

# Unlocking the potential of South Africa's technological innovation: A literature review

## 1 Introduction

The Technology Innovation Agency (TIA) was established in terms of the TIA Act, (Act No.26 of 2008) with the objective of stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploiting technological innovations. As part of its work, TIA has commissioned SiMODiSA to prepare for and facilitate a high-level workshop that can lead to implementable outcomes and appropriate policy inputs towards achieving TIA's objectives.

This high-level literature review was conducted in preparation for the above-mentioned workshop and outlines the South African technology funding landscape that supports the development of technology enterprises, complemented by profiles of the top-performing countries based on their startup entrepreneurship ecosystems.

The countries profiled in this review were selected on the basis of the Startup Ecosystem Ranking 2015<sup>1</sup>, which ranks the top 20 startup ecosystems from around the world. It is important to note that ecosystems are not synonymous with countries. Rather, ecosystems or 'hubs' tend to emerge as a local phenomenon, similar to that of Silicon Valley, which emerged as the archetypal representative of the classic model of high tech entrepreneurship<sup>2</sup>. For example, six of the top 10 localised ecosystems can be found in the US, with Tel Aviv, London, Berlin and Singapore making up the balance of the top 10 localised ecosystems<sup>3</sup> and in turn informing the countries profiled in this review: the United States (U.S), Israel, the United Kingdom (U.K), Germany and Singapore<sup>4</sup>.

In addition, it is important to note that while startup ecosystems are not necessarily exclusively comprised of technology companies, there is a strong bias towards technology companies within the discussion and composition of these ecosystems. The authors of the Startup Ecosystem Ranking also write that "(h)igh-growth technology companies have penetrated nearly every area of society, and for every declining or transforming Industrial Era company, one can usually find an emergent Information Era replacement – or a suite of

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<sup>1</sup> Compass.co (formerly Startup Genome). 2015. The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>2</sup> Monitor Group. 2009. Paths to Prosperity, Promoting Entrepreneurship in the 21<sup>st</sup> Century. Available from: <http://icma.org/>

<sup>3</sup> Compass.co (formerly Startup Genome). 2015. The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>4</sup> China is expected to be included in the top 5 countries in the next index - currently China, along with Taiwan, Japan and South Korea have been excluded from the ranking due to challenges getting survey participants and complete data.

them”<sup>5</sup>. Furthermore, Compass.co suggests that “technology startups are the primary growth engine of the Information Era”<sup>6</sup> and indeed, they believe that this Era will be characterised by the tools and infrastructure of the technology world expanding to impact and transform all aspects of society.

It is intended that the complementary country profiles included in this literature review will provide insight into key ways that South Africa could emulate the process and key enablers that made Silicon Valley successful, applying them to its own nascent and emerging local startup ecosystems<sup>7</sup>. Effectively, this will be in support of utilising a process dubbed “Catch Up Growth”<sup>8</sup> by Compass.co where local startup community leaders and policy makers proactively engage in an effort to move beyond the emergence stage of organic growth (based on locally available and mobilised resources) and catalyse the process of ‘activation’ in the interests of increasing interactions between local stakeholders and those of top performing ecosystems to import the structures, knowledge and culture that set these ecosystems apart<sup>9</sup>.

The key building blocks of an emerging startup ecosystem (and most especially that of the high-tech model of entrepreneurship), enabling it to thrive, include<sup>10</sup>:

Table 1: Key Building Blocks of an Emerging Startup Ecosystem

<b>Ideas</b>	World class universities & / or research centres (government-funded innovation)
<b>Money</b>	Community of Angel investors & Venture Capitalists (VCs) to finance high risk tech startups
<b>Talent &amp; business acumen</b>	Entrepreneurial tech & design talent Education & support for inventors to understand IP rights and protection, how to approach funders and commercialise products Business skills support, including experienced entrepreneurs, advisors and mentors Service providers such as lawyers, accountants and other specialised consultants with knowledge and expertise in servicing startups
<b>Market access</b>	Larger enterprises willing to risk doing business with startups Access to global markets and export potential
<b>Startup friendly policies</b>	Enabling government policies and supporting infrastructure to support the ease of company formation, IP protection and licensing of new products, hiring and firing and capital allocation

<sup>5</sup> Compass.co (formerly Startup Genome). 2015. The Rise of the Startup in The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. pg12. Available from: <http://blog.compass.co/>

<sup>6</sup> Compass.co (formerly Startup Genome). 2015. The Great Transition: Industrial to Information Revolution in The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. pg7. Available from: <http://blog.compass.co/>

<sup>7</sup> When we refer to startup ecosystems, we refer to the full range of participants involved in such ecosystems, from entrepreneurs themselves, to those individuals and institutions that provide financial and non-financial support, or who shape policy and the broader environmental conditions. In addition, entrepreneurs and businesses included in this concept span both startups and scale-ups.

<sup>8</sup> Compass.co. 2015. Startup Ecosystem Lifecycle Model. Available from: <http://blog.compass.co/startup-ecosystem-lifecycle-model/> Posted: November 16, 2015.

<sup>9</sup> Ibid.

<sup>10</sup> Summary developed as a composite of information sourced from Endeavour (Endeavour South Africa. No date. The State of Entrepreneurship in South Africa, The Key Archetypes of an Entrepreneurial Culture, 3<sup>rd</sup> Edition, White Paper Deliberations and Key Findings. [www.endeavour.org](http://www.endeavour.org)); Monitor Group (Monitor Group. 2009. Paths to Prosperity, Promoting Entrepreneurship in the 21<sup>st</sup> Century. Available from: <http://icma.org/>) and Compass.co (Compass.co. 2015. Startup Ecosystem Lifecycle Model. Available from: <http://blog.compass.co/startup-ecosystem-lifecycle-model/> Posted: November 16, 2015.)

## 2 High-level overview of South Africa's technology funding landscape

### 2.1 Country overview

As highlighted above, a key enabler for startup ecosystems generally, and the high-tech model of entrepreneurship specifically, is a community of Angel and VC investors to finance high-risk tech startups. South Africa's total VC investment in 2015 was R146.3 million (of which 26% went to Software and 10% to e-Commerce businesses)<sup>11</sup> but the VC industry in South Africa is still in an embryonic stage<sup>12</sup>. Furthermore, angel investment is lacking in South Africa. Overall, there is a lack of high risk funding for startups in South Africa which is critical for the development of a healthy entrepreneurial ecosystem, and is especially important within the high-tech model of entrepreneurship, where entrepreneurs are unable to leverage traditional channels of funding for growth due to higher elements of perceived risk<sup>13</sup>. Following suite from the top-performing countries in terms of startup ecosystems<sup>14</sup>, South Africa's government can focus efforts on catalysing Angel and VC investor activity to enable a self-sustaining market supporting technology enterprises in their most vulnerable early stages.

In addition, South Africa does not yet have policies and procedures that are expressly designed and implemented towards growing startups with high-growth potential, over and above its general policies and frameworks in support of small and medium-sized enterprises (SME). Moreover, the high business failure rate in South Africa and low business establishment rates are indicative of an SME landscape (and supporting policy environment) that is not favourable to start-ups<sup>15</sup>. South Africa's business environment overall is not conducive, impeded by unaccommodating and restricting legislation as demonstrated by the country's position (73<sup>rd</sup>) in the Ease of Doing Business ranking<sup>16</sup>. In addition, the Total Early-Stage Entrepreneurial Activity (TEA) rate<sup>17</sup> (7%) is extremely low when compared to that of other sub-Saharan African countries which is typically at higher than 25%. That is to say, the number of people starting businesses in the country despite a lack of employment opportunities, is low<sup>18</sup>.

When compared to other surrounding African states (Botswana, Namibia, Zambia and Malawi) South Africans' perception of opportunities to start a business, and confidence in one's own abilities to do so is also relatively low. The overall average of perceived opportunity to start a business of the aforementioned African states is 72% compared to South Africa's which is at 37%. Similarly, the average perceived capability to start a business

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<sup>11</sup> South African Venture Capital and Private Equity Association. 2015. SAVCA 2015 Venture Capital Survey. Available from: <http://www.savca.co.za>

<sup>12</sup> Public and Private sources of funding for technology enterprises are discussed in more detail in "Funding instruments" below.

<sup>13</sup> SiMODiSA Start-up. 2014. Thought Leader Perspectives: The Top 25 Constraints Inhibiting the Development of Effectively Functioning Entrepreneurial Ecosystems in South Africa. SiMODiSA. Available from: <http://www.simodisa.com>

<sup>14</sup> See country profiles in chapter 3 of this literature review for further details and examples of intervention approaches employed by these governments.

<sup>15</sup> Ibid.

<sup>16</sup> World Bank. 2016. Doing Business 2016: Measuring Regulatory Quality and Efficiency. World Bank Group. Available from: [www.doingbusiness.org](http://www.doingbusiness.org)

<sup>17</sup> The GEM measures the level and nature of entrepreneurial activity primarily using the Total Early-Stage Entrepreneurial Activity (TEA) rate. TEA indicates the prevalence of individuals engaged in nascent entrepreneurship and new firm ownership in the adult (18–64 years) population. As such, it captures the level of dynamic early-stage entrepreneurial activity in a country

<sup>18</sup> Singer, S.; Amorós, J. E.; Moska Arreola, D. 2015. Global Entrepreneurship Monitor 2014 Global Report. Global Entrepreneurship Research Association (GERA). Available from: <http://www.gemconsortium.org/report>

of the previously mentioned African countries is at 76% while South Africa's is trailing behind at a lowly 38%<sup>19</sup>.

In short, there is a pressing need to learn from successful models of entrepreneurship generally, and specifically successful startup ecosystems in order to identify viable solutions (from appropriate resource allocation to pragmatic enabling strategies and policies<sup>20</sup>) that could be implemented in South Africa to enable 'catch up growth'.

Much work has been done to identify the key challenges that need to be addressed in South Africa, and as a contributor to this body of knowledge, SiMODiSA engaged key industry thought leaders and influencers in a series of facilitated dinner conversations to identify priority constraints that inhibit the development of a thriving entrepreneurial ecosystem in South Africa. The dinners were segmented according to themes, with each dinner focussing on the different archetypes of entrepreneurship, considering each model of entrepreneurship individually, as well as considering the cross-cutting factors that affect all entrepreneurs. The resulting report, "The Top 25 constraints inhibiting the development of effectively functioning entrepreneurial ecosystems in South Africa"<sup>21</sup>, provides a visual representation and supporting narrative of the top 5 constraints per model of entrepreneurship, as well as the top 5 cross-cutting constraints. This report can be read in complement to this literature review to provide more detailed insight on the current constraints.

The top constraints identified in relation to the high-tech model of entrepreneurship include:

- A skills deficit (both in terms of entrepreneurial skills and talent and tech skills, such as coders and developers)
- Funding needs – particularly in the areas of early stage angel investment and VC
- A remote location and limited access to markets
- Current government procurement limitations, especially the Public Finance Management Act (PFMA) limiting the access of startups and entrepreneurs to government tenders and supply chains
- Limited commercialisation of innovation from universities<sup>22</sup>.

## 2.2 Hubs

Cape Town and Johannesburg are the main tech hubs in South Africa, with the highest number of entrepreneurs, angel investors and independent fund managers having set up in the Western Cape and Gauteng<sup>23</sup>.

These two provinces have the most support structures for the endorsement of entrepreneurship in the country and Cape Town is often referred to as the "The Silicon Cape"<sup>24</sup> with 75% of angel investment deals concluded in the Western Cape followed by

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<sup>19</sup> Herrington, M.; Kew, J. and Kew, P. 2015. South Africa Country Profile. Global Entrepreneurship Monitor 2014. Available from: <http://www.gemconsortium.org>

<sup>20</sup> SiMODiSA. 2014. SiMODiSA: Accelerating Growth of Small and Medium Enterprises in South Africa, Policy Recommendations for Enhancing the Start-Up / SME Ecosystem in South Africa. SiMODiSA. Available from: <http://www.simodisa.com>

<sup>21</sup> SiMODiSA Start-up. 2014. Thought Leader Perspectives: The Top 25 Constraints Inhibiting the Development of Effectively Functioning Entrepreneurial Ecosystems in South Africa. SiMODiSA. Available from: <http://www.simodisa.com>

<sup>22</sup> Ibid.

<sup>23</sup> South African Venture Capital and Private Equity Association. 2015. SAVCA 2015 Venture Capital Survey. Available from: <http://www.savca.co.za>

<sup>24</sup> Coetzee, J. 2015. Why Cape Town Has Emerged as The Biggest Startup Hub on The African Continent. Ventureburn. Available from: <http://ventureburn.com>

20% in Gauteng<sup>25</sup>. Furthermore, there is an active Information and Communication Technology (ICT) business network and community in the Western Cape called The Silicon Cape Initiative which is aimed at increasing the number of startups and access to capital. Additionally, the Western Cape and Gauteng are home to the top five universities in the country, of which four are located in the Western Cape within a 60km range of each other. Universities are great facilitators for knowledge hubs and the most successful and innovative startup stories originate from universities<sup>26</sup>.

### 2.3 Internet coverage / speed

South Africa's internet connection speed is 3.7 Mbps compared to the global average of internet speed of 5.1 Mbps and the country is ranked as having the 92<sup>nd</sup> fastest average connection speed in the world<sup>27</sup>. On average, the broadband costs for a South African internet user is R337 a month, a relatively high cost when compared to other nations which have a higher speed connection. For instance, the broadband cost for South Africans is around five times that of USA internet users and USA's internet speed is around five times faster than that of South Africa<sup>28</sup>.

