



iit Trend Monitoring

Start-Up Scene

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Imprint

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Introduction

Start-ups are an important stimulus for creative innovation, both for established companies and for the economy as a whole. Firstly, the innovative services and products developed by start-ups lead to more jobs, stronger growth and improved sales prospects – nationally and globally. Secondly, start-up businesses increase levels of innovation capital and rejuvenate corporate structures. A side effect that should not be underestimated is the way they provide an important stimulus for established companies. Start-ups inspire new business models and operational models, innovative uses for technology and new ways of modernising and streamlining procedures. They also stimulate the digitalisation of corporate structures and manufacturing processes.

The public and private sectors have long since recognised this potential for ‘creative destruction’ (a phrase coined by Joseph Schumpeter). Many companies, especially large ones, are seek-

ing to cash in on the potential that start-ups offer. For this reason, more and more of them are establishing their own accelerators, innovation hubs or labs and corporate venture capital departments or businesses.

In political terms, a dynamic start-up culture is seen to be the driving force for ensuring that the economic structure remains competitive. All over the world, start-ups are receiving monetary and non-monetary support. The support provided by government ministries and other public bodies is mostly monetary. It is awarded through specific grant and loan schemes, as well as in the form of prize money and bursaries. In addition to financial support, the importance of hybrid and non-monetary initiatives has continued to increase in recent years. Such initiatives include accelerators, competitions for start-ups and business plans, technological and innovation centres and the provision of coworking spaces.

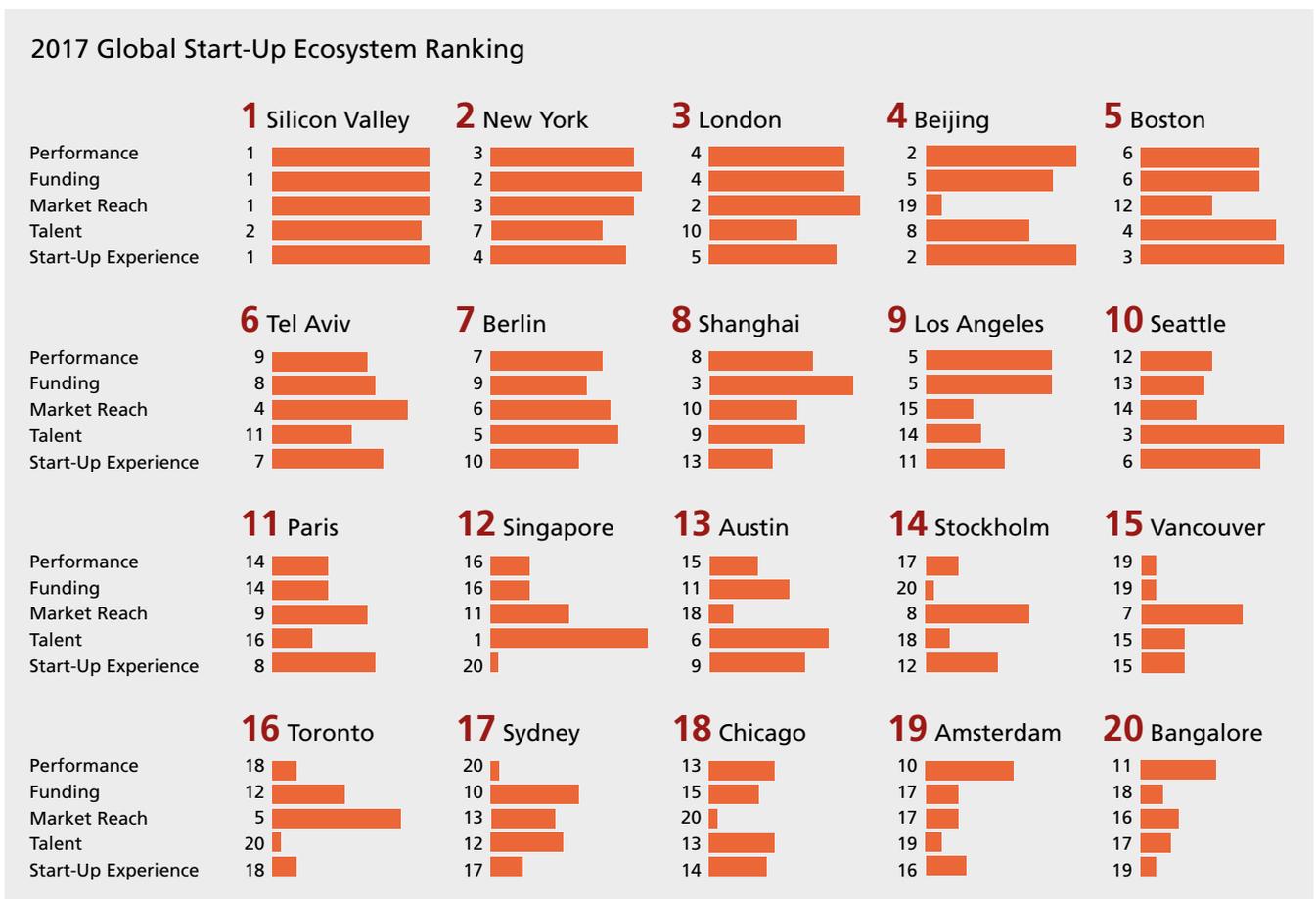


Figure 1: Global ranking of the 20 most advanced start-up ecosystems. The ranking considers the factors of performance, finance, market research, leadership qualities and start-up experience (own diagram, based on 2017 Startup Genome LLC).

This development, particularly the combination of private sector involvement and public sector support, is bearing fruit and start-up ecosystems are forming as a result (Figure 1). When observing the dynamics in Berlin (which is currently in seventh place according to various rankings of leading international start-up cities) (Startup Genome 2017; Compass.co 2015; Sparklabs Global Ventures 2016) and Munich (EY 2017), which are major international locations, it is apparent that start-up ecosystems in Germany are continually improving as a consequence of both public sector and private sector activities.

Comparing start-up ecosystems from around the world reveals clear differences in their characteristics, preconditions and developmental stages. The Institute for Innovation and Technology (iit) has compiled a trend monitoring report about the development of the start-up scene in various parts of the world. The purpose of the report is to provide qualitative data about these differences and to draw general conclusions about the opportunities and conditions for start-up ecosystem development.

The iit has representatives at Germany's foreign chambers of commerce in France, Chile, Argentina, Peru, the West Coast of the USA and South Korea. Owing to the country-specific expertise that these foreign chambers of commerce have amassed over the decades, the iit representatives can utilise an extensive wealth of knowledge and experience. As such, the information used to compile the trend monitoring report far exceeds the scope of Internet searches and isolated interviews.

This analysis of start-up hubs and their surrounding regions focuses on Germany//Berlin, France//Paris, Argentina//Buenos Aires, Chile//Santiago de Chile, Korea//Seoul and Silicon Valley. A structured portrait of each region provides details about the latest developments, support methods, prominent examples, the makeup of the scene and its economic and societal influence. Each portrait ends with a concise appraisal. In this way, the trend monitoring report seeks to help broaden the focus so as to include information about the significance and development of start-ups in a variety of global regions. The report seeks to identify both general trends and specific differences.

Marc Bovenschulte
October 2017, Berlin

Germany//Berlin

Underlying Political And Institutional Conditions

In terms of economic policy, start-ups and the underlying conditions that facilitate their formation are a high priority in Germany. This can be seen in the country's public funding instruments, which include the High-Tech Gründerfonds, the EXIST pilot programme, which focuses on scientific spin-off start-ups, and a wide range of start-up prizes. The prioritisation of start-ups in Germany is also shown by their high overall importance in the political agenda for the digital economy (BMW i 2017). Although the statistics for recent years show a downward trend in the amount of start-up activity (ZEW and Creditreform 2016) due to the positive economic situation in Germany, it seems that the quality of this activity has improved. Proportionally, the decline in opportunity-based start-ups, which are important for the economy, has been less severe than the decline in what are known as necessity-based start-ups. Recent figures (KfW 2017) show a 6% increase in the number of innovative founders. The German government is planning to introduce another multi-billion euro scheme called the 'Tech Growth Fund' in order to stabilise this positive trend. It will particularly focus on improving growth conditions for start-up businesses, as well as on scaling up business models and compensating for the cash-flow difficulties encountered by fast-growing businesses. The Tech Growth Fund will provide finance in the form of loans. The founders will need to pay back the loans with interest but they will not need to hand over any shares in their business. Reportedly, potential losses incurred by the fund due to credit defaults will be covered by the national budget (Get Started 2016).

In the German start-up ecosystem, the scientific sector and the private sector have different funding structures. In the scientific sector, there is a comprehensive, well-established support network for potential founders. There is a closely knit network of start-up centres that have links to universities or other higher education institutions. Additionally, the Federal Ministry for Economic Affairs and Energy (BMW i) programme 'EXIST' provides targeted support for promising start-ups and for entrepreneurial knowledge transfer. Furthermore, national technology clusters and university clusters are typically affiliated with publicly-funded centres for innovation and start-ups. At these centres, spin-off companies can access subsidised office space and additional non-monetary support services. By contrast, start-up activity in the German private sector primarily relies on structures that are not publicly funded. These structures have become more differentiated and more professional in recent years. This is shown by the increasingly significant role of players from the financial market, such as venture capitalists and business angels, as sources of start-up finance. It is also evi-



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denced by the vast increase in private sector support measures such as incubators, accelerators and sector-specific company builders such as Rocket Internet (e-commerce), Hitfox (advertising and big data), Finleap (fintech), WattX and Geeny (hardware/Internet of Things).

Infrastructure

In regional terms, the capital city, Berlin, is unmistakably at the centre of the German start-up ecosystem. Estimates suggest that Berlin has 1,800 to 2,400 active technology start-ups, as well as a diverse landscape of support and funding mechanisms (Startup Genome 2017; Compass.co 2015; Sparklabs Global Ventures 2016). Alongside Berlin, cities such as Leipzig, Hamburg and Munich are becoming increasingly important on a national level. The focus of each local start-up scene is generally shaped by the region's economic structure. Start-ups in creative centres such as Berlin and Leipzig tend to generate innovative business models in the areas of big data and commerce, while the focus in Hamburg is on finance and logistics. The strength of the Munich scene is in its industrially-oriented start-ups.

Germany's foundational digital and utilities infrastructures present few barriers to development and growth. Nevertheless, although Internet connectivity is generally very extensive, the average speed of Internet connections in Germany is currently only ranked 25th by the 'State of the Internet' report (Akamai 2017). South Korea is in first place (28.6 Mbit/s) but other European countries – including Sweden, Norway and Switzerland – also score significantly higher for network bandwidth and speed.

Society

In general, society's perception of the dynamics of the German start-up scene seems to be somewhat misguided. Although it is statistically correct that interest in starting new businesses has been declining for a number of years due to the economic situation, this primarily applies to businesses formed due to

necessity – the kind of businesses that rarely have the potential for growth and innovation that a start-up needs. Although the typical career path for many graduates still involves getting a job at an established company, there are signs of a new entrepreneurial spirit. This is particularly evident in Germany's urban centres. A characteristic feature of this entrepreneurial spirit is a high degree of internationalisation. One indicator of this is the great number of well-qualified and talented staff from abroad employed by start-ups in these locations. Another feature of internationalisation is the acquisition of capital from international funds and limited companies.

Public discourse about Germany's start-up scene regularly makes reference to the shortcomings of the nation's culture in the area of handling mistakes, with claims that this culture makes it harder for ambitious founders to attract monetary and non-monetary support for their businesses. For a long time, Silicon Valley was the benchmark and the vision for the German start-up scene – in the area of error culture and in other aspects. More recently, however, the German scene has increasingly emancipated itself from this vision. In fact, start-ups are intensifying their focus on B2B markets and are attempting to make their own mark in areas such as data security, the Internet of Things and Industry 4.0 (and the services associated with these areas).

