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A comparative Case Study Analysis of Singapore and Seoul”**

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Table of Contents

1. Introduction	1
1.1 Research question and aims.....	3
1.2 Outline.....	4
2. Theoretical Part.....	5
2.1 State of the Art	5
2.2 Definition of terms	7
3. Methodology	9
3.1 Economic determinants.....	12
3.1.1 Factors of Production	12
3.1.2 Infrastructure	15
3.1.3 Economic structure.....	18
3.1.4 Urban amenities	19
3.2 Strategic determinants	22
3.2.1 Urban governance	22
3.2.2 Urban strategy.....	23
3.2.3 Public-private co-operation.....	23
3.2.4 Institutional and regulatory environment.....	24
4. Case Study	27
4.1 Economic determinants.....	28
4.1.1 Factors of production.....	28
4.1.2 Infrastructure	35
4.1.3 Economic structure.....	46
4.1.4 Urban amenities	51
4.2 Strategic determinants	59
4.2.1 Urban governance	59
4.2.2 Urban strategy.....	66
4.2.3 Public-private-sector co-operation	68
4.2.4 Institutional and regulatory environment.....	69
5. Key findings	78
5.1 Factors of production	78
5.2 Infrastructure.....	80
5.3 Economic structure	84
5.4 Urban amenities.....	86
5.5 Urban governance.....	90

5.6	Urban strategy.....	92
5.7	Public-Private Co-operations.....	93
5.8	Institutional and regulatory environment	94
6.	Conclusion	97
6.1	Limitations and further research.....	99
7.	References.....	101
8.	Appendix I	114
9.	Appendix II	115
10.	Table	115

Abbreviations

ACER	Australian Council for Educational Research
BERD	Business Expenditure on R&D
CPF	Central Provident Fund
DBS	Development Bank of Singapore
EIU	Economist Intelligence Unit
FDI	Foreign Direct Investment
HDB	Housing and Development Board
HDI	Human Development Indicator
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IEA	International Association for the Evaluation of Educational Achievement
ILO	International Labour Organization
IMF	International Monetary Fund
ISA	International School's Assessment
IoT	Internet of Things
IP	Intellectual Property
KISTEP	Korean Institute of Science and Technology Evaluation and Planning
MAS	Monetary Authority of Singapore
MRD	Monthly rental deposits
NGN/ NGA	Next generation access network
NGO	Nongovernmental Organization
NRF	National Research Foundation
OCBC	Oversea-Chinese Banking Corporation
OECD	Organisation for Economic Co-operation and Development
PAP	People's Action Party
PCA	Prevention of Corruption Act
PIMAC	Public-Private Infrastructure Investment Management Center
PISA	Program for International Student Assessment
PPD	Public-Private Dialogue
PPP	Public-Private Partnership

PUBERD	Public Expenditure on R&D
RIEC	Research, Innovation and Enterprise Council
R&D	Research and Development
SH	Seoul Housing
SMG	Seoul Metropolitan Government
S&P	Standard and Poor's
TIMSS	Trends in International Mathematics and Science Stud
UN	United Nations
UNDP	United Nations Development Program
UOB	United Overseas Bank
VC	Venture capital
VET	Vocational education and training
WEF	World Economic Forum
WGI	World Governance Indicators

1. Introduction

„ [...] talent attracts capital more effectively than capital attracts talent [...] and where people want to live, businesses want to invest. “
New York’s mayor Michael Bloomberg (2015)¹

Over the last decades, a shift from rural to urban living could be observed. The world is urbanizing at a fast speed. As to date more than half of the world’s population is living in approximately 500 cities with over a million residents (Clark, et al., 2016). Until 2050 this number will increase to seven of ten people. (WHO: Western Pacific Region, 2011, p. 1) In the Western Pacific Region, one third of the population lives in urban areas and urban residents worldwide make up more than 80 percent of the global GDP. In other words, cities have become the “lifeblood”, “motor” or “megatrend” for the global and local economy and can determine “the wealth and poverty of nations, regions, and the world” but on the other side, can create negative by-products such as income inequality and housing shortages. (World Economic Forum, 2014)

In times of globalizing economies and trade liberalization it is crucial for cities, companies, and countries to be competitive. For a long time, the concept of competitiveness was analyzed from the perspective of companies, economies or on a national or regional level. The European Union, as an example, thrives to be the most competitive and dynamic region in the world. With the increasing urban population, the view shifted from nations to cities and urban areas. Through this shift, the concept of urban/city competitiveness emerged. The concept itself is not new as cities already competed against each other and people always migrated for over thousands of years, like in the ancient cities of Greece (Sparta and Athens) or Italy (Genoa and Venice). The primary goal for cities at that time was to attract new residents and industries by offering a better living standard than other cities in the region. Later the goal changed to producing goods which are better than anywhere else. But with the era of globalizing countries and increasing free trade, these assets alone could not keep cities

¹ Bloomberg M., Pope, C., 2017. *Climate of Hope: How Cities, Businesses, and Citizens can save the planet*. New York: St. Martin’s Press, p. 22.

competitive and alive. With technological development and mobility, competitiveness now takes place on an international level. People and companies are free to choose from cities all around the world, with almost no limitations. This means that cities must compete internationally and be more competitive, attractive, and livable than ever. Over the last decades, Asian cities became epicenters of rapid economic growth and wealth. According to the UNDP (2016), by 2018 “more than half of Asia-Pacific’s population is expected to live in urban areas [...]” (UNDP, 2016a). As stated by various sources, the urban population of Asia will be over two billion by 2030 and will account for over 40% of the global economic output. Recent years have seen a surge of numerous academic literature and reports devoted to the competitiveness of cities around the world. Many of them include Asian cities, but in comparison with cities outside of Asia. The term Asia includes East Asia and South-East Asia. East Asia includes following countries: Mainland China, Hong Kong, Macau, Japan, Mongolia, North and South Korea, and Taiwan. In this master thesis South-East Asia includes Singapore, Malaysia, Indonesia, Vietnam, Laos, Cambodia, Thailand, Myanmar, Philippines, Brunei Darussalam.

This master thesis will conduct a research of competitiveness among two Asian cities, namely Singapore, and Seoul. Both countries belong to the so called “Asian Tigers” alongside Taiwan and Hong Kong. Singapore has over 5.6 million residents² and a population density of 7,797 per sq. km (Department of Statistics Singapore, 2016). It is a sovereign island city-state with smaller islets surrounding the main island, and home to many international company headquarters. Singapore also belongs to the world’s “Big Six” alongside Tokyo, Hong Kong, London, New York, and Paris. The “Big Six” are the most influential cities worldwide named by professional service firm JLL³. Seoul⁴ shares the high urban density with Singapore and is the home of many international competitive companies like Samsung or Kia. It is one of the world’s largest metropolitan area with over 23 million residents. The urban area of Seoul includes not only the municipality of Seoul, but also surrounding areas such as Incheon to the west (Seoul-Incheon urban area). The municipality itself has shortly over 9.9 million residents with a population density of 16,300 per sq. km (Seoul Metropolitan Government, 2015). As there would be vast differences in the size of the urban area

² Residents refer to residents and non-residents (foreign workers, students) but excluding tourists and short-term visitors.