The World Economic Forum (WEF) Global Information Technology Report 2015 which contains its Networked Readiness Index<sup>29</sup> (NRI) reveals that South Africa has lost five positions since 2014 to settle at 75<sup>th</sup> in 2015<sup>30</sup>. The report also reveals that South Africa has poor quality ICT-related infrastructure and limited international Internet bandwidth, ranked at 85<sup>th</sup> and 128<sup>th</sup> respectively.

While South Africa is currently lagging in the ICT sector, the outlook is not all bleak and in fact there are promising developments that are indicative of a better future for ICT in South Africa. For instance, startups like Vumatel (based in Johannesburg) have been offering internet connections locally at speeds of up to 1GB/s, which is 100 times faster than the fastest copper-cable ADSL broadband available from Telkom. Vumatel plans to provide nationwide services. Telkom is also rolling out new fibre optic and copper infrastructures to enhance internet services across the country at more competitive prices<sup>31</sup>.

Overall, the full potential of ICT in South Africa has not been realised and the country is missing out on major growth opportunities. SMEs could have a more effective competing platform and upcoming entrepreneurs could have increased chances to launch innovative initiatives if South Africa significantly invests in and develops a widespread broadband capability, ultimately contributing towards more jobs being created<sup>32</sup>.

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<sup>25</sup> South African Venture Capital and Private Equity Association. 2015. SAVCA 2015 Venture Capital Survey. Available from: <http://www.savca.co.za>

<sup>26</sup> Coetzee, J. 2015. Why Cape Town Has Emerged as The Biggest Startup Hub on The African Continent. Ventureburn. Available from: <http://ventureburn.com>

<sup>27</sup> Akamai Content Delivery Network. 2015. Akamai's State of the Internet, Q3 2015 Report. Akamai. Available from: <https://www.akamai.com>

<sup>28</sup> STANLIB. 2014. Internet Access, Speed and Cost: South Africa is Improving But Remains Well Behind the Global Standard Meaning We Are Missing Out on Growth Opportunities. Available from: <http://www.stanlib.com>

<sup>29</sup> The Networked Readiness Index measures, the performance of 143 economies in leveraging information and communications technologies to boost competitiveness and well-being. The index uses factors such as the political and regulatory environment, infrastructure and digital content, usage of ICT as well as economic and social impacts to calculate the overall NRI ranking

<sup>30</sup> World Economic Forum. 2015. The Global Information Technology Report 2015: ICTs for Inclusive Growth. World Economic Forum and INSEAD. Available from: <http://www.weforum.org>

<sup>31</sup> STANLIB. 2014. Internet Access, Speed and Cost: South Africa is Improving But Remains Well Behind the Global Standard Meaning We Are Missing Out on Growth Opportunities. Available from: <http://www.stanlib.com>

<sup>32</sup> Ibid.



## 2.4 Company registration costs

According to the World Bank, to register and incorporate a business in South Africa requires six processes which are completed in around 46 days and cost 0.30% of income per capita<sup>33</sup>. Processes such as registering for tax, registering with the Commissioner in deference to the Compensation for Occupational Injuries and Diseases Act and opening a bank account are included in the World Bank's calculation of the amount of time and processes to be completed to start a business in South Africa<sup>34</sup>.

A company can register with the Companies and Intellectual Property Commission (CIPC) at a relatively low cost of R175 for South African companies and R400 for foreign companies. This can be done through various channels, including the CIPC website, email and at CIPC self-service terminals. The Doing Business Report also mentions the business registration reforms made in 2012, which involved introducing a new company law which did away with the requirement to reserve a company name at registration and streamlined incorporation documents<sup>35</sup>.

At registration stage all companies by law are required to have a Memorandum of Incorporation (MOI) which sets out the rules agreed by the shareholders for the management and maintenance of the business. Private companies may be registered with a standard or customised MOI. According to CIPC, the expected turnaround time for South African companies with a standard MOI is three working days from the date of the submission of the supporting documentation while the turnaround time for customised MOIs is 25 days. The service turnaround time for foreign companies is also 25 days<sup>36</sup>. However, the Doing Business report states that the turnaround time to register a business at CIPC is two weeks<sup>37</sup>. In this report, the World Bank does not distinguish between the time it takes for a country with a standard MOI and one with a customised and so it is assumed to represent the average.

## 2.5 Taxes

When a company is registered with the CIPC it will be automatically registered as a taxpayer<sup>38</sup>. Currently, South Africa's corporate income tax rate is at 28% however, there are existing tax frameworks that were designed to assist SMEs in their most vulnerable stage - turnover tax and small business corporation (SBC) tax. Turnover tax is intended to reduce the administrative and compliance burden and grants tax relief to micro-businesses with a turnover of R1 000 000 or less. These microenterprises are also then by default exempt from paying Value Added Tax (VAT) because only companies with an annual turnover of more than R1 000 000 must register for VAT at SARS<sup>39</sup>.

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<sup>33</sup> World Bank. 2016. *Doing Business 2016: Measuring Regulatory Quality and Efficiency*. World Bank Group. Available from: [www.doingbusiness.org](http://www.doingbusiness.org)

<sup>34</sup> Ibid.

<sup>35</sup> World Bank. 2016. *Doing Business 2016: Measuring Regulatory Quality and Efficiency*. World Bank Group. Available from: [www.doingbusiness.org](http://www.doingbusiness.org)

<sup>36</sup> Companies and Intellectual Property Commission. Available from: <http://www.cipc.co.za>

<sup>37</sup> World Bank. 2016. *Doing Business 2016: Measuring Regulatory Quality and Efficiency*. World Bank Group. Available from: [www.doingbusiness.org](http://www.doingbusiness.org)

<sup>38</sup> Companies and Intellectual Property Commission. Available from: <http://www.cipc.co.za>

<sup>39</sup> World Bank. 2016. *Doing Business 2016: Measuring Regulatory Quality and Efficiency*. World Bank Group. Available from: [www.doingbusiness.org](http://www.doingbusiness.org)

SBC tax is also intended to reduce the administrative and compliance burden and grants tax relief to small enterprises that meet the following criteria<sup>40</sup>:

- Business turnover of less than R20 million per annum
- Business shareholders or members must all be natural persons
- Business shareholders or members do not have interest or equity in another small business corporation
- Less than 20% of turnover comes from “investment” income
- Less than 20% of income comes from rendering a “personal” service
- Employed three or more full-time employees (excluding shareholders/members) throughout the year of assessment.

Small corporations with an annual turnover of more than a R1 000 000 must register and pay VAT. There are no costs involved with registering for VAT and it can take anywhere between one to 21 working days<sup>41</sup>.

## 2.6 Talent

The development of South Africa’s startup ecosystem, and especially its tech startups will require highly-skilled individuals founding and scaling innovative enterprises. In relation to the key skills relevant for the classic model of high tech entrepreneurship, the country currently lacks talent sufficiently skilled and experienced in: 1) entrepreneurship, 2) business management and 3) the key technical areas of programming, coding and developing required to deliver high-tech products and services. While entrepreneurship is increasingly viewed as a viable career, South Africans on the whole remain relatively risk averse and unwilling to tolerate the inevitable failures that come with starting and running a business<sup>42</sup>.

The formal education system has not systematically integrated entrepreneurship into curricula, which further contributes to a lack of entrepreneurial culture and limits skills development. This is particularly true for the high-tech industry where a limited number of institutions offer the necessary technical training and practical experience to upskill potential entrepreneurs. Large corporations are a key employer in South Africa and could potentially be a catalyst and support for spin-off enterprises. Here too it has proven difficult to nurture entrepreneurial talent, however, as corporate employees will typically occupy relatively narrow and compartmentalised roles within a company. This leaves them ill-prepared for the more generalist role of an entrepreneur<sup>43</sup>.

South Africa’s dearth of appropriate entrepreneurial talent could partly be alleviated by recruiting highly-skilled foreigners. This would be especially relevant for the high-tech sector that still lacks sufficient numbers of skilled engineers. The ability to easily hire skilled workers from other countries has been key to the development of many of the world’s leading startup hubs as highlighted below in the country profiles. However, in the long-term, efforts can be increased to identify, foster and support the effective existing models and service providers of technical and entrepreneurial skills development to increase the pool of home-grown talent supplying South African tech startups.

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<sup>40</sup> SARS. 2014. Tax Guide for Small Businesses 2014/15. Available from: <http://www.sars.gov.za>

<sup>41</sup> World Bank. 2016. Doing Business 2016: Measuring Regulatory Quality and Efficiency. World Bank Group. Available from: [www.doingbusiness.org](http://www.doingbusiness.org)

<sup>42</sup> SiMODiSA (2014) Accelerating growth of small and medium enterprises in South Africa: Policy recommendations for enhancing the startup/SME ecosystem in South Africa. Available from: <http://www.simodisa.com>

<sup>43</sup> SiMODiSA Start-up. 2014. Thought Leader Perspectives: The Top 25 Constraints Inhibiting the Development of Effectively Functioning Entrepreneurial Ecosystems in South Africa. SiMODiSA. Available from: <http://www.simodisa.com>

A number of public and private initiatives have been put in place in an effort to address South Africa's entrepreneurial skill gaps. Among those particularly relevant to the high-tech industry are the Incubation Support Programme (ISP) and the Small Enterprise Development Agency (SEDA) Technology Programme<sup>44</sup>. While it is important that the public sector has made efforts to provide capacity development programmes, it may be more effective to better tailor incubation and other support services to the needs of small enterprises and startups by incentivising the private sector to deliver training and mentorship. Additionally, there is room to improve existing entrepreneurship programmes that typically support former corporate and government employees to reskill and establish a business<sup>45</sup>.

## 2.7 Funding instruments

Funding is a vital component of any business - startups are generally unable to access formal means of financing such as debt or share equity. Therefore, these businesses need access to alternative sources of capital with more relaxed requirements and more support. Funding sources in South Africa can be split into public and private sources, as discussed below, and could come in the form of grants, debt, equity or hybrids of these forms. Also discussed in this section are any monetary incentives in place which benefit tech startups specifically.

One of the shortcomings of South Africa's startup ecosystem is that there are gaps in the types of funding available, most especially in the vulnerable early stages. Public institutions tend to focus on funding for research in the pre-commercialisation phase while private individuals and organisations typically prefer to invest in companies which are already beyond break-even stage and generating profit. The seed funding stage and early-stage investments are lacking to the detriment of the startup ecosystem as a whole<sup>46</sup>. South Africa has many high-net-worth individuals, yet "angel" investment is still a missing market group. Government is beginning to address the gap in VC through a tax incentive for qualifying investors, but there is still nothing to incentivise the earlier-stage investments, typically made by angel investors. In countries, such as the US and the UK, there are strong angel networks which provide early-stage capital and are fundamental to the success of these countries' startup landscape.

### 2.7.1.1 Public:

The South African government is committed to supporting small and young businesses, as it is recognised as being a driver of economic and job growth<sup>47</sup>. Government departments, such as the Department of Science and Technology (DST) and Department of Trade and Industry (DTI), are directly involved in funding and managing programmes to support small and growing tech enterprises. There have been a number of agencies authorised by government whose purpose is to promote entrepreneurship, however, in comparison to other countries, the South African funding opportunities are generally fragmented and complex. The government would benefit from streamlining incentives further and ensuring that there is communication between departments, up-to-date funding information and assistance for applicants in determining the incentive opportunities best suited to their business needs.

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<sup>44</sup> Ibid

<sup>45</sup> SiMODiSA (2014). Accelerating the Growth of SMEs in South Africa. Thought Leader Perspectives: The Top 25 constraints inhibiting the development of effectively functioning entrepreneurial ecosystems in South Africa. Available from: <http://impacttrust.org.za/>

<sup>46</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>47</sup> SiMODiSA (2014) Accelerating growth of small and medium enterprises in South Africa: Policy recommendations for enhancing the startup/SME ecosystem in South Africa. Available from: <http://www.simodisa.com>



The table below provides an overview of current public funding sources (including direct and indirect incentives) that are available in South Africa. These are either directly targeting technology sector beneficiaries or have a design and purpose that is especially relevant to technology sector beneficiaries<sup>48</sup>.

Table 2: South African Sources of Public Funding for Technology Enterprises

Incentive	Objective	Beneficiaries	Benefits	Implementing Agency	Size of available fund	Dispersed funding
Support Programme for Industrial Innovation (SPII) <sup>49</sup>	Financial assistance for the development of commercially viable, innovative products/processes & facilitate their commercialisation.	South African private-sector enterprises. SPII is suitable for small R&D projects.	Product Process Development Scheme: Max R2m grant Matching Scheme: Max R5m grant	DTI (but potentially dormant – SAVCA survey)	R20m	7 Grants <sup>50</sup>
Partnership in Industrial Innovation (PII) <sup>51</sup>	Financial assistance for the development of commercially viable, innovative products/processes & facilitates their commercialisation.	South African private-sector enterprises. PII is suitable for large R&D projects.	Min R10m grant; repayable under pre-negotiated conditions, if successful.	DTI & IDC	No publically - available data	No publically-available data
TIA Technology Development Fund <sup>52</sup>	Assist innovators to advance technologies along the value chain, from proof of concept to technology demonstration. Intended to increase the level & focus of R&D activities along with the number of opportunities for SMEs to cross the technology development stage & improve their risk profile.	Projects within Science Councils (SC) & universities that are between Technology Readiness Level 4&7 and/or projects that demonstrate a competitive IP position.	No publically-available data	Technology Innovation Agency (TIA), a DST entity.	No publically - available data	No publically-available data

<sup>48</sup> Given the typical profile of tech entrepreneurs in South Africa, they would be unlikely to be eligible for the majority of general government funding programmes targeting SMEs and historically disadvantaged individuals. A table outlining further government funding programmes that target SMEs more broadly and as such may be relevant for a small sub-set of tech entrepreneurs, can be found in Appendix A.