Networking And Transfer

The networking and transfer infrastructures have expanded considerably and have become much more differentiated. As described above, knowledge transfer in the research sector primarily takes place through the formation of scientific spin-off companies. Additionally, application-oriented research centres, such as the Fraunhofer Gesellschaft institutes, are increasingly opening their doors to start-ups. There is a diverse range of networking opportunities, which enables start-ups to connect with potential clients, investors and strategic partners, as well as with other start-ups. These kinds of events are now included in the range of services offered by university-affiliated start-up centres, regional economic development agencies and chambers of industry and commerce. The networking activities have a clear focus on collaboration between start-ups and established companies (both SMEs and corporations). This is an aspect that is also high on the political agenda. One indicator of this is the way that established companies are becoming open to 'corporate entrepreneurship' and are setting up internal

incubator programmes, which are explicitly aimed at external start-ups. Furthermore, in late 2016, the BMWi launched a national scheme called the 'Digital Hub Initiative'. The aim was to promote close partnerships between companies and founders in technological sectors such as logistics, fintech, insurtech, digital health, Internet of Things (IoT) and media technology.¹

Funding Structures

In the most recent survey by Deutscher Startup Monitor (German start-up monitor), 1,224 businesses were interviewed about various topics, including the sources of their funding. More than 80% of founders said that personal savings were injected into their start-up, while 36% of start-ups accessed government funding, 30% used financial support from friends and family, 23% injected capital from business angels and 19% used venture capital. In addition to these funding methods, 20% of start-ups said they followed what are known as bootstrapping models, whereby a start-up finances itself internally from its operating revenues. All in all, these findings confirm the general assessment that in the early phases of starting up a business, it is comparatively easy to access funding, while there is something of a funding bottleneck for the significant investment needs of start-ups during the growth and consolidation phases. Nevertheless, public and public-private partnerships, such as the High-Tech Gründerfonds and the planned Tech Growth Fund, are mechanisms for providing promising start-ups with external capital during the later phases of business development.

Markets And Market Access

The start-up businesses associated with Rocket Internet (Zalando, Home24, etc.) show the great extent to which German e-commerce start-ups have influenced consumer-oriented business sectors. In recent years, however, there has been a noticeable trend away from B2C business models. This is because other companies, particularly fast-scaling businesses from the USA (or copycat companies formed by local company builders), have saturated these market segments. By contrast, the ambitions of German start-ups in the B2B sector have significantly increased. As companies undergo digital transformation, these start-ups are seeking to use highly innovative technologies and algorithms to create and capitalise on new added value. These kinds of solutions could just as easily impact the financial sector as the insurance sector, manufacturing industries or the digital

1 Bundesministerium für Wirtschaft und Energie (BMWi). Digital Hub Initiative. Available at: www.de.digital/DIGITAL/Redaktion/DE/Downloads/digital-hub-initiative.pdf?__blob=publicationFile&v=8, last accessed on 14/08/2017.

economy itself. This trend towards B2B has also changed the characteristics of the start-ups. Seeing as it is much more complex and time-consuming to acquire clients in the B2B market, these companies do not scale as quickly. Generally, however, this is not viewed as being detrimental to the sustainable development of these start-ups.

Specific Characteristics Of The National Start-Up Scene, Flagship Projects And Best Practices for Supporting Start-ups

Sectors	Relevance (10 = highest)									
	1	2	3	4	5	6	7	8	9	10
Life Sciences					x					
Food / Agriculture				x						
Mobility / Automotive								x		
Energy								x		
Digital Industry									x	
Manufacturing										x
Finance									x	
Consumer Markets						x				
Other: Retail								x		

Examples Of Successful Start-Ups

Relayr

Relayr was founded in Berlin in 2013. The idea behind it was to develop modular networking components (software and hardware) and an associated cloud infrastructure in order to provide companies with low-threshold access to Internet of Things (IoT) technology. Relayr supplies IoT solutions to companies of all sizes and in all areas of industry. It promises to comprehensively roll out these solutions for its clients within one fiscal quarter.

Relayr wants to become one of the leading industrial platforms for the Internet of Things and it is well on its way to achieving this goal. The company is growing very fast (Relayr now has more than 200 employees and seven offices in four

countries) and over the course of five funding rounds, the start-up has attracted investment totalling 36.66 million US dollars. The Series A round in Silicon Valley was headed up by the venture capital fund Kleiner Perkins Caufield & Byers, which helped to give the business an international reputation.

As an innovative IoT start-up with a B2B focus, Relayr is a prime example of a German start-up. It is becoming clear, however, that describing it as 'German' is only partly accurate. Although Relayr was founded in Berlin, the founders and the executive managers are from a variety of different countries (although this fact shows that Berlin has long since become an international start-up hub and a global talent magnet). In 2016, Relayr established NextBigThing – its own company builder for IoT-focussed start-ups. Through this company builder, it aims to increase the profile of IoT in Berlin and beyond.

Kreditech

Kreditech was founded in Hamburg in 2012 with the aim of increasing the financial freedom of customers who are neglected by traditional banks. To reach the aim, the start-up developed a portfolio of products. This includes personal loans, a digital wallet and a personal finance manager with which customers can manage their credit rating and finances. Kreditech's USP is its scoring system, which enables financial service providers to use big data and self-learning algorithms to evaluate customer credit requests within seconds and then pay out the funds instantly. Through its subsidiaries in other countries, Kreditech has processed nearly three million credit requests to date.

Kreditech is a fintech start-up that is addressing the same markets as well-established banks and financial service providers. Its use of digital technologies is enabling it to exploit these markets more quickly and efficiently. In nine funding rounds to date, the start-up has attracted a total of 282.59 million US dollars from investors such as Peter Thiel, Bloomberg and Victory Park Capital.

Kreditech is a prime example of a German start-up that is rapidly expanding into international markets. As one of the first fintech businesses, the business has benefited substantially from the hype surrounding start-ups and from high levels of investment confidence in this sector.

Prospects

The key characteristics of the German start-up scene are its breadth and complementarity. In Germany, scientific spin-off companies are supported by a closely knit network of university-affiliated start-up centres. In recent years, this support has been complemented by the private sector start-up support structures that have emerged in many large cities, particularly in Berlin. While the publicly-funded support structures predominantly yield businesses that focus on science and technology, the private sector initiatives tend to yield fast-growing start-ups that make innovative use of digital, scalable business models.

The start-ups with the most influence on the international stage, however, are characterised by combining technology leadership with (potentially) disruptive business models. In the future, the German start-up scene will therefore need to focus on increasingly interweaving these two different approaches to start-ups.

The current trend of strengthening connections between the start-up scene and German SMEs will continue to gain traction. Many established SMEs view partnerships with start-ups as an important cornerstone for the successful digital transformation of their businesses. The underlying conditions for this collaboration will be brought about not only by political measures (e. g. the Digital Hub Initiative) but also by the incubator and accelerator programmes set up by established companies.

Political entities have also recognised the importance of young, innovative high-tech companies and this is having a significant impact on strategic agenda setting. Subsequently, the range of support available for start-ups is diversifying rapidly. In the medium term, this will result in a great many new and potentially innovative businesses. Digital business models in the e-commerce sector have already made a permanent mark on B2C markets in Germany and many other countries. Nevertheless, in future, start-ups will be most influential in the B2B sector. As such, although estimates assume that start-ups will accelerate the digital transformation of the private sector, it is predicted that they will do so without squeezing existing companies and their competencies out of the market. In fact, it is predicted that the well-established strengths of the German private sector will benefit from the digital expertise of start-ups and mutually beneficial relationships will be established. The extent to which this strategy withstands the disruptive approaches of new global and cross-sectoral competitors has the potential to be a decisive factor in Germany's economic development.

Argentina//Buenos Aires

Underlying Political And Institutional Conditions

Argentina is the third largest economy in Latin America and it has been marked by economic turbulence for a number of years. The current president, Mauricio Macri, is endeavouring to carry out a range of reforms in order to help set out a new direction for economic policy and get the economy moving again. Following a severe recession in 2016, which saw GDP fall by 2.3%, economic growth figures are gradually improving. Until now, however, the predominant stimulus of the Argentinian economy² has been the export-focussed agricultural sector and the record harvest of 130 million tonnes of grain and oilseeds in 2017. This shows how heavily the country relies on natural resources. Nevertheless, Argentina has a strong manufacturing industry by regional standards. Although this industry does employ a significant workforce, it has not been sufficiently competitive for several years.

According to the 2016 ICSEd Prodem report (Kantis et al. 2016), which provides a global context for the start-up climate conditions in Latin American countries, Argentina fell from third to seventh place in the regional entrepreneurship index ranking between 2014 and 2015. Although the report mentions the great number of training programmes in Argentina, it also identifies some major difficulties. These include the legalities and formalities associated with starting a company and the impediments to accessing seed capital. These difficulties became even more severe during the survey period.

One of the measures with which the government is seeking to counteract these structural weaknesses is the provision of targeted support for the Argentinian start-up scene. One aspect of this support is the creation of an office for entrepreneurs and SMEs within the national Ministry of Production in 2016. This new office is an indicator that the national government recognises the great strategic importance of start-ups for innovation and increased market activity. The office coordinated the process of passing the entrepreneur's law ('ley de emprendedores') in the first half of 2017. This law, which is due to come into force in the coming months, is designed to accelerate the formation and formalisation of new start-up businesses. It focuses on four key areas:



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- 1) Accelerating and simplifying procedures for obtaining a tax number, a bank account and for completing other formalities.
- 2) Creating a new, simplified form of company entity (Sociedad por Acciones Simplificadas; SAS) with one single shareholder.
- 3) Introducing new interest-free lines of credit.
- 4) Creating a new public-private fund.

Infrastructure

Generally speaking, the infrastructure in the metropolitan region of Buenos Aires and in the major cities of Rosario and Cordoba is comparable to the infrastructure in European countries. Nevertheless, outdated standards are often in use and in places, infrastructure renovation has been neglected. The opposite can be said of Internet infrastructure, where investment levels are high and coverage is comprehensive. Nevertheless, there is still scope for expansion beyond the urban centres.

Society

The social preconditions for entrepreneurs in Argentina are generally good. There is a strong middle class (40% of all Argentinian households), which provides fertile ground for young, dynamic companies. This is due not only to the cultural factors associated with this group but also to the fact that personal and family savings can contribute to the execution of individual projects.

The relatively high levels of education among the middle-class population also contribute to young entrepreneurship. Levels of education in Argentina are even higher in relative terms when compared to other countries in the region. There are few barriers to accessing higher education, which is freely accessible

2 Assuming economic growth of +1.2% compared to the previous year (as of June 2017); source: Moses, C. (2017). Langsamer Aufschwung in Argentinien.

and free of charge. Despite the defects and shortcomings of the educational system, access to higher education facilitates easier access to information and resources. Another aspect, which should not be underestimated, is that it facilitates networking with potential entrepreneurial colleagues, mentors, subject-matter experts and potential clients.

Networking And Transfer

Argentina’s various science and technology transfer platforms play a key role. For many years, Argentina has been making substantial efforts and implementing a range of programmes with the aim of strengthening the research and development culture in the country and transferring research findings to the private sector. Nevertheless, a great deal of the national scientific focus is currently on foundational research and, despite what had been hoped, it has not been possible to sufficiently capitalise on the findings. Within Latin America, however, Argentina is ranked highly for its successful transfer platforms. Networks such as RedVITEC and Centro REDES are directly involved in the transfer of knowledge and technology from universities into the private sector. The government is providing more and more coworking spaces and incubators for young entrepreneurs, while NGOs and universities are increasingly offering training programmes for entrepreneurs. In addition to this, there are a considerable number of events for start-ups.

Funding Structures

In Argentina, despite all of the funding programmes, funding structures for start-ups are in particularly need of improvement. Although there are a great many public and private funds, the general public perception is one of scepticism towards these funding mechanisms and towards the relatively large hurdles associated with accessing bank loans (Prodem 2016). The planned ‘ley de emprendedores’ legislation, however, is aimed at remediating this.