³ <http://www.jll.co.uk/united-kingdom/en-gb>

⁴ Capital of the Republic of South Korea situated in the Gyeonggi province north of the peninsula.

and population between Singapore and Seoul, the urban area of Seoul is limited to the municipality itself with its 25 districts. Seoul is catching up and is seen as a future member of the "Big Six".

1.1 Research question and aims

More than ever cities are the driving force behind the wealth of nations. The purpose of this master thesis is to examine Singapore's and Seoul's economic and strategic competitive profile for encouraging investment and economic growth and in return stay or become more competitive. The analysis of Singapore and Seoul is carried out to answer the main research question which reads as follows:

What are the strengths and weaknesses in Singapore's and Seoul's economic and strategic competitive performance?

In addition to the main research question this thesis also aims at answering the following question:

Is Seoul more competitive than Singapore?

This master thesis has two main aims. First, it should give readers a comprehensive understanding of the general meaning of the terms competitiveness as well as city/urban competitiveness. Through analyzing different academic studies and papers, this thesis should further give an overview on the topic of city/urban competitiveness in academic literature. The second aim of the master thesis is to investigate the performance of Singapore and Seoul in relation to competitiveness by analyzing and comparing various strategic and economic factors of the city economy such as infrastructure, labor force, urban amenities, and governance. To achieve this aim, both cities are analyzed by a set of indicators introduced by the authors Kresl & Singh. It is important to keep in mind that the thesis' aim is not to provide deeper knowledge of each of the areas per se but give a comprehensive overview.

By reviewing secondary literature in the fields of city competitiveness and competitiveness, information is gathered and analyzed. The data for the analysis also comes from country profiles by the WEF and OECD, which gives further information of the performance of the whole country and not the cities per se, and several city and

country statistical sites. Please keep in mind that both cities or nations do not have yearly or regularly updated statistics. Especially in the case of Seoul and South Korea data is often only available up to 2016 at most.

1.2 Outline

This paper is divided into five main chapters. The first section outlines the significance and relevance of the topic alongside the aims and objectives of the master thesis. Furthermore, the main research question and several sub questions are presented. The remainder of this master thesis is structured as follows. Chapter two discusses the theory behind competitiveness in general and city competitiveness. The State of the Art includes the academic literature from the beginning of the term competitiveness in academic writing to modern academic's point of view. Both stands in academic literature that cities do (Porter, 1995, 1996) and do not (Krugman, 1996) compete, are outlined, and discussed in this section. The lack of an accepted definition of the term competitiveness and further for city/urban competitiveness is discussed in this section. Chapter three presents the methodology of the thesis. This chapter starts with an overview of the methodology and the indicators later implemented in the analysis. The methodology is based on the framework from Kresl & Singh, with two main pillars: economic and strategic determinants. Each pillar has several subcategories such as human capital, educational facilities, governance, or regulatory environment. Chapter four includes the case studies of Singapore and Seoul. It gives a comparative perspective of the competitive performance by implementing the methodology introduced in chapter three. Chapter five will answer the research questions about the cities' economic and strategic performance with their strengths and/or weaknesses, which are presented in a table. The concluding chapter gives a brief conclusion of the master thesis and answers the second research question. Furthermore, this chapter includes a discussion of the implication of the findings as well as room for further research and limitations.

2. Theoretical Part

2.1 State of the Art

In this chapter, key texts and academic literature of urban competitiveness will be discussed. There are numerous works and academic literature concerning the concept of competitiveness with uncertainties regarding the meaning and utility of the term, especially when applied to cities. The theoretical roots of urban competitiveness lie in competitiveness of firms and industries and territorial competitiveness was first applied to nations and later extended to cities.

Among the first books that discussed the notion of competitiveness are Adam Smith's *"An Inquiry into the Nature and Causes of the Wealth of Nations"* (1776) with its concept of the invisible hand and Ricardo's *"Principles of Political Economy and Taxation"* (1817) with the comparative advantage concept. Adam Smith's work debates the impact of free trade and labor force on economies and the wealth of nations. His idea is that the produced goods and services are the measurements of a wealthy nation. (Smith, et al., 1776) Ricardo shares Smith's point of view, but notes that the information provided in Smith's books was not satisfactory enough, and he tried to fill this knowledge gap. He first presented the theory of comparative advantage, where differences in factor endowments or technological processes can boost the output for individuals, firms or nations. (Maneschi, 1998, p. 1) Schumpeter (1912), brings the notion of innovation into the discussion. According to him, the key to competitiveness is the capacity to innovate and adjust to the changing environment (Schumpeter, 2006). Over time an evolution from classical to contemporary concepts and trade to competitiveness theories took place.

Porter's (1990) and Krugman's (1996) point of view, among other academics, is predominantly on the micro-economics of companies, which are seen as the motor of the national economy but does not always includes the macro-economic perspective. Krugman states that competitiveness is only another way to express productivity and that the word competitiveness has no real meaning. In his work, Porter (1990) points out that competitiveness "can and must be applied at two levels, the industry and the nation" and that "a nation's competitiveness depends of the capacity of its industry to innovate and upgrade" (Porter, 1990, p. 73). Porter, in opposition of Krugman's point

of view, acknowledges, that competitiveness is not limited to the micro-economic perspective but can also take place at a macro-economic level. His model helps to understand the competitive advantage of firms and nations better by including non-economic factors such as social and political values. He states that cities and regions compete, but in a more complex way than industries or firms. Krugman has a more provocative view of the topic as “countries [and cities] do not compete with each other the way corporations do [because] they do not go out of business”. (Krugman, 1997, p. 6) and that competitiveness is a threat for free and fair trade. Georghiou and Metcalf (1993) and Zhang Ming (2010) also stated that there is a difference in how cities and firms compete and that “competitiveness of nations is nothing more than an appropriate aggregate of the competitiveness of the firms they contain” (Georghiou & Metcalfe, 1993, p. 164). Whereas the performance of local and international firms in a city is a crucial factor for competitiveness, firms alone cannot contribute to competitiveness.

With the start of the EuroCities Movement in 1991, the focus of competitiveness shifted from nations and companies to a more national scale – to the cities. Where Porter and Krugman are convinced that cities cannot compete per se, Begg (1999), among other scholars and different annual rankings from international organizations, like the Global Competitiveness Report (World Economic Forum), state that cities in fact do compete. Renowned urbanists Jane Jacobs, in her book *Cities and the wealth of nations* (1985), and Saskia Sassen, in her book *The Global City* (1991), point out that cities are the main factor of wealth and the driver for trade, innovation, labor markets, and capital formation, and not nations. One of the highly-considered works in urban competitiveness are the studies by Kresl and Singh (1995, 1999, 2012) in large US metropolitan cities. Their findings were that “the concept of competitiveness, traditionally reserved for use with either national economies or firms, has relevance to urban economies [...]” (Kresl & Singh, 1999, p. 1026). Kresl and Kresl & Singh extended competitiveness to cities and highlighted that competitiveness is about economic competitiveness and measured by economic success. The traditional approach of competitiveness is focused on economic factors. But not only economic but also non-economic factors should play a role in competitiveness such as urban governance, urban amenities or liveability (Begg, 1999; Florida, 2002; Shen, 2004). Kresl & Singh included a broader range of influencing factors (institutions, cooperation, ...) which supplement the traditional economic factors.