<sup>49</sup> Investment Incentives (no date) Government Investment Incentives. Available from: <http://www.investmentincentives.co.za/>

<sup>50</sup> Dti (2015) dti Annual Report 2014/2015. Available from: <http://www.gov.za/>

<sup>51</sup> Investment Incentives (no date) Government Investment Incentives. Available from: <http://www.investmentincentives.co.za/>

<sup>52</sup> TIA (no date) Overview of TIA Funds. Unpublished.

TIA Seed Fund <sup>53</sup>	Bridging finance assistance to enable innovators to evaluate & demonstrate value proposition to translate research outputs into fundable ideas for commercialisation.	Researchers at higher education institutions, SCs and SMMEs.	Bridging finance	TIA in partnership with Offices of Technology Transfer (OTT) based at universities, SCs & Regional Development Agencies.	No publically - available data	No publically-available data
TIA Commercialisation Support Fund <sup>54</sup>	Prepare technology innovators for follow-on funding through limited support for market testing & validation combined with linkages to onwards business & investment opportunities.	Existing or potential individual entrepreneurs and SMMEs.	Limited, deliverable-based follow-on funding for market testing & validation.	TIA	No publically - available data	No publically-available data
Technology & Human Resources in Industry Programme (THRIP) <sup>55</sup>	Supports research & technology development by enhancing & connecting the numbers of appropriately-skilled people.	Companies undertaking science, engineering & technology (SET) research, in collaboration with educational institutions.	1:1 cost-sharing grant, to a maximum of R8m per annum, across any number of projects.	Managed by the NRF under the DTI	No publically - available data	1 634 researchers and 1 362 students supported <sup>56</sup>
Technology Venture Capital <sup>57</sup>	Provides business support & seed capital for the commercialisation of innovative products, processes & technologies.	South African SMME's.	Financial assistance to qualifying companies that wish to commercialise innovative products.	IDC & DTI	R130m <sup>58</sup>	No publically-available data

<sup>53</sup> TIA (no date) Overview of TIA Funds. Unpublished.

<sup>54</sup> Ibid.

<sup>55</sup> THRIP (no date) Funding options. Available from: <http://thrip.nrf.ac.za/SitePages/Home.aspx>

<sup>56</sup> Dti (2015) dti Annual Report 2014/2015. Available from: <http://www.gov.za/>

<sup>57</sup> Funding Connection (2015) Funding Agencies in South Africa. Available from: <https://fundingconnection.co.za/>

<sup>58</sup> IDC (no date) Funds Easy Reference. Available from: [https://protected.idc.co.za/DFD/DFD\\_Tool.aspx](https://protected.idc.co.za/DFD/DFD_Tool.aspx)

SEDA Technology Programme (STP) <sup>59</sup>	Focuses on technology business incubation, quality & standards & technology transfer services & support to small enterprises.	Marginal & survivalist enterprises.	Non-repayable grant up to a maximum of R600 000 per project.	Small Enterprise Development Agency (SEDA), entity of the DSBD.	R126.4m	42 grants <sup>60</sup>
National Research Foundation (NRF) <sup>61</sup>	Supports & promotes a broad range of research through funding & research facility. Focus is on science & technology.	Students, mostly postgraduate level.	Offers a variety of research grants to target specific research needs.	National Research Foundations (NRF), an entity of the DST.	R5 519m	69 grants dispersed to specific programmes <sup>62</sup>
NIPMO IP Fund <sup>63 64</sup>	Funding of IP protection costs for businesses.	Institutions and businesses needing IP protection.	Maximum 50% rebate on IP prosecution costs.	DST	No publicly - available data	No publicly-available data
NIPMO OTT Support Fund <sup>65 66</sup>	Establishment and equipping offices for technology transfer to produce R&D.	Offices for technology transfer.	No publicly-available data.	DST	No publicly - available data	No publicly-available data
Incubation Support Programme (ISP)	Supports entrepreneurship incubation and partnerships between public and private sectors.	Infrastructure and business development services necessary to mentor and grow enterprises.	Grant of up to R10million over three years. ISP offers a cost-sharing support of 50:50 for large businesses and a cost-sharing of 40:60 for SMMEs.	DTI	No publicly - available data	6 grants <sup>67</sup>
Venture Capital Company (VCC) <sup>68</sup>	Encourage investment into venture capital investment funds.	Investors of VCC funds who provide finance for small businesses.	Up to 100% tax rebate for investors in VCC funds.	South African Revenue Service (SARS)	No publicly - available data	No publicly-available data

The figure below reflects the above-mentioned government funding sources in relation to the beneficiaries they target relative to business life stage.

<sup>59</sup> SEDA (no date) Small enterprise development agency website. Available from: [www.seda.org.za](http://www.seda.org.za)

<sup>60</sup> SEDA (2015) SEDA Annual Report 2014/2015. Available from: <http://www.seda.org.za/>

<sup>61</sup> NRF (2016) NRF. Available from: <http://www.nrf.ac.za/>

<sup>62</sup> DST (2015) DST Annual Report 2014/2015. Available from: <http://www.gov.za/>

<sup>63</sup> NIPMO (no date) Funding support. Available form: <http://www.nipmo.org.za/>

<sup>64</sup> DST (2015) DST Annual report 2014/2015. Available from: <http://www.gov.za/>

<sup>65</sup> NIPMO (no date) Funding support. Available form: <http://www.nipmo.org.za/>

<sup>66</sup> DST (2015) DST Annual report 2014/2015. Available from: <http://www.gov.za/>

<sup>67</sup> Dti (2015) dti Annual Report 2014/2015. Available from: <http://www.gov.za/>

<sup>68</sup> SAVCA (2014) SARS delivers on venture capital tax incentives. SAVCA Media Release. Available from: <http://www.savca.co.za/>

Figure 1: Public Technology Enterprise Finance Providers by Beneficiary Business Life Stage

Implementing Agency	Business life-stage:	Business life-stage:				
		Pre-Inception	Ideation/Concept	Seed/ proof of concept	Startup/ early stage	Acceleration/ growth stage
DST		NRF*				
		NIPMO IP Fund	NIPMO OTT Fund			
TIA (supported by DST)				TIA Technology Development Fund		
		TIA SEED Fund				
				TIA Commercialisation Support Fund		
DTI		THRIP		SPII		
				PII		
				Technology Venture Capital		
				Risk Capital Facility**		
			Incubator Support Programme			
DSBD		SEDA Technology Programme				
SARS					Venture Capital Company	

\*The NRF is a broader entity which runs multiple funding projects targeting research and development  
 \*\* Not technology-specific

It is important to note that some of the funds that have traditionally targeted technology startups, have seen significant changes in structure over the past few years. Since the restructuring of the SPII initiative from the IDC to the DTI, the fund has become less active according to a survey of technology startups<sup>69</sup>. Secondly, the IDC’s “Technology Venture Capital fund” has reportedly changed focus to prioritise non-VC-type product offerings and the high-risk equity-type funding is being scaled down<sup>70</sup>.

<sup>69</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>70</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

### 2.7.1.2 Private:

Private sources of funding – specifically angel investors and VCs – are considered key enablers of tech startups as providers of high risk finance. VC and angel investment are the most common forms of private funding in startups, and especially tech startups, but new sources such as crowdfunding are swiftly gaining popularity. Consistent with global VC investment trends, the most popular industry (and the fastest-growing) sector for VC targeting in South Africa is the tech sector<sup>71</sup>.

The ecosystem for private funding and entrepreneurial development has a strong cyclical structure where investors choose to deploy funds when they are available and then work to mature and exit these investments before looking for new investment opportunities. SAVCA finds this to be the reason for the drop off in VC funding post 2008/2009<sup>72</sup>, however, the trend is also correlated to the global slowdown in VC investment after the 2008 economic recession. While there has been growth in the amount invested in VC since 2013, deal values have remained low. This is due to VC managers taking a more conservative stance, but also, because funds are moving to ICT industries (such as e-Commerce, online enablement and digitisation) which generally require smaller amounts of startup capital to achieve market up-take<sup>73</sup>.

It is difficult for local startups to find willing investors in South Africa, especially informal, early-stage investors such as “angel investors”. In other parts of the world, such as the USA, early-stage investment markets are well-developed and startups are able to progress because they have access to finance<sup>74</sup>. In South Africa, this has traditionally been a missing market with angel investment networks being incomplete<sup>75</sup>. Venture Capitalists and even angel investors in South Africa expect that government should fund at the seed stage<sup>76</sup>.

The South African government has attempted to incentivise VC investment through the creation of the Venture Capital Company (VCC). The VCC structure gives tax incentives to investors investing their money in the VCC, and in turn, to small businesses. These investors take on significant risks and the tax break is designed to balance these risks. This programme initially had a very slow uptake with only one VCC registered during the first three years after the incentive came into effect. Post-2012, fund managers began to register their funds but it wasn't until the amendments made in 2015 – through engagement with SiMODiSA and other key industry stakeholders – that the VCC option really took off<sup>77</sup>. Since April 2015, 19 new VCC's (59% of total listed) were registered<sup>78</sup>. The marked increase in uptake suggests that incentives can be an effective approach to encourage private sector investors and is consistent with international examples of government interventions designed to increase private sector involvement.

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<sup>71</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>72</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>73</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>74</sup> OECD (2011) Financing High-Growth Firms: The Role of Angel Investors, OECD Publishing. Available from: <http://dx.doi.org/10.1787/9789264118782-en>

<sup>75</sup> SAVCA and DBSA (2013) The Economic Impact of Venture Capital and Private Equity in South Africa. Available from: <http://www.savca.co.za/>

<sup>76</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>77</sup> SAVCA (2014) SARS delivers on venture capital tax incentives. SAVCA Media Release. Available from: <http://www.savca.co.za/>

<sup>78</sup> SARS (2016) Directory of approved venture capital companies. Available from: [www.sars.gov.za/](http://www.sars.gov.za/)



The table below provides an overview of the type of private sector funders in South Africa.

Table 3: South African Sources of Private Funding for Technology Enterprises

Source	Objective	Stage <sup>79</sup>	Status
Accelerators	Short-term business equipping programme including mentorship, education, networking and investor presentation <sup>80</sup>	Early Stage Accelerate	Rising in numbers and effectively contributing to entrepreneurial ecosystem support <sup>81</sup> .
Angel/Seed Investors	Individuals/groups that use their own capital to finance projects, may also provide a mentorship role <sup>82</sup>	Startup	Traditionally lacking in South Africa, mainly due to: lack of fiscal support, poor match-making services, difficulty in selling the business because of a small VC market <sup>83</sup> .
Crowd Funding	Using the internet and social media to get funding from large amounts of people <sup>84</sup>	Startup Early Stage	A new but growing source of finance; there are 5 major Crowdfunding platforms in 2015 <sup>85</sup> .
FFF (Fools, friends and family)	Individuals in the entrepreneur's direct network which may give money in very early stages	Ideation Startup	Extent unknown, also considered angel investors in many contexts.
Private Equity	Capital investment private companies not quoted on a public exchange.	Accelerate Growth	<b>R171.1bn (\$10.9bn)</b> under management in 2014 which is 0.21% of GDP <sup>86</sup> .
Venture Capital (VC)	Capital Investment in high-risk startup and small businesses who do not have access to the capital markets. The VCs invest due to the potential for above-average returns <sup>87</sup> .	Early Stage Accelerate Growth	<b>R1.87bn (\$119m)</b> across 187 deals in 2015. The average deal value now at R3.4m. The number of VC fund managers increased by 48% between 2012 and 2015 <sup>88</sup> .
Enterprise and Supplier Development (ED and SD)	Financial and non-financial support for the growth and development of black-owned SMEs <sup>89</sup> .	Accelerate Growth	Incentivised through the BBEEE Codes of Good Practice <sup>90</sup> .

<sup>79</sup> Based on the categorisation of: ASPEN Institute (2015) South Africa's Entrepreneurial Ecosystem Map. Available from: [www.aspeninstitute.org/](http://www.aspeninstitute.org/)

<sup>80</sup> The American Chamber Of Commerce in South Africa (2015) Connecting the dots. Startup directory for Entrepreneurs. Available from: [www.amcham.co.za/](http://www.amcham.co.za/)

<sup>81</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>82</sup> Investopedia (2016) Dictionary. Available from: <http://www.investopedia.com/>

<sup>83</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>84</sup> Investopedia (2016) Dictionary. Available from: <http://www.investopedia.com/>

<sup>85</sup> SeedAcademy (2015) The Essential Guide to Funding in SA: Giving your ideas what they need to become Businesses. Available from: [www.appas.co.za/](http://www.appas.co.za/)

<sup>86</sup> KPMG, SAVCA (2015) Venture Capital and Private Equity Industry Performance Survey of South Africa covering the 2014 calendar year. Available from: <http://www.savca.co.za/>

<sup>87</sup> Investopedia (2016) Dictionary. Available from: <http://www.investopedia.com/>

<sup>88</sup> SAVCA (2015) Venture Capital Survey. Available from: <http://www.savca.co.za/>

<sup>89</sup> ImpactAmplifier and the Centre for Global Affairs (CGA), New York University (2013) The Enterprise Development Report. Available from: <http://www.impactamplifier.co.za>

<sup>90</sup> While included as a source of funding for Small Business, ICT is currently a marginal sector for ED and SD support.