For example, it will establish a national fund (FONDCE) to provide new, simplified lines of credit. A panel of public and private sector experts is set to develop the kinds of funding mechanisms that will make the programme more effective. An interesting aspect of this law is that it envisages that some of this money will be set aside for crowdfunding and some will be used for investment funds. All in all, ten public-private funds will be established (with a public contribution of at least 40%) with a total value of more than 30 million US dollars. Lastly, a government seed funding programme will be set up with the

aim of helping young businesses in the early start-up phases by offering interest-free loans. To bolster these measures, companies will have the option of offsetting any financial support given to start-ups against their tax bill. This measure seeks to boost private venture capital investment. Although this kind of investment is present in the region, the levels are significantly lower than they are in Europe and the USA.

Markets And Market Access

As mentioned above, having a broader base of entrepreneurs and strong supply chains has a positive overall impact on the market opportunities that are open to start-ups and on the implementation of new solutions. Businesses can therefore react quickly to unmet needs. In Argentina, however, this kind of business activity can usually be traced back to the efforts of dynamic entrepreneurs rather than to companies in the traditional industries.

Finally, it should be emphasised that due to the strength of the middle class, the Argentine economy is relatively pluralistic. Economic activities are less concentrated on specific players and sectors. This creates good underlying conditions because it provides start-ups and new market solutions with more space and more potential starting points. Furthermore, there is a clear willingness among various market players to incorporate new technologies. In recent years, however, the demand for these new technologies and services has been curbed by the enduring recession.

Specific Characteristics Of The National Start-Up Scene, Flagship Projects And Best Practices for Supporting Start-ups

Sectors	Relevance (10 = highest)									
	1	2	3	4	5	6	7	8	9	10
Life Sciences								x		
Food / Agriculture								x		
Mobility / Automotive				x						
Energy							x			
Digital Industry								x		
Manufacturing						x				

Sectors	Relevance (10 = highest)									
	1	2	3	4	5	6	7	8	9	10
Finance							x			
Consumer Markets									x	
Other										

Examples Of Successful Start-Ups

Semtive

Semtive offers simple, cost-effective vertical wind turbines for generating energy. The key factors in Semtive’s success are the lightweight and cost-effective construction of the turbines, which can be set up easily and without much expertise. They are also easy to maintain. By refraining from using high-end technology, Semtive is specifically targeting markets with less spending power. This approach keeps costs down and makes it easier to repair the wind turbine without any technical assistance. The main ideas behind the wind turbine are its simplicity and lightweight construction, which mean it can be used anywhere (in both rural and urban locations) and in any wind strength. The low cost structure is aimed at ‘democratising’ access to energy without compromising on quality or availability. Semtive guarantees the reliability of its wind turbines by selling them with a 40 year warranty. Furthermore, the fact that it can manufacture the wind turbines all over the world will enable it to create jobs.

Rather than increasing the energy efficiency by using new technological solutions, the start-up focuses on simplicity and low costs. Instead of selling one large wind turbine to one customer, the company seeks to sell many smaller products to large numbers of customers.

Lipomize S.R.L.

Lipomize develops technologies and products that are based on liposomes. It focuses on the pharmaceutical, cosmetics and food industries. Lipomize’s selling point is its flexible manufacturing process, which also makes it possible to personalise products. In addition to these technological solutions, the company also provides its clients – particularly those in the pharmaceutical sector – with support and advice

about using Lipomize’s nanotechnology in order to become more competitive. Replacing other nanoparticles with liposomes will reduce product toxicity, which in turn makes it possible to reduce the dose. Lipomize was formed from a spin-off affiliated with the ‘Universidad Nacional del Litoral’ university and it aims to become the leading expert in liposome technology, both on the Argentine market and in the region.

The customisable production of Lipomize products is made possible by the way that entire projects are handled by one single team – from design through to manufacture.

Zolvers

Zolvers is an online platform that originally put households and cleaners in touch with one another – for a small fee. The platform has expanded and now also specialises in offering other services required by the average household (e.g. geriatric care, electrical work and plumbing). Users must register before they can offer and request household services. During the registration process, criminal record checks are made and payment details are obtained. The platform enables reviews to be submitted, both for those offering services and for those requesting them, which increases service reliability. It is also possible to set preferred times of day.

Domestic and maintenance services have previously been heavily dominated by the informal sector. The Zolvers platform provides a way of formalising the various services. The fact that service providers undergo checks prior to being employed reduces the uncertainty associated with hiring cleaners or maintenance workers. Likewise, it counteracts the cultural mistrust associated with allowing strangers into the home environment. The platform minimises the need for the word of mouth advertising that was previously necessary and it improves reliability in the area of keeping to agreed appointments.

Prospects

Argentina has a strong tradition of enterprise and the subject of start-ups and entrepreneurship is discussed in many areas of politics and society. New generations (in particular “millennials”) are looking to self-employment as an opportunity for

self-fulfilment. Furthermore, a wide range of new initiatives and programmes are offering opportunities that aim to provide young entrepreneurs with additional support. Owing in particular to the strength of the middle class (compared to other Latin American countries), the start-up scene can be described as having very strong characteristics when measured by the country's educational standards, access to education and the existing entrepreneurial culture.

Nevertheless, access to capital and bank loans in Argentina must be significantly improved, as must the underlying political and macro-economic conditions. The planned 'ley de emprendedores' legislation may be able to help remediate this.

Overall, it is likely that there will be a continued cultural embedding of the start-up spirit and that the trajectory of current policies regarding start-ups will be continued. An increase in business ideas and business start-ups is likely in the key areas of Smart Cities (the sustainable development of cities), Farming 4.0 and software services.

In Argentina, the topic of start-ups is viewed as being an extension of national innovation policy. This is shown by the fact that the work being done on this subject is affiliated with the government ministries for modernisation and production and, to a lesser extent, with the ministry for science and technology. There is a particular focus on the areas of biotechnology, software-related services and Internet services.

Chile//Santiago

Underlying Political And Institutional Conditions

Chile is a country that is still characterised by the primary sector: mining, agriculture and fishing. For some years now, the Chilean government has been promoting the development of the start-up scene in Santiago in order to reduce the dependence on mining and achieve greater balance. The most important start-up magnet is the 'Start-up Chile' programme,³ which predominantly aims to attract new/young start-ups from abroad. The government gives prospective founders a one year visa and supplies funding to the various streams: around 13,000 euros for 'The S Factory' (a pre-acceleration stream exclusively for female founders), approximately 26,000 euros for the 'Seed' stream (for start-ups that already have a product in the early stages of development) and around 95,000 euros for the 'Scale' stream (for start-ups in the growth phase). In addition to this funding, the founders receive support in the form of workshops, coworking spaces and mentors. In return, they are obliged to do something to help the local scene, for instance by taking part in hackathons or being involved in activities at universities. The programme was established in response to a suggestion made by the Chilean businessman Nicolas Shea. This start-up accelerator helped Chile to gain a top five ranking in the 2015 'Global Accelerator Report' (Gust 2017).

There are now additional programs, which are aimed at start-ups in more advanced development stages. One such example is Imagine Lab, a public-private partnership that is supported by Microsoft and CORFO (Chilean Economic Development Agency).

Infrastructure

In general terms, there is a clear urban-rural divide in Chile's infrastructure. Santiago itself is a modern metropolis, which is largely in line with the standards in Western countries. Supplies of electricity and (hot) water are constant. Although the public transport and road networks are constantly being expanded in order to keep up with the steady growth in the city's population, they are of a comparatively high standard. A good Internet connection is generally one of the most important aspects for start-ups. Chile scores highly in this area – higher than Germany – because it has fast connections and very good levels of 3G/4G coverage. Nevertheless, the infrastructure outside Santiago is still in need of improvement and investment in the coming years, particularly in rural areas.



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Society

The private spheres of Chilean society are already digitised to a very high degree (the use of smart phones, social media, etc.). This includes the older generations. Chilean society is following the social 'example' of the USA, which means that new trends are rapidly adopted and adapted.

A widely established start-up culture is yet to develop and there is little public awareness of start-ups – although this awareness is growing. It is highly likely that the economic situation will dictate how quickly and comprehensively this start-up culture develops in the coming years. Another factor will be whether local funding mechanisms are continued. It is notable that the 'Start-up Chile' programme is predominantly accessed by entrepreneurs from other countries.

Education is a very important topic in Chilean society. The importance of this topic, however, is due to the glaring differences between private and public educational institutions. Private schools and some traditional universities in Chile are among the best in South America and are essentially in line with the standards in Western countries. These universities are particularly involved in running incubators and mentoring programmes, which support the formation of start-ups from these universities. Yet the universities in question use public finances to supply lines of credit for these initiatives. Some of the initiatives are also supported by large national or international businesses (such as Telefonica, Microsoft, the local Angelini group and family offices). Notably, the use of English is still not taken for granted, even in entrepreneurial spheres.

3 See 'Start-up Chile': www.startupchile.org

Networking And Transfer

Through the targeted distribution of innovation vouchers, the Chilean Economic Development Agency is seeking to support small, modern businesses and connect them with established companies. There are plenty of seminars, courses and events on offer, so it is easy to access relevant training and development opportunities. The wide-ranging activities of the 'Start-up Chile' programme also promote networking.

Bi-national chambers of commerce and other institutions such as Endeavor Chile and Fraunhofer Chile Research (the Chilean offshoot of the Fraunhofer Society) also play an important role. These institutions promote the transfer of knowledge to Chile from more developed countries – and knowledge transfer between young entrepreneurs. They also make their networks available to local start-ups.

Funding Structures

The CORFO funds mentioned above provide good opportunities for companies in the early phases of development. By contrast, however, obtaining private funding is very difficult in Chile. Very little venture capital is available and company valuations are much lower than they are in Europe and the USA. In general, the venture capital scene for start-ups is still very young and small.

Markets And Market Access

Generally speaking, the market is open to new technologies and companies are open to attending meetings where new solutions are presented. In this respect, it helps to have a good or a very good network because reply rates to e-mails from unknown senders are very low. Chilean society is very heavily reliant on personal connections or recommendations, so it is very advantageous to be introduced by a mutual connection. This is another area where organisations such as chambers of commerce can provide a good platform. It can also be said that in the current economic conditions (a weak economy due to low raw materials prices), the market (B2B) has a low appetite for investment and risk. In order to acquire clients, sellers must have stamina and patience and they must show initiative.

Specific Characteristics Of The National Start-Up Scene, Flagship Projects And Best Practices for Supporting Start-ups

Sectors	Relevance (10 = highest)									
	1	2	3	4	5	6	7	8	9	10
Life Sciences				x						
Food / Agriculture						x				
Mobility / Automotive							x			
Energy							x			
Digital Industry							x			
Manufacturing					x					
Finance						x				
Consumer Markets								x		
Other: Mining					x					

Examples Of Successful Start-Ups

Recorrido Latin America SPA

Recorrido Latin America SPA is a business that provides an online sales platform for inter-city bus tickets in Chile and South America. The Recorrido platform pools the services offered by local bus companies and enables customers to buy their tickets online. Recorrido is available as a website and a mobile app. Alongside its own website, Recorrido also provides white label websites to bus companies so that they can have their own sales channels.

Recorrido's user-friendly website, native mobile application and its extremely reliable customer service have enabled the business to become one of Chile's largest online travel agencies. In addition to looking after its user base, which is already very strong, Recorrido's main focus is on providing bus companies with an extremely wide range of services. The four founders moved to Chile from Germany in 2013 in order to start up the company. Although they had no funding, could not speak Spanish and had no IT skills, Recorrido now has around eight million users and is one of Chile's most successful start-ups. In the coming months, Recorrido is due to continue expanding into more countries in South America.

HiKey Resources SPA

HiKey was founded by a German who had previously worked in the mining supply industry. HiKey has now been operating in Chile for just under half a year and has successfully established numerous client contacts in the relevant sectors. The main focus in 2017 is to become established on the Chilean market, with a view to expanding into other Latin American countries in 2018.