As we have seen, there are two different stands on the question if cities compete or not. Some academics state that cities rather perform than compete, it's the firms and industries within the city which compete against each other. Cities should contain competitive businesses and industries, and nurture investment within the city instead of attracting investment and skilled labor force which is trivial as a city should focus on improving and educating existent and future labor force. The city should focus on improving the existing assets rather than attracting outside investment; they should improve the performance of the existing business environment. (Urwin, 2006) On the other side, there is the opinion that cities do compete, as stated by Porter (1995, 1996) and Sassen (1991), as they are the new driving force behind competitiveness.

So, do cities compete or rather perform? Concluded from the reviewed literature, cities can and should do both. They should attract outside investment, firms, and labor force but at the same time improve their economic performance to offer some quality of life and wealth among the whole community, and a well-functioning business environment.

2.2 Definition of terms

This part of the master thesis has its focus on the definitions of the terms used in the thesis. Before discussing the definition of what urban competitiveness is, we should define the terms of city/urban area and look at the broader notion of competitiveness.

City/urban area

There is no standard definition for urban area; where it begins and where it ends. Each country defines urban area according to their own terms, which can include administrative criteria or political boundaries, population size and density, social and economic functions, and urban characteristics such as maximum travel time by road. (UNICEF, 2012; Ni and Kresl, 2008; J.R. Weeks, 2010; Chomitz, et al., 2005; Uchida and Nelson, 2010) Especially in Asian countries⁵ the definitions are quite different. From a specific number of population (Malaysia, Japan, India) to areas designated by the government or State Council (China, Cambodia). South Korea defines urban areas by the population living in cities, regardless of the size of population (UNSTATS, 2005). As a city-state, Singapore does not give an own definition as most residents are living in an urban area, surrounding the central city in the south-east of the island.

⁵ The term Asia refers to the countries in East and South-East Asia.

Competitiveness

There is still little agreement and consensual definition on what competitiveness means or how policy makers and government should enhance it through interventions. The different point of views often leads to confusions and misunderstandings (Snowdon & Stonehouse, 2006). Numerous definitions include firms producing profitable products and meeting the open market conditions (Krugmann, 1990, 1994; Buckley et al., 1988) to other non-economic factors such as standards of living (European Commission, 2001). The OECD⁶ and the European Commission define competitiveness as the ability of firms to produce goods and services under open market conditions while at the same time “maintaining high and sustainable levels of income” (European Commission, 1999, p. 7; OECD, 1992). Porter constructed the ‘diamond model’ of competitive advantage and the ‘cluster theory’, with national productivity at the heart of competitiveness. In his model he stresses the effects of other variables of competitiveness beside economic factors – such as social and political history and values. He states that competitiveness consists of demand and factor conditions, related to and supporting industries and firm strategies (Porter, 1990; 1996). The World Economic Forum (WEF) defines competitiveness as a “set of institutions, policies and factors that determines the level of productivity” (World Economic Forum, 2016a).

City/urban competitiveness

There are many varying definitions of urban competitiveness. But all of them have some elements in common. First the dual priorities of job creation and productivity growth as stated by the European Commission (2007), Webster & Muller (2000) and Kresl (2013). Then there is the focus on companies, as suggested by Storper (2013), The World Bank (2010; 2015) and Parkinson et. al (2014). And the last element is the recognition of the city as a combination of local, private, and civil-society actors, as noted by WEF (2014), Sinkiene (2009) and Zhang (2009) (The World Bank Group, 2015, p. 20). Simmie’s (2006) definition of city competitiveness manages to grab the concept of competitiveness, including economic performance as well as social outcomes. According to the author city competitiveness is:

⁶ Organisation for Economic Co-operation and Development

“the ability of cities to continually upgrade their business environments, skill base, and physical and cultural infrastructure, so as to attract and retain high-growth, innovative and profitable firms, and an educated creative and entrepreneurial workforce, to thereby enable it to achieve a high rate of productivity, high employment rate, high wages, high GDP per capita, and low levels of income inequality and social inclusion.” (Simmie, et al., 2006, p. 65)

In this master thesis, we define city/urban competitiveness⁷ as a combination of the elements above.

3. Methodology

In academic literature, a vast number of different frameworks, indices, and ratings exist to measure urban competitiveness, all from different angles and including different, for them, crucial factors. Some try to measure competitiveness by looking at the economic performance or some parts of it such as labor productivity and foreign exchange rates. Others tend to use a more holistic view by including parts of strategic performance to their measurement. None of the existing indices has so far grabbed the multidimensional scope of competitiveness and established one universal applicable methodology for assessment. Most scholars and organizations used either economic determinants or strategic determinants to identify the competitiveness level of a city. The most appropriate way to assess competitiveness is to use multidimensional indicators including both economic and strategic determinants. The selection of appropriate indicators and weighting their importance is often a dilemma.

The methodology and approach used in this master thesis is based on Kresl & Singh's quantitative methodology (Kresl & Singh, 1999, 2012, 2013). They introduced a way to measure competitiveness, by not only including economic but also strategic performance in relation to urban economies. Kresl & Singh selected a set of three general indicators – percent of payroll per employee, percent of retail sales, and percent of professional services – and analyzed these three indicators with the regression model to identify a set of smaller variables for competitiveness. The outcome of different studies, conducted by Kresl & Singh as well as Kresl & Gappert, was that, competitiveness consists of two main pillars: economic and strategic determinants. (Kresl & Singh, 1999, 2012, 2013) Economic factors are important to

⁷ For simplicity reasons, city/urban competitiveness is seen as an interchangeable term and will be referred to as city competitiveness in this thesis.

improve competitiveness, but to attract companies and investment, and create a favorable business environment/structure, also strategic factors should be included. Begg, referring to Kresl (1995), states that, strategic factors are the policy framework and institutional design for favorable business environments (Begg, 1999, p. 800). According to Friedrich List, Max Weber, and James Buchanan social institutions such as code of conduct, public authorities or financial institutions are additional factors affecting competitiveness.

The framework is slightly modified as seen in table 1. Some sub indicators are combined under one term, e.g. *% of firms 20-100 employees and % of foreign owned firms* are combined to the indicator *size and ownership of firms*; others are renamed for a better understanding. As some strategic indicators such as *governmental effectiveness* or *institutional flexibility* are difficult to measure a more comprehensive term will be used. The indicator *location* is not included in the new framework. There are two reasons for this decision. At the time of construction of the original framework, the impact of technological change on various aspects of the economy was high and it was crucial for companies to be near and have access to such innovation. Today technology is present in every major city and in almost every aspect of the economy from communication to transportation. Due to this technological progress companies do not need to be in near proximity to their target markets as the transportation of goods and services, information, and decisions over longer distances is possible without time and cost loss (Kresl & Gappert, 1995).