Similar to the case of public sector support in the technology funding landscape, there are many types of private funding sources that are nascent but have little concrete information to guide a clear understanding of the current scope, capacity and gaps. Venture Capital and Private Equity are relatively well-established, with more formal definitions, institutions and associations, providing published information.

## 2.8 Complementary supportive regulatory features

South Africa broadly has the potential to develop a thriving and growing startup ecosystem and the government has instituted a number of initiatives intended to drive entrepreneurship, innovation and the growth of enterprises in their early stages. Still, fundamental constraints to the functioning of this ecosystem currently undermine this potential. Among the key hindrances are the country's restrictive Exchange Control regulations; the unintended consequences of the way Broad-based Black Economic Empowerment (BBBEE) Codes of Good Practice ("BBBEE Codes") and related regulations are implemented; as well as adverse labour legislation that negatively affect access to markets, labour and capital for startups.

South Africa's Exchange Control regulations have unintentionally hindered enterprises' access to markets, capital and skills. South Africa is one of the only countries in the world that uses exchange controls. The problems imposed by the exchange controls stem primarily from the prohibition of loop structures<sup>91</sup>. While the government has relaxed some loop structure prohibitions, generally exchange controls still limit the international trade of goods and services, discourage incoming investment and deter South African citizens and entrepreneurs from re-investing offshore money in South Africa.

For tech entrepreneurs in particular, exchange controls limit the selling or licensing of Intellectual Property (IP) to an off-shore company<sup>92</sup> and constrain their ability to access international VC funding as international investors become reticent to invest in South Africa. Exchange controls therefore also limit local startups' access to global markets<sup>93</sup>. All of this results in South Africa being a relatively undesirable startup destination, with tech talent in particular seeking to start or work in enterprises in more attractive startup ecosystems.

Similarly, government procurement and support to entrepreneurs is undermined by certain stipulations of the Public Finance Management Act of 1991 (PFMA), particularly the requirement that public entities establish a new entity including a spin-off enterprise with approval from National Treasury. This process is currently costly and time-consuming, with approval reportedly two years and affecting the ability of public entities like universities to commercialise R&D. Given the government's intent to support innovative enterprises, procurement processes should be tailored to be more efficient. The PFMA Act could be amended to stipulate that approval does not have to be sought from National Treasury for new entities under a certain size<sup>94</sup>.

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<sup>91</sup> "Loop structure may arise when South African residents acquire equity/interests in an offshore vehicle that then invests back into South Africa" - SiMODiSA (2014) Accelerating growth of small and medium enterprises in South Africa: Policy recommendations for enhancing the startup/SME ecosystem in South Africa. Available from:

<http://www.simodisa.com>

<sup>92</sup> Department of Trade & Industry of the Republic of South Africa (No date). A Study of the Factors Contributing to Successful Technology Commercialisation for Innovative Enterprises: Workshop memorandum.

<sup>93</sup> SiMODiSA (2014). Accelerating the Growth of SMEs in South Africa. Thought Leader Perspectives: The Top 25 constraints inhibiting the development of effectively functioning entrepreneurial ecosystems in South Africa. Available from: <http://impacttrust.org.za/>

<sup>94</sup> SiMODiSA (2014) Accelerating growth of small and medium enterprises in South Africa: Policy recommendations for enhancing the startup/SME ecosystem in South Africa. Available from: <http://www.simodisa.com>

South Africa's Broad-based Black Economic Empowerment (BBBEE) Codes of Good Practice ("BBBEE Codes") have also unintentionally hampered entrepreneurship and the development of the start-up ecosystem. The BBBEE Codes stress Enterprise Development and Supply Chain Development as key to improving access to capital and support for Small and Medium-Sized Enterprises (SMEs). The majority of South Africa's tech SMMEs are not black-owned and consequently will likely miss out on opportunities to sell their goods and services to entities seeking BBBEE points. Furthermore, as the public sector tends to acquire already-existing technologies from larger and more established firms, tech SMMEs are again likely to miss out on opportunities to grow their market<sup>95</sup>. It has been recommended that the eligibility criteria Enterprise and Supply Chain Development be refined to consider SMEs more broadly, rather than exclusively on an ownership basis<sup>96</sup>.

Finally, South Africa has a well-documented skills deficit in the key competencies required to build an effective startup ecosystem, characterised by inflexible labour market dynamics that hamper the efficiency of its labour markets. According to the 2015 World Economic Forum Global Competitiveness Index, South Africa ranks 113<sup>th</sup> out of 144 countries for labour market efficiency, and second to last (143<sup>rd</sup> out of 144 countries) for its hiring and firing practices<sup>97,98</sup>. These labour market challenges are especially felt by smaller businesses who bear the brunt of onerous and costly labour laws. Ultimately, this results in South African small businesses being averse to hiring new employees.

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<sup>95</sup> Department of Trade & Industry of the Republic of South Africa (No date). A Study of the Factors Contributing to Successful Technology Commercialisation for Innovative Enterprises: Workshop memorandum.

<sup>96</sup> The Impact Trust (2013) Recommendations for amendments to the South Africa tax policy and regulatory framework for Small and Medium Enterprises and Social Businesses in South Africa.

Available from: <http://impacttrust.org.za/>

<sup>97</sup> "Hiring and firing practices" measures the extent to which regulations allow flexible hiring and firing of workers. – World Economic Forum (2015). Global Competitiveness Index. World Economic Forum. Available from:

<http://reports.weforum.org/>

<sup>98</sup> World Economic Forum (2015). Global Competitiveness Index. World Economic Forum. Available from: <http://reports.weforum.org/>

## 3 Profiling the Global Top Performers: Startup Ecosystems

### 3.1 The United States

#### Country overview

The US has many top-performing technology hubs, the most prominent being Silicon Valley, California. Silicon Valley has a unique history which enabled its flourishing startup ecosystem to develop sporadically, with minimal government interference, through market drivers and innovation momentum. Situated close to Stanford University, the hub is home to many large telecommunications companies such as Intel, Apple and Google. There are estimated to be between 14 000 and 19 000 startups operating in the region, this amounts to between 1.85-2.5 startups per 1000 people. The value of the Silicon Valley ecosystem is estimated to be between \$264-323bn, which is 7-8 times larger than the North American average<sup>99</sup>.

Silicon Valley receives 30% of all VC deals in the US, accounting for 46% of VC investment value. Investors are likely to be attracted to the unrivalled track record of high-growth startups in the region<sup>100</sup>. Another key driver of production and innovation in the Silicon Valley ecosystem is the profusion of social and business networks in the region. Networks encourage competition, enable learning, link research associations to academia and enable collaborative projects to form<sup>101</sup>.

#### Hubs

Well-established and high-performing technology hubs in the US include Silicon Valley, New York, Los Angeles/Orange County, Boston, Chicago, Seattle and Austin. These seven hubs were all ranked in the top 20 startup locations in the compass.co Global Startup Ecosystem report, with Silicon Valley being the highest ranking globally<sup>102</sup>.

#### Internet coverage / speed

The US ranks 7<sup>th</sup> globally in the Networked Readiness Index which is a measure of the capacity of the ICT environment to enhance competitiveness and standards of living. The country strengths include good infrastructure and high penetration of technology<sup>103</sup>. The Silicon Valley region has access to 1 Gbp/s starting at \$110 per month or 300 Mbps starting at \$80 per month<sup>104</sup>.

#### Company registration costs

Incorporating a business in the State of California involves six basic processes which are expected to take eight days to complete. According to the World Bank, the cost is approximately \$100 which amounts to 0.8% of the average monthly income per person<sup>105</sup>. Registering a foreign limited liability company has similar costs<sup>106</sup>.

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<sup>99</sup> Compass.co (2015) The Global Startup Ecosystem Report 2015. Available from: <http://blog.compass.co>

<sup>100</sup> Silicon Valley Leadership Group (2015) Silicon Valley Competitiveness and Innovation Project – 2015: A Dashboard and Policy Scorecard for a Shared Agenda of Prosperity and Opportunity. Available from: <http://svcip.com/>

<sup>101</sup> Castilla, E. et al (2000) Networks in the Valley. In: The Silicon Valley Edge: Lee, C. et al. ed. A Habitat for Innovation and Entrepreneurship. Stanford: Stanford University Press, ch 11

<sup>102</sup> Compass.co (2015) The Global Startup Ecosystem Report 2015. Available from: <http://blog.compass.co>

<sup>103</sup> World Economic Forum (2015) The Global Information Technology Report. Available from: <http://reports.weforum.org/>

<sup>104</sup> AT&T (2015) U-verse with AT&T GigaPower Launches Today in Cupertino. Press Release. Available from: [www.att.com/](http://www.att.com/)

<sup>105</sup> World Bank (2015). Doing Business Indicators. Available from: <http://www.doingbusiness.org/>

<sup>106</sup> Calculated from the California Secretary of state Business Entities Fee Schedule. 'Foreign' is referred to as any company "not formed in California".

## Taxes

Two major regulatory changes catalysed the growth of VC in Silicon Valley, and across the US. The first of these was the capital gains tax, which was reduced from 49.5% to 28% in the Revenue Act of 1978. The second was a relaxation on the restrictions to pension funds, allowing them to invest in riskier asset classes such as VC (see funding section)<sup>107</sup>.

The Silicon Valley region does not have direct tax incentives for VC investment and there is a relatively high cost of doing business in the region compared to the US average<sup>108</sup>. The World Bank estimates that the average business in the State of California can expect to pay approximately 40.9% of profit on taxes. This figure includes the Federal corporate income tax (34% progressive schedule), California State corporation tax (8.84%) and a number of others<sup>109</sup>.

## Talent

Silicon Valley workers tend to outperform the national average output per worker by 62%<sup>110</sup>. The highly skilled and specialised talent pool is commonly referred to as being one of the key success factors of Silicon Valley's startups<sup>8, 111</sup>. The hub is closely linked with the nearby Stanford, Berkley and other Californian Universities. Aside from local recently graduated talent, the majority of the skilled workforce (56%) come from foreign countries<sup>112</sup>.

One in four tech companies in the US, during 2006 to 2012, had at least one founding member who was an immigrant<sup>113</sup>. In Silicon Valley, the percentage of foreigner-founded companies was 52.4% in 2005 but fell to 43.9% in 2014. This decline is attributed to increasingly stringent restrictions and delays for visa and work permit applications to the US. Recognising the limitations which visa restrictions place on the economy; the new 'Startup Act' was deemed appropriate to introduce to congress in 2015 which, if passed, will provide a new entrepreneurship visa for qualifying immigrants<sup>114</sup>.

## Funding instruments

### Public:

Research and development (R&D) enables the creation of ideas and is a catalyst for long-term technology development. In 2014, the government sponsored 87% of Stanford's research budget (approx. 25% of the total budget)<sup>115</sup>. Silicon Valley has a higher level of R&D expenditure than the majority of other hubs in North America. These R&D expenditures are directed to the universities and federal labs.

There are no tax incentives for VC or Angel investing in the State of California, or in the other US regions featured in the top 20 tech entrepreneurial ecosystems of the 'Global Startup Ecosystem report'. In other states, however, tax incentives are being implemented,

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<sup>107</sup> Kushida, (2015) A Strategic Overview of the Silicon Valley Ecosystem: Towards Effectively "Harnessing" the Ecosystem. A Stanford report for the SiliconValleyJapan project. Available from: [www.stanford-svnj.org/](http://www.stanford-svnj.org/)

<sup>108</sup> Ibid.

<sup>109</sup> World Bank (2015). Doing Business Indicators. Available from: <http://www.doingbusiness.org/>

<sup>110</sup> Silicon Valley Leadership Group (2015) Silicon Valley Competitiveness and Innovation Project – 2015: A Dashboard and Policy Scorecard for a Shared Agenda of Prosperity and Opportunity. Available from: <http://svcip.com/>

<sup>111</sup> Silicon Valley Leadership Group (2015) CEO Business Climate Survey 2015. Available from: <http://svcip.com/>

<sup>112</sup> 'Skilled work force' here refers to the population with a Bachelor's degree or higher

<sup>113</sup> Kauffman Foundation (2014) The economic case for welcoming immigrant entrepreneurs. Available from: <http://www.kauffman.org/>

<sup>114</sup> Startup Act, S. 181, 114<sup>th</sup> Cong. (2015/2016)

<sup>115</sup> Kushida (2015) A Strategic Overview of the Silicon Valley Ecosystem: Towards Effectively "Harnessing" the Ecosystem. A Stanford report for the SiliconValleyJapan project. Available from: [www.stanford-svnj.org/](http://www.stanford-svnj.org/)

<sup>115</sup> Ibid.



but have had little success in creating a globally significant entrepreneurial ecosystem for technology.<sup>116</sup>

The US government has set up the US Small Business Administration (SBA) unit which assists in creating channels between private investors/lenders and small business in need of financing. This is done through three main programmes which are discussed in the section below<sup>117</sup>.