The company offers the SaaS (software as a service) product 'Time2L', which records information about employees and commodities. Time2L was originally developed for suppliers and contractual partners within the mining industry but it can now also be used in other sectors, such as construction and agriculture – even without using smart phones. Companies pay HiKey a monthly sum per user (i.e. per employee), which essentially enables them to 'rent' the software license.

In contrast to many of the timesheet systems that are already on the market, Time2L was not developed for urban users such as cafes and restaurants. Instead, it was developed to meet the specialised requirements of project-based sectors – with one of these requirements being the need for offline usability. Time2L still works even without an Internet connection and its intuitive usability makes it possible to define which working hours model to use (overtime, shifts, public holidays, allowances, etc.), whether across the whole company, for a project or for a certain employee. It does all this while retaining the easy usability of a simple timesheet app. Another benefit is that Time2L users can clock in on their supervisor's smart phone or tablet using a card, a key fob or a sticker. There is no need for any special additional hardware.

Prospects

Before the 'Start-up Chile' programme began providing support, the role of start-ups was very minor. Owing to the success of the programme, the term 'Chilecon Valley' has now been coined for Chile's capital city. Although Chile is far from having a start-up ecosystem that is on a par with the world's leading start-up regions, the necessary changes to the country's structure and culture have taken place. Start-ups have now become

a key factor in the current debates about economic and innovation policy. In line with this, there are changes in the way this topic is being perceived by some parts of Chilean society. This is particularly true of students, who are increasingly viewing their professional activity as a vehicle for self-realisation. They are therefore less attracted by well-established companies, which often have very conventional management styles.

In order to make the most of all of these opportunities, however, it is important not only to help start-ups get going, but also to help them grow and mature. With this in mind, it is particularly important to mobilise venture capital and further improve the start-up ecosystem. As well as software start-ups, hardware start-ups are enjoying increasing levels of success in this area. This also applies to the key industries such as mining. 'Think Big Mining' and similar activities focus on providing support to start-ups in order to promote innovation in this sector. The associated start-ups offer services such as drone-based geocoding and field surveys, ore deposit surveys that utilise vegetation analysis and the containment of contaminated dust. If the 'Farming 4.0' trend persists, start-ups in particular will have opportunities to develop and sell solutions for the wine-growing, forest management and salmon farming industries, among others.

Chile's economic structure is focussed on the primary sector. Some primary sector industries, such as mining, are dominated by large companies. In view of this, the Chilean government has been seeking to diversify the private sector for some years now. These diversification efforts are also evident in the title of the Ministry for the Economy's strategic agenda. Its stated goals in some areas are reminiscent of the German government's high-tech strategy. The document, entitled 'Agenda de Productividad, Innovación y Crecimiento',⁴ states that the primary goal is to promote diversification ('Promover la diversificación productiva') and it makes reference to the role of start-ups and innovation ('Impulso al emprendimiento y la innovación') in reaching this goal.

4 See 'Agenda de Productividad, Innovación y Crecimiento': www.agendaproductividad.cl

France//Paris

Underlying Political And Institutional Conditions

France is one of the most advanced industrial countries in Europe. It has a GDP per capita of 35,896 euros and it thus ranked in the top third of European countries. The economic structure is dominated by the services sector, which contributes more than 78.89% of its national GDP and provides 76.8% of the country's employment. The next largest sector is industry, which generates 19.43% of the national GDP and provides 20.5% of employment. Agriculture accounts for 1.68% of the national GDP and provides 2.7% of France's employment. The unemployment rate is around 9.6% and economic growth is 1.2%.

The following sectors are particularly well-developed: construction, the agricultural and food industry, the chemical and pharmaceutical industry, the automotive industry, the luxury goods industry, telecommunications, metal processing and the aerospace industry. The French manufacturing industry is one of the world's leading suppliers in many sectors. Despite these indisputably positive characteristics, France is no longer viewed as being competitive in many areas. The countless debates about the need for reform and the (alleged) impossibility of such reforms accentuate its actual and supposed shortcomings.

The French Ministry for the Economy and Finance estimates that there are now around 10,000 start-ups in France, more than half of which are in Paris. There is a steep upward trend here because conditions are constantly improving. The French government is therefore working hard to support its start-ups.

In May 2017, Emmanuel Macron named Mounir Mahjoubi, former head of the French Digital Council, as the new Secretary of State for Digital Affairs. He reports directly to the prime minister. Mounir Mahjoubi is better qualified to hold this office than his predecessors – although the aspect of 'innovation' is no longer part of the job title. Together with the French Minister of Public Action and Accounts, his task is to initiate the digital transformation of the state. This remit includes digital administration and an open data policy. Mounir Mahjoubi's role makes him the guardian of digital ethics, rights and fundamental freedoms and the champion of digital integration and development. He was already addressing these topics during his time as the head of the French Digital Council. He also liaises with all of the government ministries concerning digital topics. He is responsible for pressing ahead with digitalisation on all levels,



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while also working to ensure there is digital security. His work also includes developing a national, European and international legal framework for digitalisation and future technologies. Mahjoubi will also partner with the Ministry of National Education to address topics such as digital literacy, education and training. Mounir Mahjoubi will work together with the Ministry for the Economy and Finance to address the economic digital development and digital transformation of businesses. This area of work includes 'French Tech', a plan for high-performance broadband and the 'Digital Society' programme.

The 'La French Tech' brand was created in order to boost the prominence of start-ups on the international stage in the long term. France is seeking to use it to promote the start-up system in the country and to support French entrepreneurs abroad. The first concrete step was taken in 2014, when 13 cities in France – including Paris, Lyon and Bordeaux – were officially named as French Tech cities. In June 2015, twelve French Tech Hubs were set up in foreign cities (such as New York, Tokyo and Moscow) to provide support to French companies abroad. Since then, ten more new hubs have been established in the following locations: Berlin, Dubai, Los Angeles, Milan, Beijing, São Paulo, Shanghai, Shenzhen, Taiwan and Vietnam.⁵ In addition to providing companies with networking opportunities and international visibility, they also offer a range of additional support models.

In 2016, the Minister for the Economy and Finance, Emmanuel Macron, and the Secretary of State for Digital Affairs, Axelle Lemaire, announced the formation of thematic networks within the umbrella brand of 'French Tech'. This provided an additional structural element. These thematic networks (Réseaux thématiques) are designed to bring together companies from similar market segments and to pool all of the structures and new

⁵ See: La French Tech. Les hubs French Tech à l'international. Available at: www.lafrenchtech.com/en-action/les-hubs-french-tech-linternational, last accessed on 14/08/2017.

French Tech locations. Participants who are deemed to belong to one of these thematic networks are tasked with meeting three to five times a year and agreeing joint actions for promoting start-ups in their specific sectors (La French Tech 2016).

Another aspect of the 'French Tech' brand is the 'French Tech Ticket', which is designed to attract foreign start-ups to France. Applications for the first year of the initiative (2016) were limited to Paris. 86% of the applicants came from non-EU countries, especially from India, the USA, Russia, Brazil and Egypt. The first year of the programme was successful and of the 22 start-ups, 18 decided to stay and base their company in France. More than 50% registered a business in France or expressed an intention to do so. In 2017, the second year of the programme, 180 international founders will be given funding for one year to establish and develop a start-up in a French city. They will be welcomed by one of the 41 French incubators, which will then provide the start-ups with both administrative support (visas, accommodation, insurance and tax) and funding worth 45,000 euros per project. The conditions for receiving this support are that the young, innovative companies are in the start-up phase or the early development phase and that the founders are citizens of a country other than France. Only one French team member is allowed per team (the maximum team size is three). The 'Visa French Ticket' visa process is closely linked to this. It aims to make France a more attractive location for the start-up scene. In addition to the French Tech Ticket, international companies can apply for a four-year, renewable visa (Passeport Talents). Recipients of this ticket no longer require a special work permit and their spouses are also given a visa and a work permit. The aim of this is to make it easier for young, French companies to recruit international staff (La French Tech 2017a; Kooperation International 2017).

Another new measure launched this year is the 'French Tech Diversité' funding programme, which provides special support to start-ups from socially deprived areas and from rural regions (La French Tech 2017b). Paris has a particularly start-up-friendly climate. The French capital has created its own label (My Startup in Paris) as a way of further enhancing the visibility and prominence of Paris-based companies.⁶

In 2011, the number of start-ups in Paris was only estimated to be around 1,000. The estimated figure for 2016, however, was 5,000, which equates to a growth rate of around 1,000 new

start-ups per year. The Quartier du Sentier district, which used to be the heartland of the manufacturing industry, has now been given the nickname 'Silicon Sentier' and is home to the influential Parisian digital association 'NUMA' (a blend word derived from 'numérique' = digital and 'humain' = humane). The small workshops where suits and dresses used to be designed now provide homes for start-ups, who are on the lookout for the latest business ideas.

Infrastructure

Paris is the region that attracts the most start-ups. More than 50% of France's start-ups are based in the Île-de-France (the region that surrounds Paris). The main characteristic that sets the capital apart from the other cities is its pre-eminent position in France's system of cities. In addition to being home to around 18% of the country's population, Paris also has a close-knit network of universities and research institutes. The majority of the country's domestic and foreign businesses are based in the capital city. Nevertheless, in contrast to Germany, France's start-up scene is not limited to the capital city. In recent years, other large cities have narrowed the capital's lead. Marseille, Lyon, Grenoble, Lille, Toulouse, Bordeaux and Montpellier have also become attractive locations for start-ups. Stable, independent networks are developing, as are lively start-up centres (Lemarchand 2015).

Society

Rigid, inflexible and impossible to reform. This is the image that has previously been associated with France. With its new President, however, France is now actively pursuing the reforms it needs. The country's start-up scene, however, has been developing a positive image for some time now. The start-up ecosystem is developing rapidly in France. The country has been an attractive location for foreign businesses for some time. It is becoming increasingly open to the international market and is attracting foreign investors and incubators. Innovation is a major focus.

France is also breaking new ground in the area of IT training. The billionaire Xavier Niel, who came to fame through the Parisian tech scene, has set up an innovative university for programmers and developers in Paris. It is called Ecole 42 and is the antithesis of France's elite universities. At this 'school of the

6 See Paris.fr. Paris, capitale des Startup. Available at: www.paris.fr/services-et-infos-pratiques/innovation-et-recherche/paris-capitale-des-start-up, last accessed on 14/08/2017.

future', high school qualifications are not a prerequisite. There are no professors, no lectures and no grades. In their place, however, it has brand new computers, which can be used 24/7 for the voluntary completion of the tasks set. Students teach themselves how to develop solutions to problems. It is an innovative form of learning that is evidently very attractive – the Ecole 42 receives 70,000 applications each year and 900 students are selected from those applicants (Meister 2015).

The underlying conditions for the start-up scene in France are deemed to be very good. In societal terms, the scene is predominantly characterised by its strong community of freelancers and entrepreneurs. It has a number of sector-specific meeting points. France also has some of the best business schools and internationally renowned technical experts, such as Xavier Niel, who was mentioned above. He also backed the Station F incubator and the seed investment group Kima Ventures.

In France, the topic of start-ups has now become a trend that attracts media attention. Stories about young, innovative businesses are regularly circulated to large audiences and are met with a positive response.

Networking And Transfer

'Station F', the largest incubator centre in the world to date, was opened in June 2017. The new business incubator for start-ups and coworking spans an area of 34,000 m² and is located in the former 'Halle Freyssinet' building in the 13th arrondissement of Paris. The space is divided into three zones and it provides space for 1,000 innovative IT start-ups. It is set to create 3,000 new jobs. One zone is for start-ups, another is an administrative area and the third zone will be open to the public. Facebook has already set up its 'Startup Garage' for helping young, independent start-ups to develop their businesses. Other large companies such as Vente Privée and Techshop have also secured themselves places at Station F. The concept aims to promote exchange between businesses and to accelerate the formation and development of projects with the help of annual partnerships with companies such as Facebook and the HEC Paris incubator. The project is part of the 'Paris – the digital city' initiative, which was announced by France's former Minister for Small and Medium-sized Enterprises, Innovation and

the Digital Economy (Fleur Pellerin) some years ago in 2012. This project was also largely funded by Xavier Niel. "It's a win win situation," he commented. "At a time when our economy is in the doldrums we need to accelerate job creation and give youngsters opportunities to find employment by linking public and private investment. In doing so everyone wins." (Wilsher 2016) Other investors include the City of Paris and the public financial institution 'Caisse des dépôts et consignations' (CDC).