Determinant	Original framework	New framework
Economic	Factors of production	
	% of labor force with 12 years or more education	Human capital
	Availability of industrial sites and office spaces	Industrial sites and office spaces
	Access to venture capital	Access to venture capital
	Infrastructure	
	Transportation	Transportation
	Communication	Information and Communication Technology
	Research facilities	Research facilities
	Location	
	Relation to market	(not included)

Methodology

	Center-periphery position	
	Impact of technological change	
	Economic structure	
	% of firms 20-100 employees	Size and firm ownership
	% of foreign owned firms	
	Financial institutions, adequacy of business services	Financial and business services
	Urban amenities	
	Cultural/educational institutions	Cultural/educational institutions
	Housing stock	Housing stock
Strategic	Governmental effectiveness (Urban governance)	
	Active leadership role	Urban governance
	Clear lines of responsibility and mandates	
	Urban strategy	
	How specific and well thought out	Urban strategy
	How actively pursued	
	Public-private-sector co-operation	
	Operational linkages between city and private sector	Public-private partnerships
	Coordination of each sector	
	Institutional flexibility (Institutional and Regulatory environment)	
	Regulatory environment	Institutional and regulatory environment
	Openness to decision-making to change	

Table 1: new framework by the author (Kresl & Singh, 1999, 2012, 2013)

3.1 Economic determinants

Cities face new competitive requirements due to economic and technological transformations. Attractiveness does not so much rely on geographical location and economic structure alone, but also “on the knowledge and skills levels of the population and access to high quality transport and communications infrastructure” (Banister & Hall, 2004, p. 6) as well as on urban amenities for a livable environment.

3.1.1 Factors of Production

Kresl & Singh paid high attention to these factors by including human capital, production and office sites and the capital stock. Production factors are important to attract labor forces and national as well as international small, medium and large companies.

Human capital

In various academic literature, the factor of human capital is seen as one of the most important attributes contributing to and maintaining competitiveness. In general, human capital contributes to cities competitiveness by promoting innovation as a direct input into new processes, stimulating following generations of human capital through role model and imitation effect, helping cities to reinvent themselves, attracting favorable industry mix and foreign direct investment by being a ‘talent pool’, increasing the general productive efficiency, by facilitating knowledge spillover through networking (Zhang, 2010, pp. 38-39). Adam Smith also highlights that labor force can improve the economic output and enhance technological innovation (Smith, et al., 1937). Kresl & Gappert emphasizes the importance of labor quality and quantity and the rich relationship between competitiveness and labor force (Kresl & Gappert, 1995). A high number can be sufficient for manufacturing-driven economies, but knowledge-driven economies need a labor force, not only high in number, but also highly-educated. Another crucial point is that a city should, under all circumstances, retain their highly-skilled workers. As we will see later, this depends on the cities availability to provide a high standard of living and urban amenities. Highly-educated workers are defined as

Methodology

people with at least some secondary education⁸ or above. The analysis is based upon the Human Capital Index by the WEF⁹, which assesses the level of education, skills, and employment for the working-age population of 130 different countries.

⁸ People in the country who have completed secondary education according to the International Standard Classification of Education (ISCED-97) by the UNECSO.

⁹ Human Capital Index by the WEF ranks the countries according to the development and deployment of their talents from education to skills, and employment availability.

Industrial sites and office spaces

The availability of commercial real estates, including offices, retail, and industrial sites, is another essential factor for a city to attract small, medium, and large national and international companies to settle down and establish headquarters. Office buildings should be cost-effective and central located, ideally in the Central Business District (CBD), with access to transportation, human capital, retail, and leisure facilities as well as healthcare and educational services. Modern office spaces, with the trend to co-working spaces, should also offer creative surroundings which is important for tech and creative businesses. (Couse, 2016) Some cities also have special designated districts in the center of the city with urban high-rise office buildings, like business or technology districts, to create a special working environment for these businesses. There are limitations when it comes to free land for industrial use within cities. Therefore, many cities are designating and creating industrial zones at the periphery of the city for the emerging and existing industrial sector. An adequate supply of industrial land should be ensured and protected from re-designating the use of this land.

Access to venture capital

Access to venture capital (VC¹⁰) is a key in encouraging the development and growth of new innovative firms. Bank lending is the main source for financing, especially in bank-based financial systems. But particularly start-ups, mostly in the technology sector, are relying on other forms of investment in their seed- and early-stages (Series A and Series B) as they often “lack cash-flow and tangible assets to satisfy a commercial bank’s collateral requirements” (Kremmidas, 2017). So, other forms of financing should be provided. The OECD (2010) includes leasing, factoring, venture capital, business angel networks, and microfinance as additional financing methods (OECD, 2010)¹¹. In 2016, worldwide funding declined by 24% since 2015, but Asia remained steady. China and India are the driving forces in the venture ecosystem in Asia (KPMG Enterprise, 2017). The size and shape of VC in Asia differs from other countries outside of Asia¹². The explanation of the differences can be their cultural,

¹⁰ VC (Venture Capital) is “private capital provided by specialised firms acting as intermediaries between primary sources of finance [...] and private start-up and high-growth companies [...]” (OECD, 2011)

¹¹ For further information and description please refer to OECD, 2010.

¹² For further information please refer to:

http://hcd.ucdavis.edu/faculty/webpages/kenney/articles_files/venture%20capital%20in%20asia.pdf

political, and economic environment and development. The proximity to VC companies and major cities play a significant role in VC accessibility. Active support from the government in form of incentives and programs, availability of VC and exit strategies further encourage the development of innovative firms. The measurement for the analysis is derived from the Global Competitiveness Report¹³ by the WEF.

3.1.2 Infrastructure

Since the Middle Ages throughout to the present, infrastructure has been important for the production process and competitiveness (World Economic Forum, 2014). When hearing the term infrastructure, we stereotypically think of rails, bridges, and roads. But in modern academic literature the term includes more than just the transportation sector. It is divided into soft and hard infrastructure, known as 'strategic infrastructure'. Soft infrastructure can contain information and research facilities as well as education, whereas hard infrastructure includes transportation and other heavy material stuff. Strategic infrastructure helps the economy to support key industry sectors like logistics, telecommunication etc. and in turn foster economic growth (UN HABITAT, 2013; Schwab, 2014). Infrastructure systems connect the local market with markets in other countries and regions (Schwab, 2014, p. 4). In the thesis, infrastructure is seen as the availability and accessibility of transportation, (tele)communication and research facilities, and their efficiency for business operations (Kresl & Singh, 1999, 2012).

