the short term. TransferWise has become the first non-bank payment service company with direct access to the UK Faster Payment scheme, the Bank of England's real-time gross settlement system, and it has been increasing its presence even within the conventional financial sector. Meanwhile, Guardtime, which is highly valued for its technologies, announced cyber security deals with US defense contractor Lockheed Martin, the North Atlantic Treaty Organization (NATO), and the Defense Advanced Research Projects Agency (DARPA) of the US. Of note, one of its founders, Mart Saarepara, studied in Japan and has connections with Japanese investors/businessmen. As such, Joichi Ito, a famous venture capitalist and Director of the MIT Media Lab, is on the list of its early investors.

Against this background, some Japanese companies have started to invest in Estonian companies. For example, Mistletoe, an investment firm led by Taizo Son, has invested in four Estonian firms including Funderbeam and LIFT99 (an innovation hub in Tallinn). Rakuten has invested in Lingvist, an online language-learning platform, and acquired Fits.me, a virtual fitting room, in 2015. Like this, Japanese players are increasing their presence in Estonia. At the abovementioned meet-up event Latitude59, more than 100 out of the total 2,000 participants were Japanese.

The Estonian startup scene is on a unique growth path, driven by the government promotion of digital technologies, its development/supply of talent in the technology field, successful companies passing on their gains to the community in various ways, and the environment and culture to focus on management from a medium- to long-term perspective. The country's startup companies have gone beyond niche markets and started to become mainstream. Their moves will continue to warrant attention, as they are expected to grow further, backed by the high spirit of entrepreneurship and the accommodating environment to create innovation.