The main focus is on networking and knowledge transfer, which is why the business incubator also features coworking spaces, a large auditorium, a sports centre, a large bar and a 24/7 restaurant. At the same time, the project aims to enhance the visibility of Paris and encourage new investment.⁷

Technology hubs have been established in many cities, as have accelerators, coworking spaces and incubators for start-up businesses. Founders have good, comprehensive access to several workspaces, which further simplify their work and offer a range of networking opportunities. France also hosts a number of internationally-focused conferences, including 'VivaTech'⁸ and 'Futur en Seine'⁹.

Funding Structures

Start-ups in France have access to a variety of funding mechanisms. Funding is provided by both public, private and public-private bodies. The mechanisms include loans, subsidies (such as exemptions from tax or social security contributions) and the direct acquisition of shares. The funding options vary according to the phase of the start-up. Public institutions such as job centres (Pôle emploi) are an important point of contact during the initial start-up phase.

Founders can also receive seed capital from initiatives such as France Active, Initiative France, Adie and Créa-Sol, which provide small, low-interest loans. Start-ups in later development phases can also use the funding mechanisms provided by the public investment bank Bpifrance. Once the start-up has been formed, the range of potential sources of funding is wider. For example, start-ups can receive funding directly from their municipalities and local chambers of industry and commerce (Chambres de Commerce et d'Industrie, CCI) in the form of

7 See Station F: <https://stationf.co>; Wissenschaftsportal der Französischen Botschaft in Deutschland (2013). Gründerzentrum für „1000 Start-ups“ soll 2016 in Paris eröffnen.

8 See VivaTechnology: vivatechnology.com

9 See Future en Seine 2017: www.futur-en-seine.paris/en/the-festival

subsidies. Furthermore, Bpifrance provides interest-free loans of up to three million euros for research and development (R&D). If the founder fulfils the criteria and is thus classed as a young, innovative business (Jeune Entreprise Innovante, JEI), the start-up can apply for its R&D activities to be exempted from tax and employer social security contributions. Start-ups also have the opportunity to request a regular bank loan from Bpifrance. As soon as the start-up business begins to prove itself successful, the funding conditions improve. Alongside crowdfunding, there is also the option of taking out development loans from Bpifrance for long-term funding. No guarantee is required for these kinds of loans (Prêts d'amorçage). As such, the investment bank Bpifrance as a whole is an important player in the development of start-ups in France. It participates in a range of mixed credit funds that focus especially on supporting young, innovative and technological businesses in the digital, biological and environmental sectors.¹⁰

In addition to public sources of funding, venture capital funds, private investment funds and investment departments at large companies also play an important role. 'Orange Digital Ventures', a subsidiary of France's largest telecommunications company, provides targeted support to founders who are developing products or services that interest the company. 1,433 venture capital investments were made in Europe in 2015 and two thirds of them were in the three largest markets: Germany, Great Britain and France (EY 2016). The number of venture capital investments in France increased slightly between 2014 (284 rounds of funding) and 2015 (302 rounds of funding). In the same period, there was a significant rise in these figures in Germany and a dramatic fall in Great Britain. Following its first round of funding in 2014, which totalled more than 100 million US dollars, the Parisian company BlaBlaCar attracted more than 200 million US dollars in another round in 2015. This made it one of the best-funded start-ups in Europe. The round of funding was led by Insight Venture Partners and Lead Edge Capital. Vostok New Ventures also participated. BlaBlaCar has grown to become a global business and this expansion means it is now active on three continents and in seven new markets.

Around 590 fundraising initiatives took place in 2016, which shows the appeal of French start-ups (by contrast, the 2016 figure for Germany was 380). Innovative French start-ups are popular targets for investment and they generally do well out of fundraising initiatives.

Markets And Market Access

According to the EY study entitled 'Startup-Barometer Deutschland'¹¹, the sector favoured most by French start-ups is e-commerce, followed by software/high-tech, Internet services and social networks/media. The next most popular sectors are entertainment, travel/hotels/catering, financial and asset services, individual services and sport (EY 2016).

Specific Characteristics Of The National Start-Up Scene, Flagship Projects And Best Practices for Supporting Start-ups

Sectors	Relevance (10 = highest)									
	1	2	3	4	5	6	7	8	9	10
Life Sciences							x			
Food / Agriculture								x		
Mobility / Automotive										x
Energy					x					
Digital Industry										x
Manufacturing					x					
Finance								x		
Consumer Markets						x				
Other										

¹⁰ See the Germany Trade and Invest GmbH (GTAI) website: www.gtai.de/GTAI/Navigation/DE/Trade/Maerkte/Trends/StartUps/Land-Frankreich/trend-land-frankreich.html

¹¹ The 'Startup-Barometer Deutschland' report is published every six months by Ernst & Young GmbH. It evaluates the landscape for start-ups and investors in Germany, giving consideration to current developments, investments, structures and areas of focus.

Examples Of Successful Start-Ups

Doctolib

The start-up business Doctolib was founded in October 2013. It is a leading provider of online medical appointments and associated services. Doctolib began life in an incubator that was funded by the French government. Since then, it has attracted 50 million euros of funding from accredited private investors and from the French public investment bank, BPI. Now, four years later, Doctolib employs more than 350 people in 35 cities in France and Germany. The business now works with 26,000 doctors and therapeutic professionals and it partners with more than 750 healthcare institutions. According to Doctolib, 8.5 million people use its online and mobile applications each month.

Doctolib recently won a public tender to implement its solution at 39 hospitals in France, adding 9,000 new doctors to its user base. Germany is seen as being one of the countries with the most potential for development and the business intends to create more than 150 new jobs there.

BlaBlaCar

Frédéric Mazzalla founded BlaBlaCar in France in 2006. Mazzalla has an MBA from INSEAD, a Master's degree in Computer Science from Stanford University and a Master's degree in Physics from the Ecole Normale Supérieure (France). The business now employs 500 people and has offices in 22 countries. It has become one of the leading companies in the global sharing economy. BlaBlaCar represents efficient, affordable long-distance mobility.

The company has been connecting drivers and passengers in Germany since April 2013 and it has become a well-established alternative form of transport on the German market. The company's German head office is in Hamburg. Its philosophy is all about sharing resources. This enables those using the service not only to save money but also to protect the environment. In the German BlaBlaCar community, each car transports 2.8 people on average, compared to 1.7 people. Participants split the costs for journeys, which have an average distance of 300 km (figures from 2015).

BlaBlaCar combines the functionality of connecting passengers and drivers with community features. Users can view each other's profiles, which contain the member's photo, along with details about their car, age, interests and their level of chattiness. The aim of this is to help people find particularly suitable ride-sharing arrangements. For journeys that are arranged and paid for online, the passengers are automatically insured and a partnership with 'myclimate' means that the journeys are CO₂-neutral.

In June 2014 and September 2015, BlaBlaCar attracted 300 million US dollars of capital and has thus become a global business that is one of Europe's most highly capitalised start-ups. The round of funding was a reaction to the accelerated growth in Europe and to the rapid initial growth seen in emerging markets. In these markets, demand is particularly high due to the lack of public transport and the high vehicle maintenance costs. BlaBlaCar will use the investment to press ahead with growth and plans for further expansion.

Prospects

To a great extent, the debates concerning the need for and the viability of reform in France have not acknowledged the fact that the country – particularly Paris – has become a magnet for new businesses in recent years. Technological centres, start-up incubators, accelerators and coworking spaces have been established in many cities. There are many examples of France's thriving dot-com industry. France has a creative elite, engineers are cheaper than they are in the USA and scientific research can be offset against tax. Both the quantity and the quality of talented workers is deemed to be very good. Furthermore, the privately funded 'Ecole 42' and the world's largest start-up accelerator 'Station F', which is also largely privately funded, are establishing France as an exceptional location for training and employing tomorrow's digital elite. Developments on the French start-up scene have sufficient substance and dynamism to become an important motor for the economy and for employment. This is particularly true in the area of digitalisation. This is highlighted by the fact that the Parisian digital association NUMA, which was founded in 2000, is now active in seven other global innovation centres. By 2019, it aims to have 15 offshoots.

In addition to the software start-ups, France's hardware start-ups are also expected to become increasingly important. France already has a number of robotics suppliers, including suppliers of small, humanoid robots for everyday tasks – robots that could almost be categorised as useful toys.

The development of start-ups in Paris and other French cities has now become a recognisable economic factor. As is the case elsewhere in the world, the effects go beyond the immediate factors of added value and employment. Here too, a 'creative spillover' effect can be observed, whereby new developments are stimulated within existing industries and are radiated out into society as a whole. Nevertheless, it must be noted that many of the successful start-ups in the area of software are matchmaking apps and platforms for connecting people with services. It is not yet clear whether these platforms will utilise developments that will spill over from this business model (e.g. with their own artificial intelligence applications).

Korea//Seoul

Underlying Political And Institutional Conditions

In recent years, the Korean start-up scene has been picking up speed very quickly. There are now more than 20 accelerators and a number of coworking spaces and start-up events. The business angel and investor scene is also very active. Since 2011, the Korean government has been heavily investing in funding programmes for start-ups. This support includes (1) financial funds, (2) setting up coworking spaces and linking start-ups with investors and companies and (3) a wide range of training and advisory services. Lastly, there are (4) funding programmes that are especially aimed at foreigners. As a result of these underlying conditions, Korea, which has a population of just under 51 million, has developed a start-up scene that currently has 46,000 start-ups.

More detail about these funding programmes:

- 1) To begin with, the Korean government is making funds available for start-up funding in 2017. In total, this funding is worth around 2 billion US dollars. In addition to providing funding, the Korean government is also supporting start-ups and investors by offering tax incentives of up to 100% for business angels.¹² According to the latest figures from KERI (Korea Economic Research Institute), Korea is spending around 4.3% of its GDP on research and development each year – a higher percentage than any other country in the world (Germany: 2.84%).¹³
- 2) Furthermore, the government is supporting a number of private initiatives. This has led to numerous coworking spaces being set up for start-ups (see 'Funding Structures' section). In 2011, the Korean government also established a programme for putting early stage start-ups in touch with business angels. The 'Tech Incubator Program for Startup' (TIPS) is another driving force for private investment in start-ups. The programme provides support for early stage start-ups. Start-ups are assessed and, if they meet the criteria, they are awarded R&D funding for nine times the sum they have received from a business angel. This means that for every US dollar provided by an investor, the start-up secures an additional nine dollars from the government. It appears that the new Korean government, which was elected at the beginning of May 2017, will continue to support the development of start-ups in Korea.
- 3) The training and advisory services are offered by both private and public organisations (see 'Funding Structures' section). These services cover every phase of starting up a business, including drawing up innovative ideas, putting together a professional business plan and presenting the business. They also include legal advice about patents and plans for expansion.
- 4) Foreign entrepreneurs can apply for the 'Oasis Visa' in order to set up a technology-based business. This enables foreign founders to use Korea as a starting point from which to expand into the Asian market. A problematic aspect of this is the bureaucracy that is sometimes associated with acquiring this visa if there is no seed capital. Furthermore, accessing the government fund is relatively difficult unless there is a Korean partner who holds at least 50% of the company. For this reason, plans to start up a business and enter the market should be agreed with the 'Seoul Global Business Center' in advance. In this way, founders can be given advanced warning of the regulatory obstacles so that there will be no barriers to successful market entry. Nevertheless, new government programmes prompt hopes that the conditions for foreign founders will be more attractive in the future. Programmes such as the 'K-Startup Grand Challenge', for example. This involves foreign start-ups being invited to Korea for three months. The Korean government covers all of their costs. In 2016, 40 start-ups took part in this programme. 20 start-ups received funds of up to 130,000 US dollars and were accepted into the mentoring programme. The 'Seoul Global Startup Center' was also founded. This organisation provides free coworking spaces, offices, networking events, courses and seminars that are specifically geared towards foreign start-ups. The aforementioned Seoul Global Center, which offers legal and financial advice for foreign companies, is another port of call for foreign start-ups.