Transportation

Often transportation, as crucial as it is for an economy, is seen as given and therefore not included as a key issue for city competitiveness in several academic studies. But due to higher community and business expectations and the dispersed geographies of modern cities, efficient and resilient transportation is crucial to attract people and companies and increase internal and external accessibility. (Kresl & Singh, 1999) Roads, rail, sea and air transports are essential to transport goods, people and services and for companies to "get their goods to market in a secure and timely manner" (Porter & Schwab, 2008, p. 4) and influences the choice of location for industrial, commercial and residential areas (Kresl & Ietri, 2015; Harris, 2007). The lack of a well-functioning system is seen as a 'constraining factor on development' and

¹³ For a detailed description of the indicators and measurements please refer to <http://reports.weforum.org/global-competitiveness-index/country-profiles/>

further for city competitiveness (Hickmann & Banister, 2003). Whereas cities with “the most modern and efficient public transport systems are also the most successful at attracting high-skilled workers and the most innovative businesses, lining people to jobs and key services.” (European Investment Bank, 2016). Different types of transportation should not only be accessible but also affordable. Reduced transportation costs can positively affect employment, productivity, and economic growth (Baum and Kurte, 2001; Echenique, 2001; Ryan, 1999). The Travel and Tourism Competitiveness Report 2017¹⁴ and the Global Competitiveness Report 2017, both by the WEF (2017), include transportation in their assessments of countries worldwide. The countries are ranked from one (bad) to seven (good) according to their frequency, punctuality, speed, and price for ground (including buses, subways, taxis, train services) and port infrastructure, as well as air transport infrastructure. (World Economic Forum, 2017b)

Information and Communication Technology

Communication networks (ICT – Information and Communication Technology) are important for residents and for companies to “obtain information on markets and orders, adjust their product designs and product runs, manage materials and inventory, and deliver their goods quickly.” (Rondinelli, et al., 1998, p. 93) Local and national governments should ensure high quality and reduced costs of various communication services, like broadband and telecommunication. Access and usage of ICT is a key factor for the technological readiness of a country (World Economic Forum, 2017). Many countries worldwide are installing next generation access networks¹⁵ (NGN or NGA), as it combines fixed lines and mobile networks for faster access. Friedrich et al. (2009) states that, “Next-generation national broadband networks can significantly improve the way that consumers, businesses, and governments interact, spurring economic growth and productivity.” (Friedrich, et al., 2009, p. 2). Countries in which the government actively participates in establishing NGN infrastructure, through policies and/or large investment, have higher penetration rates. (Friedrich, et al., 2009) The next step is IoT (Internet of Things), a network which connects devices and objects

¹⁴ For a detailed description of the indicators and measurements please refer to <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2017/>

¹⁵ NGN or NGA includes fixed-lines (fibre-based technology) and mobile networks (4th generation networks), which have faster access speed than the traditional networks. (Hätönen, 2011)

such as a coffee machine or cars and allows them to collect and exchange data. It should help people and businesses to improve and manage their lives in a more efficient and smarter way. Nations across the world started implementing IoT networks such as the Netherlands or South Korea. The OECD¹⁶ and The Travel and Tourism Competitiveness Index by the WEF include fixed and mobile penetration as well as subscription rates, which should show the availability throughout the city, and prices for mobile and fixed lines in their assessment of the ICT environment.

Research facilities

Functional linkages and networks between universities, laboratories and other economic institutions can “be essential to [national and international] success” (Kresl & Gappert, 1995). The Global Competitiveness Index by the WEF and the Global Innovation Index¹⁷, a joint co-operation between the Cornell University, INSEAD, and the World Intellectual Property Organization, consider innovation and R&D as a core indicator. Sufficient public and private investment in R&D, a complex of appropriate research facilities, and strong co-operations between research facilities/universities and the industry can push development and innovation of innovative technologies, which in turn shapes the city as a center of innovation and technology. (OECD, 1992) Instead of investing in a broad field of research, the government should focus on “highly localized, technology-related industries and scientific competencies” (Ni & Zheng, 2014, p. 123). Access and proximity to centers of knowledge are important for global competitive enterprises, as they depend on highly trained workforce and researchers, as well as laboratories in the technological R&D sector. Research and science parks are a perfect source, as they combine both, highly skilled human capital and laboratories. Universities, colleges, and consultant organizations are additional sources for innovation by “providing personnel and research capacities”. (Rondinelli, et al., 1998, p. 87) The quality of scientists and engineers can be assessed through the number of national and international research publication in high quality journals. The Nature Index by Springer Nature¹⁸ provides such an annually ranking of scientific output.

¹⁶ For further information please refer to broadband methodology by the OECD <http://www.oecd.org/sti/broadband/broadband-methodology.htm>

¹⁷ For further information please refer to <https://www.globalinnovationindex.org/>.

¹⁸ For further information please refer to <https://www.natureindex.com/>

3.1.3 Economic structure

The aspects of economic structure, which seem to be most significant, are the distribution of companies by size, the role played by foreign-owned companies, and the richness of the complex of companies providing business and financial support services.

Size and ownership of firms

A good mix of different company sizes can contribute to the competitive status of a city. Large companies have always been a source for employment, production, and exports. But a market structure dominated by many large firms, can hinder the development of the economy. In several studies Kresl argues that the real source for employment, production and, to a small amount exports, are the small- and medium-sized enterprises (SME¹⁹). On one side SME can take advantage of niche markets and are able to react faster to changing circumstances and conditions on the market. Some of this SMEs can even become large enterprises. SMEs also foster innovation by interacting with other SMEs in their proximity. On the other side, SME often lack resources and experiences, and are dependent on the existence of healthy large enterprises, as most of them are outsourcing parts of their production to SMEs. (Kresl & Gappert, 1995; Kresl & Singh, 1999, 2012). Another point is the ownership of firms. Different studies prove that foreign-owned companies and FDI are sources for higher firm performance. Both factors tend to bring innovation, new products, job creations, and development in management to new locations. This gives advantages to the city and other firms as they gain access to these elements. Not only foreign-owned, but also state-owned enterprises (SOE), have been key players in economies worldwide from being a source of revenue to control strategic industry sectors. Especially in many Asian countries, such as Malaysia or India, SOEs are still prevalent. The importance of SOEs reflects itself in the Global 500 ranking. An increasing share of the largest companies worldwide consists of SOEs. To prevent unfair advantage over private companies, the government should keep its influence on the administrative level.

¹⁹ SMEs are defined as companies between 20 and 250 employees, with an annual turnover fewer than 50 million euro and/or 43 million euro in annual balance sheet total. (European Commission, 2005)

Financial and business services

This part of the thesis does not evaluate the impact of the financial sector on economic growth but focuses on the structure of and services provided by financial institutions. Hence, the structure of the financial system, bank-based or market-based, is not of relevance. A mix of local and foreign financial institutions varying in size, from small to large, may be best to meet the needs of the economy and businesses. These institutions²⁰ include the banking sector as well as non-banking institutions such as insurance companies and investment institutions. Especially SMEs are dependent on lending from smaller local institutions and banks, as large and foreign-owned banks typically lend to larger businesses. (UNEP, 2015) To be trustworthy and transparent, the financial sector should be regulated by the state through one or more agencies. In the United States several federal and state agencies supervise and regulate the financial sector, whereas in the United Kingdom there is only one agency responsible for the regulation and supervision. Business services provide support from consultant to financial services and legal activities for businesses of all sizes and from all sectors. These services are especially important for SMEs as they are not large enough to provide such services internally. Recently, large companies, which were quite indifferent to such services before, draw on these services too as they are contracting tasks to smaller companies. Cities without “competent and low-cost services sector companies” struggle to attract new companies. (Kresl & Gappert, 1995) Measuring adequacy and quality of business services are difficult. Therefore, we will look at the size and, if data is available, at the composition of the financial and business service industry in Singapore and Seoul.