#### **Private:**

Investment into small business in the US is incentivised through guaranteed loan partnerships, surety bonds access and the registration of small business investment companies (SBIC). SBIC's are given access to government-guaranteed debt and capital into these funds is also supplemented by the SBA<sup>118</sup>.

The angel and VC market in the US is well-developed, with recent studies reporting the number of deals as 70 730 and 3 995 respectively. The early-stage investments are very active and make up 42% of the startup investment allocation<sup>119</sup>, with the largest percentage of investment over all stages put into Silicon Valley enterprises (49% of US total VC)<sup>120</sup>.

The VC landscape in the US has grown significantly since changes in the *Employment Retirement Income Security Act* made in 1979 which allowed pension funds to invest in riskier asset classes such as VC. Within a few years, pension funds have grown to become the primary investor in the VC asset class<sup>121</sup>.

The average seed round in Silicon Valley receives \$900 000-950 000, slightly higher than the North American average, and the first round of institutional investing is, on average, between \$6.5m and \$7m<sup>122</sup>. The total amount of early stage funding in the region in 2014 was \$3.1bn, with the next highest hub, being New York City, receiving only \$1.22bn<sup>123</sup>.

#### **Complementary supportive regulatory features**

Restraint of trade restrictions in the California State are made void in the region; improving worker mobility. Historically, this proved to be favourable to technological development as employees of IBM left the company after the S/360 Mainframe computer was created. The employees created other businesses where plug-ins for the mainframe were developed; driving the computer industry. The split of IBM's workforce meant that networks within the computer industry were enhanced and competition stimulated<sup>11</sup>.

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<sup>116</sup> Williams, J. (2008) Tax Credits and Government Incentives for Angel Investing in

Various States. Angel Capital Foundation. Available from: [www.angelcapitalassociation.org/](http://www.angelcapitalassociation.org/)

<sup>117</sup> U.S. Small Business Administration (No date) See what SBA offers. Available from: [www.sba.gov](http://www.sba.gov)

<sup>118</sup> Ibid

<sup>119</sup> Sohl, J. (2013) The Angel Investor Market In 2013: A Return To Seed Investing. Available from: <https://paulcollege.unh.edu/>

<sup>120</sup> NVCA(2015) National Venture Capital Association Yearbook. Available from: <http://nvca.org/research/stats-studies/>

<sup>121</sup> Kushida (2015) A Strategic Overview of the Silicon Valley Ecosystem: Towards Effectively "Harnessing" the Ecosystem. A Stanford report for the SiliconValleyJapan project. Available from: [www.stanford-svnj.org/](http://www.stanford-svnj.org/)

<sup>122</sup> Ibid

<sup>123</sup> Compass.co (2015) The Global Startup Ecosystem Report 2015. Available from: <http://blog.compass.co>

<sup>123</sup> Silicon Valley Leadership Group (2015) Silicon Valley Competitiveness and Innovation Project – 2015: A Dashboard and Policy Scorecard for a Shared Agenda of Prosperity and Opportunity. Available from: <http://svcip.com/>

## 3.2 Israel

### Country overview

Tel Aviv is ranked 5<sup>th</sup> of the top 20 startup ecosystems in the world and continues to live up to its reputation as a hub of technology and innovation<sup>124</sup>. Approximately 3,100 to 4,200 active tech startups operate in the city and the ecosystem is valued<sup>125</sup> at \$24 to \$29 billion. This compares well to Europe's average of 2,400 startups and average ecosystem value of \$12 billion<sup>126</sup>. Companies operating in Tel Aviv have benefitted from the city's access to a broad funding base and highly-skilled local talent. Capital is generally available for every stage of the business life cycle and a wide range of government-initiated funding mechanisms exist to encourage investment in early-stage enterprises<sup>127</sup>.

Local universities continue to build on the engineering capacity brought about by an influx of highly-skilled migrants from the Soviet Union in the 1990s<sup>128</sup>, with a strong focus on programming, software development and design in university curricula<sup>129</sup>. The Wix Initial Public Offering (IPO) of 2013 which saw the company listed on the NASDAQ at a valuation of \$750 million illustrates Israel's continued prominence as an innovation and technology hub.

Israel as a whole has a TEA rate of 10% is similar to the regional TEA rate of 9.6% in the Middle East & North Africa illustrating a normal level of early-stage entrepreneurial activity for its context<sup>130</sup>. The Israeli population generally perceives entrepreneurship to be a respectable career and allocates a high status to successful entrepreneurs<sup>131</sup>.

### Hubs

Israel is divided into National Priority Areas intended to draw investment to areas located far away from the main cities of Tel Aviv and Jerusalem. While Jerusalem is a centre for high-tech enterprises<sup>132</sup>, Tel Aviv is the only city in Israel that is ranked amongst the top 20 startup ecosystems in the world.

### Internet coverage / speed

Given its prominence as an IT hub, it is unsurprising that Israel ranks highly for internet coverage and speed. According to the State of the Internet report by The Akamai Content Delivery Network, Israel's average internet connection speed of 11.2 Mbps is over twice the global average of 5.1 Mbps<sup>133</sup>. Israel also ranks highly on the World Economic Forum's

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<sup>124</sup> Compass.co (formerly Startup Genome). 2015. The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>125</sup> The ecosystem value represents the estimated value of all startups at or prior to exit

<sup>126</sup> Compass.co (formerly Startup Genome). (2015) The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>127</sup> Ministry of Economy: State of Israel (No date) Guide to Starting a Business in Israel. Ministry of Economy: State of Israel. Available at: <http://www.investinisrael.gov.il/>

<sup>128</sup> Monitor Group (2009) Paths to Prosperity, Promoting Entrepreneurship in the 21<sup>st</sup> Century. Available from: <http://icma.org/>

<sup>129</sup> Compass.co (formerly Startup Genome). 2015. The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>130</sup> Amoros, J; Bosma, N. (2013) Global Entrepreneurship Monitor 2013 Global Report: Fifteen Years of Assessing Entrepreneurship Across the Globe. Global Entrepreneurship Monitor Consortium. Available from: <http://www.gemconsortium.org/report>

<sup>131</sup> Ehud, M; Miri, L; Yoash, A. (2013) National Report for Israel by the Global Entrepreneurship Monitor. Global Entrepreneurship Monitor Consortium. Available from: <http://www.gemconsortium.org/>

<sup>132</sup> Ministry of Industry, Trade and Labour, Foreign Trade Administration Investment Promotion Centre (No date). Investment Incentives and Benefits. Ministry of Industry, Trade and Labour, Foreign Trade Administration Investment Promotion Centre Available from: <http://www.investinisrael.gov.il/>

<sup>133</sup> Akamai Content Delivery Network (2015). The State of the Internet Report. Akamai Content Delivery Network. Available from: <https://www.stateoftheinternet.com/>

Network Readiness Index with regards to economic impact<sup>134</sup> and business usage<sup>135</sup> of technology<sup>136</sup>.

### Company registration costs

According to the World Bank, it takes a total of 13 days to complete the 5 processes required to start a business in Israel and costs approximately \$1,200 (3.4% of Gross National Product per capita)<sup>137</sup> to do so. In order to register a foreign company, entrepreneurs have the option of establishing a subsidiary company, branch office or representative office of a foreign firm at an estimated cost of \$675<sup>138</sup>.

### Taxes

Resident firms are subject to Israeli tax rates on income earned in and out of the country, and non-resident companies are subject to Israeli tax on income earned in the country<sup>139</sup>. As of January 2014, corporations were subject to an income tax rate of 25%<sup>140</sup>. In addition, both resident and non-resident companies are subject to a capital gains tax of 26.5% on worldwide capital gains, or on gains on assets located within the country<sup>141</sup>. The standard VAT rate is 18%<sup>142</sup>.

Overall, Israel offers noteworthy tax benefits and incentives to encourage investment. These incentives fall under the Law for the Encouragement of Capital Investment and focus on reduced tax rates in the country's National Priority Areas. To support overall investment a uniform tax deduction of over 25% applies to all companies engaged in industrial exporting. National priority area A has a reduced tax rate of 9% while the rest of the country may benefit from a reduced rate of 16%. Additionally, exporting industrial enterprises may also receive a fixed asset grant of 20 to 32% or direct funding towards new employee costs of 20 to 33.5% of the monthly wage cost<sup>143</sup>.

### Talent

Israel and in particular Tel-Aviv's prominence as an innovation hub is in large part due to its strong talent base of entrepreneurs and employees skilled in technology and entrepreneurship. According to the Global Startup Ecosystem Ranking, all startups in Tel Aviv had at least 1 founder experienced in tech and close to 50% of employees have some

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<sup>134</sup> "The economic impact pillar measures the effect of ICT on competitiveness thanks to the generation of technological and non-technological innovations in the shape of patents, new products or processes or organisational practices. In addition, it also measures the overall shift in the economy towards more knowledge intensive activities" - World Economic Forum (2015). Global information Technology Report 2015: Networked Readiness Index. World Economic Forum. Available from: <http://reports.weforum.org/>

<sup>135</sup> "The business usage pillar (five variables) captures the extent of business internet use as well as the efforts of the firms in an economy to integrate ICT into an internal technology savvy, innovation conducive absorption capacity as well as its overall capacity to innovate, the production of technology novelties measured by the number of PCT patent applications or the extent of staff trained, so that management and employees are better capable of identifying and developing business innovations" - World Economic Forum (2015) Global information Technology Report 2015: Networked Readiness Index. World Economic Forum. Available from: <http://reports.weforum.org/>

<sup>136</sup> World Economic Forum (2015) Global information Technology Report 2015: Networked Readiness Index. World Economic Forum. Available from: <http://reports.weforum.org/>

<sup>137</sup> World Bank Group (2015) Ease of Doing Business in Israel. Doing Business: Measuring Business Regulations. World Bank Group. Available from: <http://www.doingbusiness.org/>

<sup>138</sup> Ministry of Economy: State of Israel (No date) Guide to Starting a Business in Israel. Ministry of Economy: State of Israel. Available from: <http://www.investinisrael.gov.il/>

<sup>139</sup> EY Global Limited (2015) Doing Business in Israel. EY Global Limited Available from: <http://www.ey.com/>

<sup>140</sup> Deloitte. Analysis of Israel's R&D Incentives: 2015 Global Survey. Deloitte Touche. Available from: <http://www2.deloitte.com/>

<sup>141</sup> EY Global Limited (2015) Doing Business in Israel. EY Global Limited Available from: <http://www.ey.com/>

<sup>142</sup> Ministry of Economy: State of Israel (No date). Guide to Starting a Business in Israel. Ministry of Economy: State of Israel. Available from: <http://www.investinisrael.gov.il/>

<sup>143</sup> Ibid

previous startup experience<sup>144</sup>. While Tel Aviv startups do not employ a large number of foreigners, local talent has proven to be particularly skilled in technology – particularly software development, product development and programming<sup>145</sup>.

## Funding instruments

### Public:

The government has played an active role in supplying capital as well as developing programmes and financing mechanisms to promote R&D and innovation. In 1993, the government initiated the Yozma Fund supplying \$100 million towards the VC fund for high-tech startups. Yozma has become renowned as the catalyst to Israel's growing VC industry, and the government sold its interests in the fund to private investors in 1996<sup>146</sup>. Additional R&D support programmes target enterprises across the business life cycle from pre-seed to mature technology firms, and primarily do so through the provision of grant funding directly to entrepreneurs or to fund research and collaboration between academic researchers and industry.

Israel's Ministry of Trade and Labour is responsible for implementing the government's R&D policies, and is in charge of administering incentives to encourage industrial R&D. The Ministry's Office of the Chief Scientist (OCS) approves applicants for the incentive.

The government has identified three main national priority areas or geographic zones into which it aims to increase investment by offering incentives for investment into key industries. Generally, R&D incentives tend to be awarded to companies operating in software and hardware development, energy and utilities and pharmaceuticals. Alternatively, the R&D Fund offers conditional grants of up to 50 percent of approved R&D spending and offers up to 60 percent in Priority Area A. Other noteworthy R&D incentive programmes include the EUREKA funding and MAGNET programme. They both promote industrial innovation and the commercialisation of R&D projects. The MAGNET programme in particular facilitates the collaboration between academic researchers and industrial companies in order to commercialise new products<sup>147</sup>.

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<sup>144</sup> Compass.co (formerly Startup Genome). (2015)The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>145</sup>BBC (2014) Next Silicon Valleys: What makes Israel a start-up nation? Available at: <http://www.bbc.com/news/technology-26071818>

<sup>146</sup> Organisation for Economic Development and Cooperation (2015) Government Venture Capital for Technology-based firms. Available at: <http://www.oecd.org/sti/inno/2093654.pdf>

<sup>147</sup> Deloitte (2015) Analysis of Israel's R&D Incentives 2015 Global Survey. Deloitte Touche. Available at: <http://www2.deloitte.com/>

## Private:

VC continues to play a dominant role in the funding of high-tech startups. According to the Israel VC Research Centre, 2015 saw the highest number and value of high-tech capital raising recorded by the annual survey of VC. In 2015, 708 deals were made that raised \$4.43 billion<sup>148</sup>. Trends illustrated an increase in the volume of capital allocated to growth-stage companies, as well as a tendency towards larger deals. Capital invested in late-stage companies (\$1.7 billion) increased by 23% from 2014, outpacing the reported increase in capital allocated to seed-stage deals which grew from \$178 million in 2014 to \$269 million in 2015<sup>149</sup>.