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¹² 100% for investments of up to 13,000 US dollars; 50% for 13,000 to 46,000 US dollars; 30% for investments of more than 46,000 US dollars
¹³ As of March 2017

Infrastructure

Compared with other OECD countries, Korea's technological infrastructure is very good. It has the best Internet connectivity in the world. LTE is already being used by 68.8% of the population. Korea is the only country where the whole population has access to 4G connectivity. Korean companies are working to ensure that there will be a functional 5G network in PyeongChang by 2018, in time for the Winter Olympics in the city.

Furthermore, Korea offers the highest Internet connection speeds in the world, including in public spaces, buses and trains. This infrastructure has also helped to familiarise Koreans with online shopping and online payment systems. Online trading is present in nearly every sector and it accounts for almost all the consumer goods, industrial goods and services sold. The requirements that customers place on online retail are particularly remarkable. Customers expect high quality, good customer service and quick delivery (within 24 hours).

Another aspect of Korea is its transport infrastructure. Approximately 25 million people live in the Seoul metropolitan region. This equates to half of Korea's entire population, making the city the world's second largest metropolitan region. Nevertheless, Korea has a well-functioning public transport network that is incredibly efficient. It is also very cheap to use the bus and underground train services. Korea has a comprehensive utilities infrastructure. It should be noted, however, that the cost of living is relatively high, especially in the capital city. Seoul is now one of the top ten most expensive cities in the world.

To summarise, the technological infrastructure is an important foundation for Korea's innovation potential. Korea is therefore a particularly attractive place from which to establish start-ups, especially in the areas of e-commerce, new technologies and apps.

Society

Korea currently has a population of approximately 51.5 million. At the moment, the country has the world's lowest birth rate of 8.4 births per 1,000 population. The number of single and two-person households is increasing, so Koreans are increasingly buying their groceries in small quantities from shops near their homes. Culturally and ethnically, Korea is a very homogenous country. Owing to the Confucian tradition, it is characterised by social hierarchies. Education plays an incredibly important role in this way of thinking. On average, in the last ten years, 70% of pupils decided to go on to further study (university, etc.) after

completing their high school education. In mathematics and the sciences, Korean pupils receive the best grades of any OECD country. In this respect, Korea is often gripped by 'education fever'. This describes the way that Korean families spend huge sums on education in order to enable their children to have a better life. The statistics show that they spend one third of their available income on private afternoon and evening tuition, which also puts children and young people under high pressure to perform and succeed. At the moment, however, there is insufficient demand for academics on the Korean job market. As a result, levels of youth unemployment are relatively high (around 11%). The government is currently seeking to compensate for this by promoting start-ups and overseas placements for graduates. In Korea, high levels of education also provide founders and entrepreneurs with a number of opportunities. In Korea, the concept of vocational training as a way of providing an alternative career path is still not widely recognised by society at large.

By their very nature, innovative projects are risky and there is a chance they may fail. The problem with this is that majority of Koreans are risk averse. There is a tendency to view failure as a personal catastrophe – perhaps one that also has negative consequences for the future career path – rather than as an opportunity for development. For this reason, Koreans are often hesitant to be the first to do something new. They prefer to wait and watch the successful development path of something new elsewhere – and then jump on the bandwagon (e.g. Apple vs Samsung in the smart phone sector). It is not without reason that the Koreans are often described as 'fast followers' and are rarely characterised as having the 'first mover' gene. In recent years, this has tended to be an inhibiting factor for the start-up scene. It also dampens the innovation potential of established companies in areas that are beyond the scope of their core business. Nevertheless, a gradual change of perspective is underway as the consequence of exchange programs and increased interaction with people from other cultures – both online and offline.

Korean consumers are characterised by their particularly strong affinity with new technologies and trends. Status symbols, such as luxury goods, are viewed as indicators of economic success. As such, consumers on the Korean market are very active and have a great deal of purchasing power. These market conditions also provide opportunities for innovative start-ups who wish to test the success of their product on the fast-moving Korean market.

Networking And Transfer

Despite Korea's good levels of Internet connectivity, it is continuing to invest in developing its Internet infrastructure. Although more than 90% of the population have access to the Internet at above average speeds of around 26 mb/s and relatively cheap prices of around 17,000 KRS (13.90 euros) per month, liberal investments are due to be made in the coming years in order to establish a comprehensive commercial 5G network. The aim is for 5G technologies to be used on a large scale at the Winter Olympics in 2018. This would make it possible to broadcast 360° video recordings of the games, for example. These endeavours provide excellent opportunities for start-ups, especially in the areas of IT, e-commerce and Internet of Things (IoT).

Korea has an advantageous position in terms of logistics because it is located between the world's second and third largest national economies: China and Japan. Korea itself has a highly developed infrastructure with good motorways, ports and airports.

Funding Structures

Start-ups face financial challenges and obstacles, especially in the seed stage, early stage and the early expansion stage. Although this applies to acquiring equity capital from investors or business angels, acquiring borrowed capital is often particularly problematic due to the absence of securities. This problem is being counteracted, both by the Korean government and by private institutions. This section will begin by describing the players who are currently making an important contribution to the provision of monetary and non-monetary support to start-ups in Korea. There are currently 31,000 venture capital firms in total. Korea's start-up scene is predominantly based in Seoul. In Seoul, there are both public and private funding programmes. 'D.CAMP', a joint venture backed by Korea's 20 largest banks, is an important player. The banks have formed a joint start-up fund worth more than 450 million US dollars. D.CAMP is a technology-focussed coworking space that concentrates on providing founders with finance and networking opportunities. Since its launch, the initiative has been constantly growing. D.CAMP is also home to local venture capital firms such as Primer and Big Basin Capital and it provides a total of 80 desk spaces for entrepreneurs in the pre-seed phase. Furthermore, it organises regular 'Demo Days' events, which enable founders to give presentations to venture capital investors and business angels. The Asan Nanum Foundation is another important player. In 2014, the foundation opened 'Maru 180'. Maru 180 is another coworking space where start-ups, accelerators, ven-

ture capital investors and mentors can meet and work together. At Maru 180, founders meet accelerators such as SparkLabs and FuturePlay, as well as venture capital firms such as Global Brain, Capstone Partners and DSC Investment. Google has also opened a coworking space in Seoul, which is the first Google campus in Asia. There is also an initiative called 'Startup Alliance', which specifically focuses on internationalising Korean start-ups. It has set itself the goal of supporting the start-up ecosystem by establishing a network of private and public institutions. These include the Ministry of Science, ICT and Future Planning, as well as incubators and leading IT companies such as Naver, Kakao and SK Planet. There are also a number of advice services, seminars and conferences. Accelerate Korea and Born2Global have similar goals. These two organisations work with founders, seeking to put start-ups in contact with incubators, investors and accelerators around the world. The organisations also train Korean start-ups to give their pitches and business presentations in front of an international audience as a way of gaining additional business partners from around the world. What makes Born2Global unique is the fact that it also conducts market research, marketing and legal advice about patents on behalf of Korean start-ups in other countries. 500 Kimchi is a micro venture capital fund that specialises in funding promising Korean start-ups.

The Korean Institute of Startup & Entrepreneurship Development (KISED) is another key player. The institute concentrates on activating start-ups and creating new jobs. It mainly focuses on technology-oriented businesses. KISED works together with business angels to achieve its aims. It also supports 21 universities in order to establish a start-up ecosystem at each institution. A crucial aspect of KISED's work is the provision of funds. In 2014, more than 600 individuals applied for funding. The average amount was 40,000 US dollars. Those who receive this funding are also accepted into a mentoring programme and have access to start-up training programmes. The TIPS funding programme (see 'Underlying Political And Institutional Conditions' section) is also a KISED initiative.

The most important Korean institutions for the seed stage seem to be K Cube Ventures, Bon Angels, TIPS, Fast Track Asia, Zello Financial Group and The Ventures. For the 'Series A' phase, the key institutions are DSC Investment, Sotonebridge Capital, DS Asset Management, Smilegate Investment, Capstone Partners, Value Invest Korea, IDG Capital and KTB. The most important institutions for the later stage of business development are LB Investment, Partners Investment, Atinum Investment, Company K Partners, SL Investment, Neoplux and STIC Investment.

Examples Of Successful Start-Ups

Bagel Labs

The Bagel Labs business model focuses on selling their hardware products. The company's digital length gauge is dubbed the 'Bagel'. The product was launched on the market in 2016 and since then, the start-up has sold more than 27,000 units in 105 countries around the world. In the near future, the company plans to sell smart phone apps that will make it possible to provide data for e-commerce and data-sharing platforms. This expanded business line will focus on big data.

Since the tape measure was invented around 150 years ago, the fundamental mechanisms for measuring and processing lengths have remained essentially unchanged. Lengths are measured, written down manually and then forgotten at some point – which is why it is important to rethink this process from scratch. The unique selling point for Bagel Labs is that in addition to converting length measurements into digital data, their products also make it possible for this data to be archived for industrial use in the future. This means that production processes can be made more efficient. Another selling point is the fact that on average, the company only takes two to three months to develop a new prototype. This has enabled them to attend numerous trade fairs and exhibitions, where they have been able to respond to requests from a range of different customers.

The company's goal is to create an online platform that provides all of the important lengths and measurements required by the industrial and research sectors in a digital format. The idea is that this will simplify communication between different countries and industries and minimise the risks, such as those associated with incorrect conversions. Bagel Labs is therefore concentrating on developing products for a range of industrial sectors.

The support and advice provided by the TIPS programme helped the company to raise 1.91 million US dollars of funding on two crowdfunding platforms (Kickstarter and Indiegogo). Furthermore, the government institution Born2Global provided the business with legal advice and office space.

INNOPLAYLAB (IPL)

IPL develops and sells 'social robots', which are built on the 'iJINI' robot platform. The company aims to establish the social robot as an essential household item. One of the ways it is seeking to do this is by improving platforms and manufacturing processes. It also distributes software development kits that facilitate the increased personalisation of their robots. In future, the company wants the sale of robot operation systems to become an additional business line. The company successfully agreed a minimum order quantity (MOQ) of 45,000 units with a Chinese investor. Additional contracts with Russian and Thai investors are currently being negotiated. The company is preparing to launch a Kickstarter campaign.

Social robots bring together robotic technology, the IoT and speech recognition. For example, a robotic dog with a built-in camera can look around and move freely. In response to speech controls, it can monitor the house and provide up-to-date answers to questions about the news and weather. As such, social robots would be able to perform various additional functions without having the alienating external features of a robot. Robots can also be connected up to other household devices via the Internet and can therefore perform day-to-day household tasks for their owners (such as operating the lights, air conditioning, TV, heating, washing machine and so on).

Some of the company's main achievements include: Winning the 2015 Next Startup Award, receiving a Red Dot Design Award in 2016 and reaching the list of finalists in the 2017 BT Infinity Lab competition.

Vital Smith

This start-up produces devices that are compatible with smart phones and can identify the most fertile time in a woman's cycle. The start-up has developed a device that analyses the user's saliva. It automatically identifies the shapes of the crystalline structure as an intelligent way of ascertaining where the woman is in her menstrual cycle. The start-up has developed a patented film strip, which the user simply runs along her tongue. It is hygienic, convenient and quick to use. There is also software than uses a big data model to automatically calibrate the reading of each user. By

integrating big data analysis, the system provides the most precise calibration possible. The product measures oestrogen levels, which means it has great potential to expand onto areas of the healthcare market that specifically cater for women's health.