3.1.4 Urban amenities

Urban amenities can make a city more livable and attractive for people and highly skilled labor forces. Such amenities contain ‘high culture’ like museums or galleries, housing stock, educational institutions, parks and so forth. All of them makes a city more livable. Various researchers also consider natural assets, such as climate or mountains, as a part of amenities. However, as they are outside of the influence of policy makers and the lack of such assets can be counterbalanced by other amenities,

²⁰ Types and roles of institutions can differ among countries.

they are not included in the framework. (Kresl & Gappert, 1995; Zhang, 2010; Florida, 2010) Urban amenities contain a wide range of factors; in this master thesis, we are looking at educational and cultural amenities as well as at the housing stock.

Educational institutions

Quality and access to educational institutions, public and private, are fundamental to every modern economy. It is the key to a respectable job and standard of living for residents, can enhance economic growth, and plays a role in economic promotion. Access to educational institution should be provided for all, including the marginalized and vulnerable. Today, economies are more knowledge and technological driven, which is achieved through quality graduates from universities and other higher education facilities. From primary to tertiary²¹ education; to meet the demands of national and international businesses, students train to be highly skilled in technological fields and to adapt to changing businesses quickly. Therefore, governments should invest in and promote educational institutions, because if enrollment in secondary and tertiary education is low, future skilled labor force will be a shortage. With its high density of universities, Boston is a good example for a working educational system which attracted knowledge-intensive industries from IT to life science. A good mix of educational institutions and a supportive public and private environment are key factors for good education. In the analysis, we are looking at the education in general, and at the quality and number of educational institutions in the city. Data will be derived from the HDI, the Global Competitiveness Report 2016-2017 by the WEF, the Human Capital Index, and international assessment such as PISA and other university rankings.

Cultural institutions

The cultural sector has high economic effects and impacts on the urban environment. Either through generating employment, direct and indirect expenditure, or stimulating creativity and innovation. (van den Borg & Russo, 2005) Culture is defined as a set of activities and services such as museums and galleries, food and drink, sport and performing centers, historical districts, and festivals. All these cultural assets are important to attract top-global talents and creative industries. Talent is attracted by an environment of cultural creativity and innovation, and businesses benefit from a

²¹ As stated by the International Standard Classification of Education (ISCED-97) by the UNESCO ILOSTAT.

proximity of this creative professionals as they are outsourcing their creative and innovation activities. (van den Borg & Russo, 2005; Landry & Wood, 2003; Kern, 2014) Through the promotion of performing arts, especially the San Antonio Symphony, the city of San Antonio, Texas, was able to generate knowledge-class jobs and attribute to the city's economy (Florida, 2015). Busan, South Korea, is sponsoring the international film festival to attract more skilled talent and businesses in the film industry. Kresl & Singh looked at the number of cultural institutions. But as this number has not much relevance in terms of competitiveness, we will be looking at the size and structure of the cultural sector, their integration into and the impact on the urban economy, and the cultural highlights of Singapore and Seoul.

Housing stock

The right to housing, as stated in the UN Habitat II and Habitat III²², is essential for the wellbeing of citizens. Housing, public and private²³, can enhance a city's productivity and competitive performance, as it has impact on the labor market, infrastructure, and businesses (Gibb, et al., 2008). Workers need an affordable and secure place for their families to live. The wrong type of housing, at the wrong place with high prices can lead to a "segregation and spatial concentrations of poverty" (Glossop, 2008, p. 1). Property inflation, created from high housing rents due to a lack of construction activities, is forcing many low- and middle-income households to move to the periphery of the city. Therefore, the government should install a modern housing security system and implement housing policies in consideration to the economic context, as it can improve the overall housing stock and further attract new residents and workers, international students and firms. (Zhang, 2013; Lyons, 2017; Glossop, 2008; Gibb, et al., 2008) In the analysis, we will be looking at the size of the private and public housing sector, and the average prices for housing.

²² United Nation conferences on topics of sustainable urban development.

²³ Private housing includes condominiums, landed property and executive condominiums. Public housing includes property owned and managed by government authorities, non-profit organizations, or by a combination of both.

3.2 Strategic determinants

A strong and effective leadership, a vision where the city should head, and co-operations between public and private actors accompanied by a sound and stable institutional and regulatory environment are strategic core points for competitiveness.

3.2.1 Urban governance

Governance is defined as “the system of values, policies and institutions by which a society manages its economic, political and social affairs through interactions within and among the state, civil society and private sector” (UNDP, 2011, p. 287) and includes a variety of actors from the local and state governance to the private sector and the civil society. The local government plays an important and essential role in city competitiveness. It is a provider for different services important for functioning businesses and a manager for the city and its leadership, has impact on the business environment and on the life of city residents. (Harris, 2007) Through different policies, implemented by the local government, for example, the business environment can improve, which in turn raises the income level of city residents. (Zhang, 2010) To carry out services and thereby strengthen the capacity of urban governance, the national government should give the local government enough autonomy, decentralization of authority and responsibilities. There are several indexes which assess the notion of country governance by using a set of different indicators. The Worldwide Governance Index (WGI) by the World Bank is the most influential one. The Index includes six different dimensions of governance and measured their effectiveness on a score from -2.5 (weak governance) to +2.5 (excellent governance). (The World Bank Group, 2016) *Government effectiveness* measures the efficiency of the government in public service delivery. *Political instability and absence of violence and terrorism* includes the stability of the government and the security of the society. *Voice and accountability* regards the participation by citizens, civil society, and the private sector in public affairs and electoral process, as well as freedom of media and expression. *Regulatory quality* is the efficiency of the government regulation, which means that the government should reduce unnecessary regulatory burdens. *Control of corruption* shows the ability of the government to fight corruption and be open and transparent to the public. (Kaufmann, et al., 2016; Guo & Wenhao, 2012, p. 308) Data is gathered from various sources such as Freedom House and EIU Democracy Index, Corruption Perception Index and so forth.