In spite of a largely supportive policy environment, it is estimated that 46% of Israeli startups close within 3.5 years of operation<sup>150</sup>. The average seed round raises \$700 to \$750,000 - higher than the Europe average of \$600 to \$650,000 – while the average Series A round of \$4.5 to \$5 million stands slightly below the regional average of \$5 to \$5.5 million<sup>151</sup>.

Much of the capital invested into Israeli startups is in the form of venture capital, however angel investors are reported to be playing a growing role in financing early-stage enterprises spurred by “Super Angels” – successful entrepreneurs who contribute capital and investment to young firms<sup>152</sup>. Overall, it seems that while Israel has a vibrant VC industry, there is still room to improve capital allocation and support to seed enterprises by further developing angel investment networks.

## Complementary supportive regulatory features

Israel's growth into a startup hub has largely been attributed to the presence of policies conducive to supporting startups in the technology sector and a keen investment in academic achievement. The discipline and exposure to technology within the mandatory military subscription are also reported to have embedded a level of skill with technology in the population that could then be leveraged to develop products and services. The Israeli Defence force was instrumental to technology development as many entrepreneurs made use of technical know-how gained serving in the IDF<sup>153</sup>.

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<sup>148</sup> Israel Venture Capital Research Centre (2015) Venture Capital Raising Survey. Israel Venture Capital Research Centre. Available at: <http://www.ivc-online.com/>

<sup>149</sup> Ibid

<sup>150</sup> Israeli Venture Capital Research Centre (2015) Israeli Startup Success Report 1999 – 2014. Israeli Venture Capital Research Centre. Available from: <http://www.ivc-online.com/>

<sup>151</sup> Compass.co (formerly Startup Genome). (2015) The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>152</sup> Organisation for Economic Cooperation and Development (2011) Financing High-growth firms: The Role of Angel Investors. Organisation for Economic Cooperation and Development. Available from: <http://www.keepeek.com/>

<sup>153</sup> Organisation for Economic Cooperation and Development (2011) Financing High-growth firms: The Role of Angel Investors. Organisation for Economic Cooperation and Development. Available from: <http://www.keepeek.com/>



## 3.3 The United Kingdom

### Country overview

London ranks 6<sup>th</sup> in the Global Startup Ecosystem Ranking of the top 20 startup ecosystems in the world. The city continues to be a hive of startup investment and activity with an estimated 3200 to 5400 active tech startups and an ecosystem value of \$44 billion<sup>154</sup>. Much of the city's success in supporting startup enterprises comes down to its market reach (geographic location) and access to "affluent consumers, powerful corporations, a good funding landscape and supportive government initiatives"<sup>155</sup>.

London is also able to attract quality entrepreneurial talent as well as a diverse pool of employees with relevant experience in startups. Finally, government policies and mechanisms have generally created a policy environment intended to drive investment into early-stage businesses, particularly in the fintech sector in which the London and the United Kingdom (UK) have a competitive advantage.

Overall, the UK has a high TEA rate of 10.7%, higher than the regional EU average of 7.8%. Generally, a high regard for successful entrepreneurs and increasing optimism about starting a business contribute to the country's status as a relatively strong entrepreneurial hub<sup>156</sup>.

### Hubs

London is the main ecosystem hub and claims the 6<sup>th</sup> place in overall global ranking of the top 20 startup ecosystems<sup>157</sup>, while the UK as a whole ranks 8<sup>th</sup> in the top 10 locations in which to found an enterprise<sup>158</sup>.

### Internet coverage / speed

Internet coverage in London sits at 87% and the average speed of the internet is 15 Mbps<sup>159</sup>. According to the World Economic Forum's Networked Readiness Index, the UK has particularly strong infrastructure (mobile network coverage, international internet bandwidth, electricity production and secure internet servers) to support the tech startup ecosystem, and ranks 15<sup>th</sup> of 144 countries in availability of infrastructure and digital content<sup>160</sup>.

### Company registration costs

It takes a total of 4.5 days to complete the 4 processes required to incorporate a business in the UK, and costs approximately \$43 (0.1% of Gross National Product per capita)<sup>161</sup>. The cost to incorporate a company is \$22 for foreigners<sup>162</sup>.

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<sup>154</sup> Compass.co (formerly Startup Genome). (2015) The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>155</sup> Ibid. Pg57.

<sup>156</sup> Global Entrepreneurship Monitor Country Profile: United Kingdom (2014) Global Entrepreneurship Monitor Consortium. Available from: <http://www.gemconsortium.org/>

<sup>157</sup> Compass.co (formerly Startup Genome). (2015) The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>158</sup> Madison, R. (2015) Top 10 Countries in the World to Launch a Startup. Available from: <http://www.seedstarsworld.com/>

<sup>159</sup> Madison, R. (2015) Top 10 Countries in the World to Launch a Startup. Available from: <http://www.seedstarsworld.com/>

<sup>160</sup> World Economic Forum (2015) Global information Technology Report 2015: Networked Readiness Index. World Economic Forum. Available from: <http://reports.weforum.org/>

<sup>161</sup> World Bank Group (2015) Ease of Doing Business in United Kingdom. Doing Business: Measuring Business Regulations. World Bank Group. Available from: <http://www.doingbusiness.org/>

<sup>162</sup> Madison, R. (2015) Top 10 Countries in the World to Launch a Startup. Available from: <http://www.seedstarsworld.com/>

## Taxes

UK corporations and foreign corporations operating within the UK are subject to a tax of 20% on their income and a VAT of 20%<sup>163</sup>.

## Talent

London is able to draw on its central location to attract talent with relevant experience. Twenty-three percent of founders have prior work experience in a startup, much higher than Europe's average of 13%. Additionally, the city is able to draw on a diverse talent pool from other countries where 53% of employees are foreign – the highest proportion in all the hubs ranked in the top 20 startup ecosystems in the world<sup>164</sup>.

The UK's strength in attracting international talent is especially relevant as the 2009 Monitor Group Entrepreneurship Benchmarking Initiative Survey<sup>165</sup> revealed that the UK respondents generally had a poor perception of available educational preparation for a career in entrepreneurship in the country<sup>166</sup>. Results showed that only three percent of UK respondents believed that primary and secondary education dedicated enough time to entrepreneurship. Russia was the only country out of the 22 surveyed that ranked lower than the UK in the perceived adequacy of entrepreneurship preparation at the primary and secondary education level. Similarly, only 6% of UK respondents believed universities and colleges offer a sufficient amount of entrepreneurship education to mid-career professionals<sup>167</sup>.

A number of initiatives have been instituted to begin to address the lack of entrepreneurial training in schools. One such example is Young Enterprise, a leading charity founded by Sir Walter Saloman, that runs entrepreneurship programmes and masterclasses for young people aged 4 to 25<sup>168</sup>. Young Enterprise has partnered with Virgin Money and the Department for Business, Innovation and Skills to implement The Fiver Challenge, which gives students aged up to 11 the opportunity to learn about entrepreneurship by starting their own business<sup>169</sup>.

## Funding instruments

### Public:

The UK government is well-known for its efforts to promote investment into early-stage enterprises. As part of these initiatives, it makes large numbers of grants, loans and financing instruments available to catalyse and support startups. Government grants available to entrepreneurs include the National Department of Trade and Industry (DTI) grants for R&D; the Grant for Business Development that offers grants to entrepreneurs working in sectors that generate employment; the Export Credits Guarantee to allow

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<sup>163</sup> Deloitte (2015) Taxation and Investment in the United Kingdom 2015. Deloitte. Available from: <https://www2.deloitte.com/>

<sup>164</sup> Compass.co (formerly Startup Genome). (2015) The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>165</sup> The Monitor Entrepreneurship Benchmarking Initiative Survey is a multi-year project that identified and measured key weaknesses in entrepreneurial environments around the world. Results shown here are taken from the 2009 analysis of interviews with entrepreneurs in 22 countries.

<sup>166</sup> Monitor Group (2009) Paths to Prosperity, Promoting Entrepreneurship in the 21<sup>st</sup> Century. Available from: <http://icma.org/>

<sup>167</sup> Ibid

<sup>168</sup> Young Enterprise (No date) Young Enterprise: Our Programmes. Young Enterprise. Available from: <http://www.young-enterprise.org.uk/>

<sup>169</sup> Bonner, K; Drews, C; Hart, M; Levie, J (2014) Global Entrepreneurship Monitor United Kingdom 2014 Monitoring Report. Global Entrepreneurship Monitor Consortium. Available from: <http://www.gemconsortium.org/>

entrepreneurs who export to travel and participate in overseas exhibitions; and the European Regional Development Fund that assists SMEs to reduce their carbon footprint<sup>170</sup>.

Loans and loan assistance are also available to entrepreneurs. The most prominent schemes of this type are the Small Loans for Business Scheme providing loans to SMEs; the Gateway to Finance programme focused on supporting London-based entrepreneurs to raise funds to start or grow an enterprise, and the Enterprise Finance Guarantee scheme that supports entrepreneurs without collateral to access debt financing by providing guarantees to potential lenders<sup>171</sup>.

The government also provides other schemes including mentoring and training programmes, as well as R&D centres designed to strengthen technical as well as business management skill. Notable examples include the Business Bootcamps launched by the Mayor of London, the Entrepreneur First programme targeting graduates interested in entrepreneurship and the Get Mentoring Scheme that pairs entrepreneurs with a mentor and eventually become a business mentor themselves. Of particular relevance to the tech industry are: the UK Business Incubation that operates laboratories, R&D centres and commercial clusters; and the UK Science Park Association that connects entrepreneurs with universities encouraging the commercialisation of IP<sup>172</sup>.

Finally, the UK has instituted a number of funding instruments under the “Venture Capital Scheme” (“this Scheme”) to incentivise private investment in startups. The table below outlines the key features of each of the instruments in this Scheme.

Table 4: Key Features of instruments in the Venture Capital Scheme

Funding instrument	Entity eligible for tax relief	Key features
Corporate Venturing Scheme (CVS) new investments of this type ceased after March 2010	Tax relief provided to companies that bought shares in unquoted companies	<ul style="list-style-type: none"> <li>Provides range of tax reliefs on corporation tax liability for companies that purchase for shares in other unquoted companies carrying out qualifying trading activities</li> <li>Deferral of gains accruing on investment made under the CVS, where gain is reinvested under the scheme. This deferral relief only available where investment relief is because of shares disposed of</li> </ul>
Enterprise Investment Scheme (EIS)	Tax relief provided to individuals & trustees of certain trusts who buy new shares in smaller and higher-risk companies	<ul style="list-style-type: none"> <li>Income tax relief of 30% available to individuals who subscribe for share in an EIS of up to 1 million pounds</li> <li>Capital gain tax relief on any disposed shares</li> <li>Share loss relief (shares disposed of at a loss, this loss can be offset against income from the year shares were thrown away or against income of the previous year)</li> </ul>

<sup>170</sup> ENT Magazine (No date). Government Backed Schemes and Initiatives Promoting New Business Startups. ENT Magazine. Available from: <http://www.entmagazine.com/>

<sup>171</sup> Ibid.

<sup>172</sup> ENT Magazine (No date). Government Backed Schemes and Initiatives Promoting New Business Startups. ENT Magazine. Available from: <http://www.entmagazine.com/>

Seed Enterprise Investment Scheme (SEIS)	Tax relief provided to individuals who buy new shares in small, early-stage companies	<ul style="list-style-type: none"> <li>SEIS was designed to complement EIS and encourage investment in early-stage companies</li> <li>EIS offers relief to investors in high-risk unquoted companies, and SEIS focuses on companies of this sort in the early stage of the business cycle generally offering tax relief at a higher rate than EIS</li> <li>Income tax relief offered at rate of 50% on amount invested. Investor can claim tax relief up to 100,000 pounds in any one year</li> </ul>
Share Loss Relief (SLR)	Relief on capital losses provided both to individuals and companies	<ul style="list-style-type: none"> <li>Capital losses on shares can be set against an individual or company's income providing certain conditions are met, otherwise allowable losses can be set against capital gains on other assets</li> </ul>
Venture Capital Trust (VCT)	Tax relief provided to individual investing in a VCT	<ul style="list-style-type: none"> <li>A VCT is similar to an investment trust approved by HMRC and subscribes for shares in small unquoted companies</li> <li>Under the VCT scheme, VCTs and their investors enjoy tax reliefs where individual investors are exempt from income tax on dividends on ordinary shares within the allowed maximum up to 200,000 pounds</li> <li>Individuals are also exempt from capital gains tax on disposal of shares acquired up to maximum of 200,000 pounds</li> </ul>

Source: Her Majesty's Revenue & Control

The instruments primarily offer tax relief to investors as a measure to increase VC investments. Analysis of the VCT and its implementation suggests that tax-based incentives need to be carefully designed in order to adequately stimulate investment in early-stage businesses as intended, rather than being directed to growth-stage enterprises<sup>173</sup>. Additionally, the conditions and limitations imposed on investors into such schemes – and the costs of administering them - have been critiqued<sup>174</sup>.