The story behind the business and its aim both correspond to a recognised and widespread problem: When trying to become pregnant, it is difficult to identify the time at which the woman is most fertile. In the USA, 150 million US dollars are spent each year on identifying the best time for conception. Research shows that having sexual intercourse numerous times increases the chance of becoming pregnant during this period. The chance of becoming pregnant increases by 53% two days before ovulation and reduces by 10% on the day of ovulation (Dunson et al. 2002). Previously, there was not a good way of identifying the five-day period that was also practical and cost-effective. A common method is the urine test, however this is (1) unhygienic because it must be conducted while on the toilet. It is also (2) inaccurate because the urine concentration can easily be diluted by unexpected physical factors, such as water consumption. The biggest problem with the usual methods, however, is that the moment at which the likelihood of conception is highest can be missed because this kind of test only identifies a time period of one day. The vision of the founders is to offer couples a convenient and cost-effective solution so that they can identify the level of fertility as accurately as possible.

In addition to the device, the company also sells 'consumable film packs'. The profit margin for the 'consumable film pack' is higher than that for the smart phone apps, so the company is aiming to make most of its profit from the films. The business has already made some significant achievements. The main backers are listed here: KOTRA, Ministry of Science, ICT and Future Planning, Bayer AG (Grants4Apps winner). In future, the business is also aiming to partner with hospitals, which is likely to result in additional profits. Making use of the data that is collected is also likely to be profitable.

Prospects

The endeavours and support of private and public investors have led to the development of a start-up ecosystem with a well-networked start-up scene in Gangnam (a large district in Seoul). On the whole, these developments give rise to significant opportunities. These opportunities include high levels of

purchasing power, the increasing popularity of Korean products in Asia, the fact that young Koreans are particularly open to new developments and influences, as well as the great appeal of Korean early stage start-ups for foreign venture capital firms. Nevertheless, the scene will also encounter some challenges as it develops in the future. The relationship between the conglomerates (Chaebol) and the start-up scene is a source of conflict. Start-ups often find themselves facing legal restrictions and barriers to market entry. The country and its start-up ecosystem will also be confronted with the difficulties associated with demographic changes. Owing to the increasing involvement of foreign investors, founders and potential founders continue to express concerns regarding giving up shares and surrendering control of their businesses. The hierarchical culture that is present in society and the world of business is also viewed as being an inhibiting factor for the country's innovation potential, as are the language barriers that exist.

Looking ahead, it is generally true to say that although the Korean start-up scene is still very young, there is evidence of exceptional growth in recent years. 51% of start-ups operate in the mobile Internet and IoT sectors. There are also many start-ups operating in the intelligent service automation, cloud technology, high-tech robotics and 3D printing sectors. Around 3,000 start-up events are held each year. 100,000 coworking spaces are in active use. This rapid growth is mainly due to huge government subsidies and private funding initiatives. Another trend on the Korean start-up scene is the increase in foreign investment. Seoul was given the ultimate seal of approval as a location when Google opened a campus there. The new Korean president Moon Jae-In has announced that a public venture capital platform will be established and barriers to investment will be removed in order to help young entrepreneurs start businesses. Furthermore, there will be large-scale government investment in future-oriented fields of business such as smart factories, IoT and driverless cars, with the aim of identifying new economic growth engines.

The Korean start-up scene is relatively homogenous. Only approximately 17% of founders do not have Korean citizenship (many of whom are 'Korean Americans'). The diversity of the scene could be increased by introducing attractive new funding programmes for foreign firms and making it easier to issue visas. Its ageing population means that Korea is one of the many modern economies undergoing demographic change. Owing to the low birth rate and increased life expectancy, the healthcare sector is becoming increasingly important and is therefore offering more business opportunities. Initial experiments with digital medical examinations, which can be conducted using

smart phones and special apps, are taking place. This means that increasing numbers of older people living in more rural regions or on islands have access to a remote diagnosis.

All in all, the growth potential of the Korean start-up scene is positive and will remain positive. In particular, the provision of funding for foreign founders offers opportunities for more diversity, creativity and therefore for more innovation potential.

In 2017, Korea was once again named the world's most innovative national economy by the Bloomberg Innovation Index (Bloomberg 2017). The factors used for the ranking were research and development, the number of patents registered, high-tech companies, value-added manufacturing and education. This shows that the numerous private and public programmes are making an impact on the real economy. But what influence does the start-up scene as a whole have on the economy and on technological developments? To begin with, the public funding programmes are mainly targeting technology-based businesses. It is therefore likely that there will be ongoing technological development in the areas of O2O, medical and biological technologies, IT and engineering – sectors where there has been a great deal of activity in recent years. In 2016, investors set their sights on the ICT-focussed sectors of fintech, virtual reality, online security, artificial intelligence and health tech. As explained in the 'Infrastructure' section, the technology infrastructure in Korea is among the most modern in the world. The combination of this infrastructure and the great number of initiatives for founders will enable Korea to remain a centre for innovative technology developments in the future.

Much of Korea's economic success is due to the large conglomerates. Corporations such as Hyundai, Samsung and LG dominate various sectors, including the automotive industry, the high-tech sector and the electronics industry. These companies also run incubators and thus promote innovation in areas that are outside the scope of their core business. As a result, many start-ups are in direct contact with these large corporations. It is therefore likely that the innovative technology sector will generate important stimuli because there is the potential for large companies to immediately implement new, creative ideas. Nevertheless, these partnerships can be a source of conflict. After all, start-ups run the risk of having their ideas used by large corporations without being able to share in the market success their ideas may enjoy. For this reason, many start-ups purposefully move abroad to gain more independence from the corporations in their home country.

Furthermore, it is likely that the rapidly growing start-up scene will have an ever-increasing influence on Korea's work culture. Indeed, more and more jobs are being created outside the large corporations. This is resulting in the diversification of the employment market outside the Chaebol businesses.

In summary, it is likely that the start-up scene will continue to grow as a consequence of the huge, sustained investments made by the government and private institutions. In particular, the government-funded technological sectors (O2O, medical and biological technology, IT and engineering) are the most promising in terms of innovation potential. The success of the public and private initiatives and the development of the economy will depend on how well the financial measures can be channelled towards start-ups. It will also depend on whether start-ups are able to develop products that can also target foreign customers and whether founders can internationalise their businesses in a more general sense.

Silicon Valley

Underlying Political And Institutional Conditions

California is by far the most densely populated US state and it is considered to be the USA's most important state in terms of trade and industry. The state had a population of around 39 million in 2015. Estimates from 2014 indicate that the population of California will have grown to around 46.4 million by 2030. California has impressive economic potential, which is demonstrated by the fact that if this state were to be taken in isolation, it would be considered to be one of the world's largest economies (currently ranked 6th). In keeping with the importance of the state as a whole, Californian companies are world leaders in a variety of sectors. California is home to important sector clusters for IT, web technology and communication technology (San Francisco and the adjoining Silicon Valley region), biotechnology and nanotechnology (the San Diego region, Silicon Valley, East Bay, Orange County), the entertainment industry (Los Angeles), medical technology (Los Angeles, San Francisco/Bay Area) and the aviation industry (the Los Angeles metropolitan area).

Infrastructure

At the moment, Silicon Valley's infrastructure presents a major challenge. In recent years, the costs of renting and buying real estate have risen sharply, which makes it difficult to find affordable housing. Since 2010, commute times have increased by 15% and the two motorways that connect Silicon Valley with San Francisco (Route 101 and Route 280) are nearing full capacity. Surprisingly, when it comes to Internet connection speeds, Silicon Valley is also falling behind other countries. Download speeds are significantly higher in cities such as Singapore, Hong Kong, Paris and Barcelona. The increasing number of direct flights to Europe and Germany is a positive aspect. In late 2016, Lufthansa began flying from San Jose to Frankfurt and Air Berlin has been operating a direct flight from San Francisco to Berlin since May 2017.

Society

The whole Bay Area is home to around 7.6 million people. In Silicon Valley (Los Gatos, Mountain View, Menlo Park), the average annual income is more than 100,000 US dollars and a salary of less than 105,000 US dollars is categorised as 'low income'. In the Bay Area, the unemployment rate is 3.6% (compared with 4.6% in the USA as a whole). Half of founders have a migrant background and founders are often younger than 35. The influx of top talent from abroad is a factor that contributes significantly to the region's success. The region has an above



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average level of education. The number of people employed in STEM (science, technology, engineering and mathematics) jobs is three times higher than the national average.

Networking And Transfer

Silicon Valley has a wide range of incubators, accelerators and coworking spaces, which are crucial for networking. There are countless events that provide opportunities for networking and discussion. Every year, major events such as TechCrunch and The Startup Conference are held in the region. In recent years, around 50 German companies have set up branches in Silicon Valley in order to ensure that the region's technology is transferred to Germany. These companies include Carl Zeiss, Porsche, SAP, Bosch, Mercedes-Benz, Brose, MunichRE and Deutsche Bank. For these companies, there are three main reasons to open an office on the West Coast of the USA: (1) research and development, (2) scouting for trends and innovation and (3) collaborating with and investing in start-ups and businesses in the region. In contrast to the 49 other states in the USA, California does not allow non-compete clauses. As a result, corporate culture is more open and sharing information is more acceptable – as is leaving your employer in order to start up your own business.

Funding Structures

In this region, the primary source of start-up funding is venture capital. There is a high concentration of venture capital companies on the legendary Sandhill Road in Palo Alto. At its pinnacle in 2015, venture capital investment in the USA reached a total of 58.5 billion US dollars. Approximately half of this sum was invested into companies in Silicon Valley. In 2016, only 24.9 billion US dollars were invested in the region. Despite the 28% reduction, this figure still equates to one quarter of global venture capital investment, which totalled 100.8 billion US dollars. On average, early stage start-ups received 762,000 US dollars of investment in 2016.

Markets And Market Access

In the USA, it is very easy for companies and start-ups to access the market. Companies can usually be formally established within a few weeks and the associated costs are minimal. Legal issues often arise if an innovative business introduces disruptive technology to an area of the market that is subject to strict government regulation. Nevertheless, intellectual property protection is important for start-ups and companies because intellectual property is often the only asset that a start-up has. According to a 2013 survey by the Silicon Valley Bank, around 25% of the start-ups surveyed had faced legal disputes regarding intellectual property.

In 2012, the ‘German Accelerator’ was established in order to open up opportunities in Silicon Valley to German ICT start-ups and to make it easier for them to access the market. For three to 12 months, participating German founders are coached by a team of experts with start-up experience and investors. A wide range of support measures are in place, from checking business plans to ensure they are suitable for the US market, right through to helping start-ups to successfully reach out to and connect with potential customers and investors. In addition to its Palo Alto and San Francisco branches, the German Accelerator has now opened locations in New York City and Boston. The programme is funded by the Federal Ministry for Economic Affairs and Energy.

Since 2017, the German American Chamber of Commerce on the West Coast (San Francisco) has been offering a one week start-up trip to the region. Up to ten German start-ups gain a greater understanding of Silicon Valley during an intensive and varied week, which involves workshops, pitching events and visits to companies. This makes it easier for founders to enter the market.

Specific Characteristics Of The National Start-Up Scene, Flagship Projects And Best Practices for Supporting Start-ups

Sectors	Relevance (10 = highest)									
	1	2	3	4	5	6	7	8	9	10
Life Sciences									x	
Food / Agriculture				x						
Mobility / Automotive								x		

Sectors	Relevance (10 = highest)									
	1	2	3	4	5	6	7	8	9	10
Energy							x			
Digital Industry										x
Manufacturing							x			
Finance							x			
Consumer Markets		x								
Other: Artificial Intelligence									x	

Examples Of Successful Start-Ups

Palantir Technologies

The big data company Palantir, which is based in Palo Alto (California), offers a platform that makes it possible to analyse large quantities of data from a very wide range of sources. It is valued at over 20 billion US dollars, which makes it one of the highest valued start-ups in the world. The company was founded in 2004 and it now employs more than 2,000 people. The start-up has grown to become a global organisation with offices in New York, Washington, Singapore, London and Oslo. Just six years ago, Palantir’s only clients were governments, intelligence services and civil entities. Its clients now include the investment bank JP Morgan, the insurer Zürich, Walmart and the chocolate manufacturer Hershey. Palantir wants to go on to analyse even more customer and sales data on behalf of corporations. Palantir currently has its sights set on Germany. A business deal with the pharmaceutical company Merck has just been announced. Merck wishes to use Palantir’s technology to identify which patients to contact about certain treatments and to develop new cancer treatment drugs.