3.2.2 Urban strategy

By forming and implementing an urban strategic plan, city leaders, in cooperation with and support from all tiers of higher government and non-government agencies as well as citizens, can address constraints, mobilize local resources, implement and change reforms and policies, and drive economic development and competitiveness. (Kresl & Gappert, 1995; The World Bank Group, 2015; Gashi & Watkins, 2015). Urban strategies are unique for each city, and should run over a business cycle rather than an electoral cycle. Strategies can range from promoting cluster development over improving infrastructure to skill development. But the focus should always be on economic development, as with economic growth jobs can be created and budget revenues expanded which are important to improve e.g. infrastructure, housing or other facilities. The World Bank (2015), describes three groups of factors included in a good urban strategy. First, a strong and committed city leader and inclusion of the private and public sector are preconditions for a good strategy. Citizens should be encouraged to participate in local policy decisions. The private sector should be included through public-private co-operations. This topic is separately discussed in chapter 3.2.3. Second, the content of the strategy should include clear priorities and measurable goals/targets with a strong grounding. Third, at the time of implementation, the strategy should have secure funding sources and should be institutionalized. (The World Bank Group, 2015)

3.2.3 Public-private co-operation

To generate and implement projects, not only the local government should be involved but also higher-level governance, the private sector and the non-profit sector. Lately, also university involvement gains more importance in a partnership by contributing knowledge and expertise. All of them are relevant stakeholders, which should be involved from the very beginning of projects by forming a growth coalition and partnership. This should include “public sector agencies and diverse external stakeholder groups, including the private sector and civil society [...]”, who “collaborate in strategic planning and implementation.” (Gashi & Watkins, 2015, p. 8). Van den Berg & Braun states that representatives from each sector need a “partnership culture, in which mutual cooperativeness between the involved public and private actors can flourish.” (Braun & van den Berg, 1999, p. 996). Public-private co-operations can be achieved through structured dialogues and partnerships between all involved

stakeholders. To create such collaborations and structure interactions between public and private actors, the implementation of a Public-Private Partnership (PPP) is reasonable. PPP's are long-term partnerships and should lead to a solution where everyone benefits. Such partnerships are playing a crucial role in the growth and competitiveness of cities worldwide. In a partnership investment, responsibility and reward is shared by all stakeholders, whereas the risk is allocated to the party best able to manage and absorb them (Metaxas, 2010). There are various reasons for establishing a PPP, beginning, in most cities, with the infrastructure sector, but the scope is soon extended to other sectors as well (Wojewnik-Filipkowska, 2012; Metaxas, 2010). The government should encourage the implementation of PPPs through incentives and policies. Such clear policies, legal framework and regulations need to be established to form partnerships into a working and coordinated structure. (World Economic Forum, 2017a)

3.2.4 Institutional and regulatory environment

The city government should establish sound and stable institutional and regulatory environments, to encourage national and international investment and ease the process of doing business.

Institutional environment

The decision to start a business is strongly influenced by the country's effective public and private institutional environment, as it defines the norms and framework for doing business, creating wealth, interact, and decreases uncertainty among citizens and businesses. Institutions cannot only be formal – rules, laws – but also informal – norms, behavior. A strong institutional environment and a healthy relationship between government and businesses should be a priority in any economy, as it has impact on productivity. Businesses and citizens only invest and engage in an economy if they can trust the institutions to secure basic levels of security and enforce rights. (Acemoglu, et al., 2001; World Economic Forum, 2017; Rodrik, et al., 2002) According to the Global Competitiveness Report, public institutions include *property rights, ethics and corruption, undue influence, public-sector performance, and security*. Private institutions include *corporate ethics and accountability*. (World Economic Forum, 2017) Property rights are a fundamental legal and economic institution, as they contribute to economic growth by protecting intellectual and physical rights. The protection of

citizens and businesses against violence, organized crime, and terrorism is a prerequisite in any economy, as a lack of security will drive investment away (Detotto & Otranto, 2010; Pinotti, 2014). The quality of institutions is determined by undue influence, ethic and absent of corruption, and the public-sector performance. The misuse of public power, such as irregular payments and bribes, diminishes economic growth as investors and businesses do not trust in the institutional environment. An independence from the judicial system can prevent the misuse of power. Ethics and corruption, public-sector performance, and security are included in urban governance under chapter 3.2.1. and therefore, will not be included in this indicator. Public-sector performance includes efficient administrative services and a stable policy environment (World Economic Forum, 2017). Jong-A-Pin (2009), indicates a positive correlation between policy stability and productivity as uncertainties concerning the future decreases (Jong-A-Pin, 2009). Efficient administrative services, such as obtaining permits, can increase investment and firms' efficiency (World Economic Forum, 2017). Corporate ethics and accountability can further improve trust and productivity if businesses are transparent and abide by strong ethical practices.

Regulatory environment

The city government should establish sound and stable regulatory environments, to encourage national and international investment and ease the process of doing business. Both, an excessive or loose regulatory environment, may have negative effects on the ease of doing business. Excessive regulations can make it exceedingly costly for a firm to comply, constrain the flexibility and responsiveness of firms and be a burden to market participants (Kresl & Gappert, 1995). Whereas a loose regulatory framework can increase the insecurity of businesses and reduce investment. The aim is to enhance or constrain business activities by implementing simple and transparent business regulations. Basic regulations should include efficient and simple *taxation*, lower *entry barriers*, ease of *registering property and licenses*, and ease of *employing workers* as well as an *openness to trade*. Overall the policies should be simple for producers, consumers, and citizens. (Zhang, 2010; World Economic Forum, 2014; Razeen, 2014) Data for the analysis will be derived from different business indexes such as The World Bank Doing Business Index and The Travel and Tourism Competitiveness Index.

A low *tax strategy* is a widespread method for attracting domestic and foreign businesses. But this comes at the cost of reduced capacities to improve other areas of the economy such as infrastructure. A more successful method is to introduce financial and tax incentives such as municipal revenue bond financing, government loans or tax exemptions. *International trade* has been an important source for economic growth for a city because it generates employment and increases productivity. The degree of *openness to trade* can be reflected by low import tariffs and restrictions, bilateral and international trade agreements, policies for certain activities, programs, laws, and trade and investment liberalization. (OECD, 2002) *Regulations and barriers for business entry and operations* widely differ among nations. The regulations rank from company registration, registering licenses and properties to permits for construction and occupation, which are time- and cost-consuming (Morisset & Neso, 2002; Sun, 2002). The last basic regulation, *employing workers*, not only includes the hiring process, redundancy rules and costs, and working hours but also job quality aspects such as unemployment protection and maternity leave, as measured by the Doing Business Index. (The World Bank, 2017) For a more detailed description of each regulation please refer to The World Bank Doing Business Index²⁴ and The Travel and Tourism Competitiveness Index²⁵.

²⁴ www.doingbusiness.org

²⁵ <http://reports.weforum.org/travel-and-tourism-competitiveness-report-2017/country-profiles/#economy=SGP>

4. Case Study

The Republic of Singapore, a multicultural and -multiracial city-state, has a total population²⁶ of over 5 million residents and a population density of 7,796 per sq.km. (World Economic Forum, 2016). Singapore has a land area of 721.5 sq.km. The per capita GDP of Singapore as of 2017 was approximately 57,957 US \$ or 76,318 Singapore Dollar. (Statistic Singapore, 2017) The Singapore Dollar is the official currency. Singapore belongs to the high-income countries. The city-state consists of over 60 islands. The city itself is situated on and covers the main island Pulau Ujong at the southern tip of the peninsular Malaysia and consists of 28 districts. The main metropolitan region of Singapore has five regions surrounding the Central Area with a population of 939,890. As data and information is scarce on the main metropolitan area, the analysis includes the city-state in general. Since its independence declaration from the Federation of Malaysia in 1965, the Republic of Singapore developed from a country with a high unemployment rate, small domestic markets, and slums into a high-income economy and a member of several international organization such as ASEAN, ILO, WTO or WHO. Singapore is a parliamentary republic with president Tan Keng Yam Tony and prime minister Lee Hsien Loong as the heads of the state and government. (World Economic Forum, 2016; Statistic Singapore, 2016) The majority of Singapore's population is Chinese followed by Malays and Indians with four official languages (Mandarin, English, Malay, Tamil) and Buddhism as the main religion.