The UK also offers a number of R&D incentives including super deductions to both SMEs and large companies. SMEs can receive a 230% super deduction and a cash credit of up to 33.35% on qualifying expenditure on R&D. This cash credit is only available to SMEs in a loss position. Large companies qualify for and can select between a 130% super deduction and an R&D expenditure credit available at a rate of 11%. A patent tax regime also allows for a lower corporation tax on profits earned from patented inventions<sup>175</sup>.

### Private:

<sup>173</sup> Organisation for Economic Cooperation and Development (1997) Government Venture Capital for Technology-based Firms. Organisation for Economic Cooperation and Development (1997) Available from: <http://www.oecd.org/sti/inno/2093654.pdf>

<sup>174</sup> SiMODiSA (2014) Accelerating growth of small and medium enterprises in South Africa: Policy recommendations for enhancing the startup/SME ecosystem in South Africa. Available from: <http://www.simodisa.com>

<sup>175</sup> Deloitte (2015) Analysis of the United Kingdom's R&D Incentives 2015 Global Survey. Deloitte Touche. Available from: <http://www2.deloitte.com/>

The UK, and London in particular enjoy a robust funding base for startups where the volume of both seed and Series A investments is considerably higher than the average for Europe. The average seed round in London raised \$700 to \$750,000 compared to \$600 to \$650,000 for Europe, and the average Series A round of \$7 to \$7.5million also exceeded Europe's average of \$5 to 5.5 million<sup>176</sup>. In 2014 € 0.9 billion (approximately \$0.98 billion) was invested in VC in the UK and Northern Ireland. An estimated € 0.5 billion of these investments were dedicated to growth-stage enterprises, and the remainder to early-stage companies<sup>177</sup>.

Angel investors have played and continue to play a crucial catalytic role for startups in the UK, providing risk capital, skill and experience to businesses. The country's angel investor network has also been recognised as the most mature and developed within Europe. The European Trade Association for Business Angels, Seed funds and other Early Stage Market Players estimates that in 2013, € 84.4 million was deployed in 535 UK companies – far ahead of Spain, the second largest European market with an estimated € 57.6 million invested. In 2013 technology-intensive sectors attracted the most angel investment in both Europe and the UK<sup>178</sup>.

Trends observed in the UK Business Angel Association's national business angel survey indicate that the UK's angel investment activity will continue to grow should it continue on its current trajectory. Survey responses showed an increase in the number of deals, more use of VC Scheme mechanisms, and strong investor expectations of investment performance. The 445 respondents made a median of 5 investments in 2014 compared to a median of 2.5 investments reported in 2009<sup>179</sup>.

Eighty percent of the investments made in 2014 were through a VC Scheme mechanism with 24% of these under SEIS, "while evidence from 2013 indicates that SEIS was used in only 12% of angel deals"<sup>180</sup>. This shows a general trend of increased investment in startup enterprises. Survey respondents had high growth and performance expectations of their investments where the majority (69.7%) anticipated that investments would generate a return 1 to 5 times the size of the original investment<sup>181</sup>. This again illustrates that it is likely that angel investments will only grow in importance to the startup ecosystem as the number of deals increases, and investors continue to take advantage of incentives geared to supporting startups and early-stage enterprises.

### Complementary supportive regulatory features

Other key features that contribute to London and the UK's status as a thriving entrepreneurial ecosystem include a relatively low cost of hiring key personnel – it is estimated to take 39 days to hire engineers in London compared to 47 days in Europe as a whole<sup>182</sup> – and a strong regard for entrepreneurship and high resilience to business failure.

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<sup>176</sup> Compass.co (formerly Startup Genome). (2015) The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

<sup>177</sup> European Private Equity & Venture Capital Association (2014) 2014 European Private Equity Activity: Statistics on Fundraising, Investments & Divestments. European Private Equity & Venture Capital Association. Available from: [www.investeurope.eu/](http://www.investeurope.eu/)

<sup>178</sup> European Trade Association for Business Angels, Seed Funds, and other Early Stage Market Players (2014) Statistics Compendium. European Trade Association for Business Angels, Seed Funds, and other Early Stage Market Players – Secretariat. Available from: <http://www.eban.org/>

<sup>179</sup> Fu, K; Hart, M; Wright, M. (2015) A Nation of Angels: Assessing the impact of angel investing across the UK. UK Business Angels Association. Available from: <http://www.ukbusinessangelsassociation.org.uk/>

<sup>180</sup> Ibid p.g. 9.

<sup>181</sup> Ibid.

<sup>182</sup> Compass.co (formerly Startup Genome). (2015) The Global Startup Ecosystem Ranking 2015. Startup Compass Inc. Available from: <http://blog.compass.co/>

The UK is second only to the US on people who agree that the founder of a failed business venture will likely try again (86% agree in UK, 96% in US and 63% in China)<sup>183</sup>.

In addition, the UK consistently ranks high on the World Bank's the "Ease of Doing Business" index in large part due to a focused effort to streamline regulation and reduce red tape. Launched in 2011, the Red Tape Challenge aims to reduce unnecessary bureaucracy in UK legislation. The Red Tape Challenge was specifically designed to be a participatory initiative in which business and the general public have a chance to identify those regulations needing to be improved or eliminated. In 2014, the Office of the Prime Minister announced that the UK had abolished or simplified 800 regulations and saved business £1.5 billion<sup>184</sup>.

## 3.4 Germany

### Country overview

Berlin is one of the quickest growing tech hubs and now hosts 1 800 to 3 000 technology startups. The value of the startup ecosystem is calculated to be between \$24.7-30.2bn, at least twice the European average of \$12bn<sup>185</sup>. The government provides most of its support in the form of cash grants and loans, education. Private funding and entrepreneurial spirit are some of the weaker points of Germany's tech startup arena. The TEA rate in Germany is relatively low, even with strong government support, most likely because of low levels of entrepreneurial spirit within the local population<sup>186</sup>.

### Hubs

Berlin is the main startup hub in Germany and is ranked in the top ten in the Global Startup Ecosystem ranking<sup>187</sup>. Munich is another prominent region for technology startups. While it does not get a mention in the Global Startup Ecosystem ranking, it does rank first in Europe in the ICT Poles of Excellence report<sup>188</sup>.

### Internet coverage / speed

Germany ranks 13<sup>th</sup> globally in the Networked Readiness Index. The country strengths include good infrastructure and high penetration of technology<sup>189</sup>. The majority of businesses in Berlin have access to the internet with speeds of 50Mb/s with very few having access to 100 Mb/s speeds<sup>190</sup>

### Company registration costs

The process of registering a company in Germany has 9 procedures which are expected to take 10.5 business days to complete. The cumulative costs of these processes are € 681;

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<sup>183</sup> Monitor Group (2009) Paths to Prosperity, Promoting Entrepreneurship in the 21<sup>st</sup> Century. Available from: <http://icma.org/>

<sup>184</sup> The United Kingdom Cabinet Office: Her Majesty's Government (No date) About the Red tape Challenge. The United Kingdom Cabinet Office: Her Majesty's Government. Available from: <http://webarchive.nationalarchives.gov.uk/20150522175321/http://www.redtapechallenge.cabinetoffice.gov.uk/about/>

<sup>185</sup> Compass.co (2015) The Global Startup Ecosystem Report 2015. Available from: <http://blog.compass.co>

<sup>186</sup> Global Entrepreneurship Monitor Country (2014) Profile: Germany. Available from: <http://www.gemconsortium.org/>

<sup>187</sup> Ibid

<sup>188</sup> De Prato, G. and Nepelski, D. (2014) 'Mapping the European ICT Poles of Excellence. The Atlas of ICT Activity in Europe', JRC Scientific and Policy Reports EUR 26579 EN.

<sup>189</sup> World Economic Forum (2015) The Global Information Technology Report. Available from: <http://reports.weforum.org/>

<sup>190</sup> Moving to Berlin (No date) Internet provider Berlin. Available from: <http://www.movingto-berlin.com/internet-provider-berlin/>



which, as a percentage of the income per capita, is relatively low (1.8%) compared to the European average set up cost percentage (3.2%)<sup>191</sup>.

## Taxes

The corporate income tax in Germany is 15% and VAT is 19%. The World Bank calculates that for an average business operating in Germany, they could expect to pay about 48.8% of profit to the government in various forms of tax<sup>192</sup>. There is no explicit capital gains tax in Germany. This could indirectly incentivise investment in the economy and into VC. There are currently no tax incentives for R&D activities, however, other funding incentives (discussed below) are available.

## Talent

The German Government supports the nation's labour force through assisting with training and subsidising wages to reduce business operating costs. The Federal Employment Agency assists companies in finding prospective employees, and numerous subsidies are available for pre-hire training and on-the-job training<sup>193</sup>.

The pool of full-time German entrepreneurs is stagnant and new entrepreneurs generally operate their business alongside formal employment. One suggestion for why this is has become a problem is the lack entrepreneurial education at a University level and low regard of entrepreneurship as a respectable career choice<sup>194</sup>. The concentration of foreign employees (49%) in Berlin is higher than the European average of 30% and even that of Silicon Valley (renowned for its high share of foreigners in the workforce)<sup>195</sup>.

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<sup>191</sup> World Bank (2015) Doing Business Indicators. Available from: <http://www.doingbusiness.org/>

<sup>192</sup> Ibid

<sup>193</sup> Germany Trade & Invest (2014) Incentives in Germany – Supporting your investment project. Available from: [www.gtai.de/](http://www.gtai.de/)

<sup>194</sup> Waeltring, F. and Dornberger, U. (2014) Insight Study on the German Early Stage Investing, Incubation and Business Angel System. Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) GmbH, New Delhi

<sup>195</sup> Compass.co (2015) The Global Startup Ecosystem Report 2015. Available from: <http://blog.compass.co>

## Funding instruments

### Public:

Germany primarily provides financial incentives for new investment projects which promote economic growth or which are innovative. These may be in the form of cash incentives, interest-reduced loans, public guarantees and wage and training subsidies<sup>196</sup>.

Table 5: Public Financial Incentives in Germany

Type	Implementing Agency	Objectives
Cash Incentives	Joint Task Program for the Promotion of Industry and Trade (GRW – Gemeinschaftsaufgabe).	Coordinate the distribution of non-repayable grants to qualifying businesses. The grant is focused on small business
Interest-reduced loans	KfW Bankengruppe	Subsidised loans for building and machinery for startups
Public guarantees	State and Federal Governments	Small businesses who fail to access bank loans can apply. Up to 80% of the loans are guaranteed by government
Labour-related subsidies	Federal Employment Agency (Bundesagentur für Arbeit)	Recruitment support, assistance in pre-hiring and on-the-job training, wage subsidies
R&D Incentives <sup>197</sup>	European Commission, German government, German state government	Numerous programs targeting R&D in high-tech industries, supported by grants and subsidised loans

Source: Germany Trade & Invest: Incentives in Germany

The German government also offers incentives for eligible R&D projects based on a series of selection criteria looking at the extent of innovation, technical risk, and economic risk. The incentives are either in the form of non-repayable cash grants or R&D loans. The restrictions of these incentives include keeping R&D costs within Germany. Project results occurring in Germany and any resulting intellectual property (IP) should also remain within Germany.

### Private:

Risky investments such as VC have not traditionally been very popular in Germany, although attitudes in the investment industry appear to be changing. The government encouraged this shift by creating public-private VC funds; boosting the supply of VC available to startups. There is also now a growing network of angel and VC investors, with over 40 Business Angel Networks operating in the region<sup>198</sup>.

The average seed round of investment into startups in Berlin averages at \$550 000 per project which is lower than the European average of \$600 000 – 650 000. At Series A rounds, Berlin slightly outperforms the European average (\$5m – 5.5m) with the average funding round being between \$5.5m – 6m. Total VC investment into Berlin in 2014 was approximately €1.97bn, while the total for Germany as a whole was €2.68bn<sup>199</sup>.

## Complementary supportive regulatory features

<sup>196</sup> Germany Trade & Invest (2014) Incentives in Germany – Supporting your investment project. Available from: [www.gtai.de/](http://www.gtai.de/)

<sup>197</sup> Deloitte (2015) 2015 Global Survey of R&D incentives. Available from: <http://www2.deloitte.com/>

<sup>198</sup> Waeltring, F. and Dornberger, U. (2014) Insight Study on the German Early Stage Investing, Incubation and Business Angel System. Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) GmbH, New Delhi

<sup>199</sup> EY (2015) Liquidity meets perspective- Venture Capital and Startups in Germany 2015. Available from: [www.ey.com/](http://www.ey.com/)

The German government has a decentralised institutional structure enabling local development agencies and city administration to promote startup ecosystem hubs in ways which are most effective for their particular context. Many co-working spaces, investing networks, creative labs and startup centres, have risen from the outworking of this structure<sup>200</sup>.

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<sup>200</sup> Waeltring, F. and Dornberger, U. (2014) Insight Study on the German Early Stage Investing, Incubation and Business Angel System. Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ) GmbH, New Delhi

## 3.5 Singapore

### Country overview

The World Bank ranked Singapore as the number 1 place to do business in 2015 and 2016<sup>201</sup>. Singapore is championed for its well-organised financial institutions and networks, but is also rapidly growing as a centre for technology startups. There are between 24 000 and 36 000 tech startups in the region with an ecosystem valued between \$11.8bn – 14.4bn.

Singapore has a high rate of early-stage entrepreneurial activity, placing the nation in the top 5 countries compared on the rate of TEA<sup>202</sup>. The country's good education system, favourable funding environment, government incentives, policy stability and networked economy; have enabled the success of Singapore's startup environment. Impeding growth is the lack of early-stage funding and the high costs of living which increase the burden of business failure on entrepreneurs.