Palantir would never have been able to employ 2,000 people or be valued at more than 2 billion US dollars without the high availability of venture capital in Silicon Valley – or without the willingness of potential clients in the intelligence services and civil administration sectors to start using a new technology. Industry sources are expecting the company to be floated on the stock market in the near future.

SpaceX

SpaceX is a private aerospace company from the USA. It designs and produces advanced drive systems and spacecraft. Elon Musk founded the company in 2002 in Hawthorne (California) in order to revolutionise aerospace technology and make it possible for people to live on other planets (www.spacex.com/about).

SpaceX is planning to send an unmanned spacecraft to Mars and land it there by 2020. Manned missions to Mars would then follow. The company now employs more than 5,000 people and despite being such a young business, it already has some historic achievements under its belt. In 2012, SpaceX transported goods to the international space station, making it the first private company to successfully do so. In March 2017, it successfully launched and landed a re-used Falcon 9 rocket for the first time. Elon Musk is an entrepreneur and visionary who leads both Tesla and SpaceX – two of the world's most innovative companies. He is now being compared to legendary inventors/entrepreneurs such as Thomas Edison and Steve Jobs.

Dedrone

Dedrone, which is based in San Francisco (California), has developed intelligent anti-drone software. The business was founded in 2014 in Kassel (Germany) and it moved to California in 2016. It has developed a software platform that automatically mitigates drone threats and offers comprehensive airspace protection.

The software facilitates the configuration of the relevant sensors, active and passive defensive measures and alarms. The platform uses integrated interfaces (APIs) to obtain external flight data and data from sensors and so that it has a constant supply of live data from the airspace. DroneDNA, with its analysis and intelligent pattern recognition capabilities, automatically recognises and classifies drones. Measures to defend against hostile drones are automatically activated and security services are informed. Dedrone introduced DroneTracker to the market in 2015. The product is now protecting critical facilities – such as data centres, prisons, airports and government buildings – from espionage, smuggling, terrorism and hacker attacks carried out by small, commercially available drones. Dedrone came into being

after a drone crashed two metres away from the German Chancellor Angela Merkel in 2013. In the spring of 2015, the company received 2.7 million euros to finance growth under the leadership of the venture capital investor Target Partners. In January 2016, Dedrone moved its head office from Germany to San Francisco so that it would have a base from which to conquer the North American market. It also wanted to benefit from the close proximity to innovative high-tech and security companies. The research and development team remained in Kassel, as did the sales teams for Europe and Asia.

By May 2016, Dedrone had already attracted 10 million US dollars of investment from the US-based venture capital firm Menlo Ventures. At the start of this year, the company secured an additional 15 million US dollars of funding from a Series B round. As such, the start-up has received a total of 28 million US dollars in funding. Dedrone aims to use the majority of this latest funding injection to accelerate product development and to continue strengthening its position as the global market leader for drone detection and defence.

It was not until early 2017 that Dedrone secured the backing of five of Silicon Valley's well-known founders and managers: Dominic Orr, CEO of Aruba Networks; Selina Lo, CEO of Ruckus Wireless; Hans Robertson, co-founder of Meraki; Tom Noonan, former chairman and CEO of Internet Security Systems; Trevor Healy, former CEO of Jajah and Amobee. According to the start-up team, the funding rounds and the opportunities for networking with well-known founders would not have been possible in Germany.

Prospects

Silicon Valley remains the global benchmark for start-up ecosystems. Nevertheless, there are four factors that at least have the potential to hinder further growth. The first is the relative decline in the levels of venture capital available on the market – and the possibility that levels will decline further in the coming years. Another factor is the extortionate cost of living in the region. This causes people, especially young families, to move to other regions in the USA (especially Seattle, Portland and Austin). The third factor is the inadequate infrastructure, which is nearing its limits. Reliance on foreign talent is the fourth factor. On the topic of foreign talent, if the current US government made changes to immigration laws, the impact on this region could be negative and immediate.

In recent years, companies in this region have largely focused on traditional IT-related business areas. More recently, there has been a clear focus on issues associated with the digitalisation of industries. The Internet of Things has been a megatrend. Software is becoming increasingly important in all sectors and industries and disruptive innovation is challenging traditional business models. Silicon Valley is at the forefront of many future-oriented technologies, especially IoT, analytics, artificial intelligence, wearables, augmented reality, virtual reality, digital health, biotechnology and autonomous driving. The area of artificial intelligence is currently attracting extensive investment, especially from the large technology corporations (Google alone has employed 2,000 software developers in this field). Consequently, there is a steady increase in the number of start-ups being purchased, seeing as these technological founders are pioneers in their highly specialised fields.

Summary And Conclusion

Unsurprisingly, this overview of start-up scenes in various countries reveals both similarities and differences. In particular, observations regarding countries and cities that are not at the centre of global discussions concerning ‘innovation hubs’, ‘fast-growing industries’ or ‘knowledge incubators’ are remarkably fruitful. As such, it is not only possible to learn from ‘the best’ but also from ambitious ‘followers’ such as Chile and Argentina.

When making comparisons, consideration should be given to the diversity of the economic structures, the levels of innovation and the underlying socio-economic conditions that affect the regions to varying degrees. Nevertheless, this comparative report does reveal some underlying trends and characteristics of start-up ecosystems. Across the board, the availability of talented employees and the extent to which the products and services of young start-ups have access to the market are shown to be essential driving forces and success factors. All over the world, these factors have been identified by both public and private bodies and are attracting monetary and non-monetary support. Although the underlying conditions for establishing successful start-up ecosystems have many similarities from region to region, in some cases there are significant differences in terms of the structure of players in an ecosystem, its preconditions and its development stage. In the past, the Silicon Valley has set the global standard for a flourishing start-up ecosystem. Although it will continue to do so for the time being, other regions are catching up rapidly. These other regions are increasingly breaking free from the Californian prototypes, largely by addressing a different portfolio of topics.

Another finding of this comparative international report is that generally, a high concentration of start-ups is of great economic importance. As such, in all of the regions studied, the topic has become a high priority in politics and in society at large – although in some cases, societal recognition is delayed. A consequence of this is that supporting start-ups is increasingly becoming a task for the government. In this comparison of different start-up ecosystems, the combination of public and private sector support appears to be a particularly important success factor. While the private sector is generally able to offer start-ups more targeted support in the area of gaining market access or establishing strategic partnerships, public measures (at their best) ensure that the environment is generally conducive to innovation, that supportive infrastructure is in place and that talented people can access training. In addition to these non-monetary support structures, the provision of financial support is also essential for the development of start-ups. Where venture capital provides a larger proportion (or the majority) of

funding for implementing business ideas, this is an indicator of a higher risk appetite and of greater public openness within the ecosystem. In this respect, the comparatively young start-up regions in this report (Seoul, Santiago de Chile and Buenos Aires) are more risk-averse and more fraught with scepticism. In such cases, public funding and government-led support remain the main mechanisms used and are the key driving forces for development. Nonetheless, the start-up scene in the metropolitan region of Santiago de Chile has made a name for itself as ‘Chilecon Valley’.

These younger countries also show the importance of underlying infrastructural conditions and the associated increase in public awareness. Korea has the most advanced technology infrastructure in the world and it has been developing rapidly since the 1960s. It is now one of the competitive economies and it has a very young start-up scene. Nevertheless, the Seoul region in particular has seen astonishing growth and a start-up culture has developed there – not least due to large-scale government support and investment. Partnerships between start-ups and large corporations are further boosting the region’s potential for developing innovative technology.

If innovation-friendly, founder-friendly conditions are established in the space where science, the private sector and politics intersect, this can boost the economic and societal importance of regional start-up ecosystems. In many well-established ecosystems, these kinds of initiatives have yielded positive and self-perpetuating results. Promising start-ups attract high levels of investment, which in turn act as a magnet for talented entrepreneurs. This increases the innovative output of the region.

The most striking example of this is Silicon Valley, which is one of the world’s most important locations for the IT and high-tech industries. Many innovative business ideas that are now successful originally came from Silicon Valley and in future, the region is likely to remain the number one start-up location. The current socio-economic and socio-cultural developments in California’s Bay Area, however, show that innovation and investment cannot simply be switched on or off. Although the start-up system is still highly productive and innovative, the local infrastructure is reaching its limits. The extortionate living costs, the cost of renting or buying a home, the insufficient capacity of the transport infrastructure and the medium-speed Internet connections are all aspects that are muddying the waters of the region’s development prospects. Another example to introduce to the discussion of these kinds of breaking points is that of the Korean electronics giant Samsung. In June 2017, it announced that it would be establishing its new European in-

novation centre (costing 150 million US dollars) in Berlin rather than in London due to the cheaper cost of living in the German capital. This highlights the importance of these relatively 'soft' factors, even in the technology sector.

When considering the focus and emphasis of the funding programmes in the various regions, it can be said that there is generally a strong focus on foreign start-ups. In line with this, each location seeks to make itself as attractive as possible. Examples of this include the French 'French Tech Ticket' and the Chilean 'Start-up Chile' programme. This comes hand in hand with a high degree of internationalisation and with the targeted recruitment of well-qualified, talented people, new start-ups and potential investors from other countries. There are also specific measures for the promotion of national and international networking, which has great potential and is of great value as a growth catalyst for young start-ups. With these networking measures, there is an increasing trend towards forging and strengthening connections between long-established companies and the start-up scene. In Germany, these established companies are SMEs, whereas in Korea they are large conglomerates. This is another area where the consequences of globalisation are evident. The number of competitors is growing and there is more and more pressure to keep up with new developments – this is especially true when it comes to the innovation capacity of these companies. It is predominantly for this reason that established companies are increasingly choosing to transform their existing business models and are deliberately involving (innovative) start-ups.

On the whole, the similarities and differences of the start-up regions that have been discussed confirm that there is a distinctly positive trend in the development of start-up ecosystems and in the increasing global and economic importance of these ecosystems. In future, it is likely that the race to be at the forefront of innovation and the race for market leadership will intensify, as will the associated search for talented and highly qualified staff or start-ups. New methods for training talent, such as the unorthodox 'Ecole 42' talent factory in Paris and the ambitious Argentinian qualification programme '111 Mil' (training 100,000 programmers, 10,000 professionals and 1,000 entrepreneurs), show that the impact of start-up ecosystems extends far beyond their immediate spheres of influence and is a driving force for the development of society as a whole. The same applies to an even greater degree when it comes to outputs. This is highlighted by the impressive progress of the platform economy, for example.

The topic of talent is closely associated with how attractive the location is. Favourable underlying conditions are significant (success) factors and they should be taken into consideration. In addition to the cost of living, which was mentioned above, these factors include the cultural and leisure activities on offer, how accessible the location is and how well-connected it is to the rest of the world. Owing to the fact that metropolitan regions are particularly likely to have the foundations required for development, the polarisation of start-up ecosystems described above is expected to continue.

Ultimately, if emerging regions are to compete effectively, they will need to channel opportunities and challenges and tap into the potential offered by a strong start-up ecosystem, with a view to establishing robust entrepreneurship. This applies to other examples as well as to the regions that have been analysed in this report. In Nairobi, for example, a start-up ecosystem known as 'Silicon Savannah' has emerged and is considered by many to be a key starting point for the comprehensive digitalisation of the African continent.

In China, particularly in the electronics metropolis of Shenzhen, which is well-known for the shanzhai innovation system (among other things), there has also been an entrepreneurial focus on hardware innovation. This has laid the foundations for an enduring influence on the international markets for consumer electronics, electro mobility and the industrial Internet. The example of Argentina clearly shows that supporting start-ups is a way of establishing a new economic paradigm. One that is not dependent on the practically unassailable raw materials export business but instead is built on fast-growing technology companies with fast-scaling business models that can be implemented globally. Welcome to the dragon's den.

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