### Hubs

Singapore, a city-state, is the highest ranking technology startup hub in the Asia region according to the Global Startup Ecosystem Report. China was not included in the report and, along with South Korea, would be expected to also be high-ranking Asian economies should they have been included<sup>203</sup>.

### Internet coverage / speed

Singapore is the highest ranked economy globally in the Networked Readiness Index which is a measure of the capacity of the ICT environment to enhance competitiveness and standards of living<sup>204</sup>. Since 2015, Singapore has had access of up to 2Gbp/s internet speeds<sup>205</sup>.

### Company registration costs

Registering a company in Singapore consists of three procedures which are expected to take two-and-a-half business days to complete. The cost of this process is SGD 385 (\$273.85) which amounts to only 0.6% of the per capita income. In comparison to other OECD high-income countries, which cost 3.2% of per capita income, and other APAC countries, which cost 23% of per capita income; company registration in Singapore is far more affordable<sup>206</sup>.

### Taxes

Corporate income tax in Singapore is at 17% of taxable profit and VAT is charged at 7% of the value added. Singapore offers tax deductions for R&D efforts which are calculated on a multi-tiered level based on the location of the R&D benefits and the amount spent on R&D<sup>207</sup>. There are also tax reductions for funds investing in VC (this will be discussed in the funding section).

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<sup>201</sup> World Bank (2015) Doing Business Indicators. Available from: <http://www.doingbusiness.org/>

<sup>202</sup> Global Entrepreneurship Monitor Country (2014) Profile: Singapore. Available from:

<http://www.gemconsortium.org/>

<sup>203</sup> Ibid

<sup>204</sup> World Economic Forum (2015) The Global Information Technology Report. Available from:

<http://reports.weforum.org/>

<sup>205</sup> ViewQwest (2016) Fibre Broadband Bundle. Available from: <http://www.viewqwest.com/products.html>

<sup>206</sup> World Bank (2015) Doing Business Indicators. Available from: <http://www.doingbusiness.org/>

<sup>207</sup> Deloitte (2015) 2015 Global Survey of R&D incentives. Available from: <http://www2.deloitte.com/>

## Talent

Singapore ranks third globally for its good education system, according to the Pearson Global Index of Cognitive Skills and Educational attainment<sup>208</sup>. The scientific output of Singapore's universities is rapidly increasing as the region leans towards innovation and entrepreneurial focus at a university level. The region also has many partnerships with leading global universities and startup hubs. Founders of startups are highly qualified, with 52% of startup founders having a Master's or Ph.D. degree (in Silicon Valley, the percentage is only 42%)<sup>209</sup>.

The availability of labour for new businesses in Singapore is low as only 2% of the population are unemployed and seeking work. This is also likely to have led to the employment of foreign workers who make up 52% of the startup's employee base<sup>210</sup>.

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<sup>208</sup> Pearson (2014) Index-Which countries have the best schools. Available from: <http://thelearningcurve.pearson.com>

<sup>209</sup> Sean C. (2015) Start-up ecosystem in Singapore. Netherlands Office for Science & Technology in Singapore. Available from: [www.rvo.nl/](http://www.rvo.nl/)

<sup>210</sup> Compass.co (2015) The Global Startup Ecosystem Report 2015. Available from: <http://blog.compass.co>

## Funding instruments

### Public:

The government of Singapore has committed to developing a knowledge economy and delegated much of the development of this goal to agencies within the country.

Table 6: Knowledge Economy Implementing Agencies and their Objectives, Singapore

Implementing Agency	Objectives
National Research Foundation (NRF)	Financing research, innovation commercialisation
SPRING	Financing entrepreneurs, innovation commercialisation
Action Community for Entrepreneurship (ACE)	Financial assistance, mentorship, lobbying
Community Care (ComCare)	Fund startups addressing socio-economic needs
National Volunteer and Philanthropy Centre (NPVC)	Funding social enterprise startups to develop philanthropic opportunities
Environment and Water Industry Programme Office (EWI)	Incubator for clean energy and clean water
Interactive Digital Media Programme Office (IDMPO)	Coordinates R&D in interactive media
International Enterprise (IE)	Driving external economy and market access

Source: Sean C. (2015) Start-up ecosystem in Singapore. Netherlands Office for Science & Technology in Singapore.

### Private:

VC is a relatively new investment class in Singapore and is still growing internally. The region therefore proactively encourages foreign VC firms to set up their regional offices in the district. Early-stage investing is not as easy to come by as late-stage expansion financing, as investors prefer to see some profitability before making investments<sup>211</sup>. The government incentivises VC investment through a 5% tax concession on VC fund management companies with certain specified funds (13H) on their income statements<sup>212</sup>.

The average seed round of investment into startups in Singapore is \$550 000 per project, which is higher than the APAC average of \$400 000 – 450 000. Series A funding rounds in Singapore are on par with the APAC average of \$4– 4.5m<sup>213</sup>.

## Complementary supportive regulatory features

Singapore's good governance, and commitment to supporting the business environment and investment, make it a healthy business ecosystem for startups. The country's regulatory environment has ensured that contracts are effectively enforced and shareholders are well-protected. The government has also ensured that any administrative 'red-tape' to doing business is reduced so that there are quick turnaround times for approvals and so that processes can run efficiently to enable companies to concentrate on adding value to their businesses<sup>214</sup>.

<sup>211</sup> Hawksford (No date) Venture Funding Options for Singapore Companies. Available from: <http://www.guidemesingapore.com/>

<sup>212</sup> Inland Revenue Authority of Singapore (2016) Tax Changes For Businesses. Available from: [www.iras.gov.sg](http://www.iras.gov.sg)

<sup>213</sup> Compass.co (2015) The Global Startup Ecosystem Report 2015. Available from: <http://blog.compass.co>

<sup>214</sup> World Bank (2015) Doing Business Indicators. Available from: <http://www.doingbusiness.org/>



## 4 Conclusions: What does this mean for South Africa?

The table below provides a summary overview of the key strengths in each of the profiled countries, highlighting the features that have been linked to their great performance and the relative areas in which South Africa could potentially adopt similar measures:

Country	Key strengths	Area for Improvement in SA	
USA	Talent	Proximity to good universities developing highly skilled workforce	Access to education and quality of education.
	Immigration	Historical openness attracted many foreign business founders	Visa restrictions for skilled/entrepreneurial immigrants.
	Private Funding	Well-developed VC and angel investment market	Encourage early-stage angel and VC investors and investment activity
	Other	Innovation momentum after initial tech investment boost during WWII	
ISRAEL	Immigration	Highly skilled immigrants moved to Israel during the 1990's	Visa restrictions for skilled/entrepreneurial immigrants
	Entrepreneurial culture	Population is inherently more inclined to take on the risks of starting new ventures	Encourage entrepreneurial spirit
	Public funding	Government initiated the first VC fund, lots of grants and innovation hubs were created	Encourage early-stage angel and VC investors and investment activity and streamline government funding incentives
	Other	Compulsory military service with high technology focus	
UK	Geographic Location	Central location for trade and talent in the world.	N/A
	Private Funding	Well-developed angel networks and VC with incentive initiatives available for both.	Encourage early-stage angel and VC investors and investment activity Address the funding gap in early-stage/seed investment and address current VC incentives.
	Founder Experience	Many startup founders have experience in high-growth startups or other tech companies.	Encourage entrepreneurial spirit
GERMANY	Public Funding	Efficient incentive scheme including cash grants, loans, guarantees, tax breaks and subsidies to reduce the burden on small businesses	Address the funding gap in early-stage/seed investment and fragmented funding between government departments. Utilise incentive schemes to alleviate the gap and reduce the burden on small business.
	Immigration	High numbers of foreign employees, although immigration time is still burdensome	Visa restrictions for skilled/entrepreneurial immigrants
	Government Infrastructure	Good government support of business structures and instilling market confidence	Address fragmented government departments and compliance restrictions.
SINGAPORE	ICT Infrastructure	Global leader in terms of internet speed and penetration	Address the need to catch up to global ICT standards
	Business Infrastructure	Government has smooth business processes to make business	Streamline business registration processes and

	administration simple, quick and cost-effective	reduce compliance costs
Education	One of the best education systems in the world. Many university graduates enter the workforce with degrees in STEM <sup>215</sup> fields	Improve access to education and quality of education

The most attractive and flourishing startup ecosystems discussed above feature a range of key ingredients that have been instrumental in facilitating “Catch Up growth” to propel these ecosystems forward. A trend across these startup ecosystems, is the primarily catalytic role that their governments have played, either directly funding the early stages of VC or proactively encouraging the development of well-developed angel and VC networks, investors and early-stage investment activity through the use of a range of incentive schemes. Consequently, these case studies provide a range of examples of how the South African Government can strategically encourage private sector investment, in addition to other key ecosystem enablers to support sustainable startup ecosystems in the long-term.

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<sup>215</sup> Science, technology, engineering and mathematics

## 4.1 Appendix A: South African Public Funding Sources in Support of Small and Growing Businesses

Incentive	Objective	Beneficiaries	Benefits	Implementing Agency	Size of available fund	Dispersed funding
Small Enterprise Finance Agency (SOC) <sup>216</sup>	To help establish & grow SME's through access to loans	SME's	Subsidised loans over available, repayable over five years	IDC	R943m	1 246 loans <sup>217</sup>
Isivande Women's Fund <sup>218</sup>	Accelerating women empowerment through access to finance for female business owners	Women-owned enterprises	Funding available between R30 000 and R2 million	DTI, managed by the IDC	No publically-available data	No publically-available data
Gro-E <sup>219</sup>	Assisting startups which create jobs, or existing businesses with job-creating expansion projects	Job-creating enterprises	Provides loans at prime less 3% to qualifying enterprises, maximum loan is R50m per project	IDC	R9bn <sup>220</sup>	No publically-available data
Gro-E Youth <sup>221</sup>	Financial and non-financial support to youth enterprises	SME's with 50% ownership under 35 years of age	Provides loans at prime less 3% to qualifying enterprises, maximum loan is R50m per project	IDC	R1bn <sup>222</sup>	No publically-available data
Risk Capital Facility <sup>223</sup>	Providing access to finance to businesses improving economic development	Small business owners from historically disadvantaged groups	Equity or quasi-equity financing instruments	DTI, managed by the IDC	R841m <sup>224</sup>	No publically-available data
iMbewu Fund (NEF) <sup>225</sup>	Supplies startup and expansion capital to black-owned	Black-owned small business	Term-loans, shares and other funding structures to a max. value	National Empowerment Fund (NEF), under the DTI	R60m <sup>226</sup>	No publically-available data

<sup>216</sup> SOC (No date) Small Enterprise Finance Agency. Available from: <http://www.sefa.org.za/>

<sup>217</sup> SOC (2015) SEFA Annual Report. Available from: <http://www.sefa.org.za/>

<sup>218</sup> IDC (2014) Risk Capital Facility Programme. Available from: <http://www.idc.co.za/>

<sup>219</sup> IDC (2014) Gro-E scheme. Available from: <http://www.idc.co.za/>

<sup>220</sup> IDC (No date) Funds Easy Reference. Available from: [https://protected.idc.co.za/DFD/DFD\\_Tool.aspx](https://protected.idc.co.za/DFD/DFD_Tool.aspx)

<sup>221</sup> IDC (2014) Gro-E scheme. Available from: <http://www.idc.co.za/>

<sup>222</sup> IDC (No date) Funds Easy Reference. Available from: [https://protected.idc.co.za/DFD/DFD\\_Tool.aspx](https://protected.idc.co.za/DFD/DFD_Tool.aspx)

<sup>223</sup> IDC (2014) Risk Capital Facility Programme. Available from: <http://www.idc.co.za/>

<sup>224</sup> IDC (No date) Funds Easy Reference. Available from: [https://protected.idc.co.za/DFD/DFD\\_Tool.aspx](https://protected.idc.co.za/DFD/DFD_Tool.aspx)

<sup>225</sup> NEF (2016) iMbewu Fund - Entrepreneurship Finance. Available from: <http://www.nefcorp.co.za/>

<sup>226</sup> NEF (2015) Annual Report 2015. Available from: <http://www.nefcorp.co.za/>

	and managed businesses		of R10m			
National Youth Development Agency (NYDA)	Provides young entrepreneurs access to financial & non-financial business support	Youth (18 to 35 years old) who display future entrepreneurial potential but are not yet fully developed	The grant finance starts from R1 000 to a maximum of R100 000 for any individual or youth co-operative.	National Youth Development Agency (NYDA)	No publically-available data	1 034 grants <sup>227</sup>
R&D Tax Incentive <sup>228</sup>	Encourage private-sector investment in scientific and technological R&D	Private-sector business conducting R&D	<b>Operating Expenditure:</b> Up to 150% of qualifying expenditure incurred. <b>Depreciation Allowance:</b> Accelerated depreciation: 50/30/20 basis.	DST	No publically-available data	No publically-available data

<sup>227</sup> NYDA (2015) Annual Report 2015. Available from: <http://www.nyda.gov.za/>

<sup>228</sup> The R&D Tax incentive has limited relevance for and uptake by SMEs and consequently is not a core part of the focus of this literature review. For more information see Chapter 6.7 in the Simodisa Report: Policy recommendations for enhancing the startup/SME ecosystem in South Africa.