Seoul, also known as Seoul Special City, is the capital and largest city of South Korea. The metropolitan area of Seoul with its satellite cities, cities surrounding Seoul and are a part of the metropolitan area, has over 25 million residents. Seoul Special City with its 25 districts (gu) has over 10 million residents (regardless of citizenship and residency status) and a population density of 17,000 people per sq.km. So, Seoul has a higher density as New York or Los Angeles. The recent years have shown a short decline in population size, as more residents moved to the satellite cities around Seoul. With Seoul's per capita GDP of 31,2564 US \$ or 35.003 won, the official currency, Korea belongs to the high-income countries. (Seoul Metropolitan Government, 2017a)

²⁶ The total population comprises residents and non-residents including foreigners who are working studying or living in the city without permanent residence.

The capital lies in the northwest of the peninsula surrounded by the Han river and mountains. The city itself consists of 25 districts (gu) with Korean as the main language. The population is very homogenous with the majority being Korean followed by smaller groups of Japanese and Chinese people. Christianity and Buddhism are the biggest religions in Seoul. With the economic rise and growth of South Korea over the last 50 years since its partition from the northern part in 1948, the country is now one of the leading export nations and a dynamic knowledge economy. Most of the country's economic activity takes place in Seoul. The city is Korea's capital since the Joseong period and was named Seoul after the liberation from the Japanese occupation. Korea is a republic with president Moon Jae-in, elected after the impeachment of Park Geun-hye, and Lee Nak-Yeon as the prime minister. At the beginning of 2017, the former president Park Geun-hye was removed from the office due to a political scandal in 2016. South Korea is a member of many international organizations like ASEAN or WTO.

4.1 Economic determinants

4.1.1 Factors of production

Human Capital

In 2017, Singapore's total working-age population (14-65 years) reached 3,657 million. The resident working-age and economically active population accounts for 2,269 million with a labor force participation rate²⁷ of 67.7%. (Statistic Singapore, 2017). A literacy rate, of residents aged 15 years and older, of 97.2% and a gross tertiary enrolment ratio in 2015 of 89.5% show that Singapore has a well-educated future labor force (Government of Singapore, 2017b). In 2016, over 70% of the resident labor force had at least a high school education and 17.9% had secondary education as their highest level of attainment. Singapore ranks 1st in the quantity of education in the Global Competitiveness Index by the WEF (World Economic Forum, 2017). 53.1% had a university degree or a professional qualification and/or diploma, which indicates a highly tertiary-educated labor force in contrast to a decade ago as most of the labor force had only a secondary or below-secondary education. Most degree holders came from Business & Administration, Engineering Sciences followed by Humanities and Information Technology. Accordingly, Singapore also registered an increase in the

²⁷ Definition according to the International Labour Organization (ILO) 2016

Case Study

creative class – professionals, managers, executives, and technicians (PMETs). PMETs make up 51% of the occupational distribution of the employed residents and work in most industries from Information & Technology to professional services. (Singapore Government, 2016; Ministry of Manpower, 2016) Despite a highly educated labour force, there was a lack of skilled talent with experiences in the demand-supply labour market especially in engineering or finance (MAS, 2017), which also shows on the ranking in the Human Capital Index. Singapore ranks 13th, out of 130 countries, but only 20th in terms of ease of finding skilled employees. To overcome the gap of demand and supply, the government promotes skill upgrading and lifelong learning to foster future skilled talent and implements special programs for attracting talent. The participation rate in working-related trainings in mid-2016 was 42%. This was an all-time high in the last ten years. Especially in industries which rely on skilled-labor force, such as finance & insurance or personal services, the participation rate was higher than in industries which rely on lower-skilled labor force. (Ministry of Manpower, 2016) In the latest Global Talent Competitiveness Index (GTCI) 2017, Singapore ranks 2nd, behind Switzerland, and 1st in the regional ranking (INSEAD, 2017).

Seoul has an advantage in human capital; the sheer size of its population with over 10 million people. In 2016, the total working-age population (14-65 years) was 8,526 million with a participation rate of 62.8%. But Korea has also one of the fastest aging workforces worldwide and youth unemployment on the rise. With a high number of people over 65 the city faces high welfare costs in the future. The establishment of several centers and working programs for elderly people should help decrease these costs. Furthermore, the government actively encourages women to join the workforce. The literacy rate of Korea rose from only 22% in 1945 to 97.9% in 2014. Seoul has no official data on education attainment status for the working-age population. But data is available for the economically active population which accounts for 5,124 million. In 2017, nearly 90% had at least a high school education, and 34.45% secondary education as their highest level of education. With 54.61%, Seoul had a slightly higher percentage of university degrees and/or diploma holders as Singapore. (KOSIS, 2016; Seoul Metropolitan Government, 2017) Although 80% of students enroll in tertiary education, only a smaller percentage complete their tertiary education due to high education fees and the increasing hiring rate for high-school graduates among banks and multinational corporations. But overall education attainment is higher in Seoul than

in Singapore, which is due to the heavy public and private investment in education and the strong education culture. In the Global Competitiveness report Korea ranks 1st in the quantity of education (World Economic Forum, 2017). Most degree holders came from Business & Administration, Engineering Sciences followed by Humanities and Natural Sciences (KESS, 2015). Slightly over half of the population in Seoul has a high proficiency in English.

In 2013, South Korea's former president Park Geun-hye announced the plan to focus on entrepreneurship and the formation of a creative class. In 2010 a rise in this class could already be observed. PMTEs rose in scientific and technical services, business services, as well as in health and social welfare services (KOSIS, 2017). The creative class accounts for over 29% of Seoul's workforce, which is relatively low compared to Singapore. South Korea's government enabled the Vocational Training Promotion Act in 2004 to foster life-long learning and skill-upgrading. Data of the participation rate in working-related trainings is not available for South Korea or Seoul. On the Human Capital Index, South Korea ranks 32nd with a score of 76.89 which is far behind Singapore. One of the reasons are the lower participation rate and the difficulty of finding skilled employees. The number of tertiary education graduates is higher than in previous years, but these graduates are not appropriately trained for industrial needs. In the latest Global Talent Competitiveness Index (GTCI) 2017, Korea ranks 29nd, and 6th in the regional ranking (INSEAD, 2017).

Industrial sites and office spaces

After Singapore's weak office market in 2016, signs of stabilization could be observed in 2017. The average office vacancy rate, in the last quarter of 2017, was 12.6% (URA, 2017). In the last years, businesses started to relocate to low-rental locations outside of the CBD (Central Business District). In 2016, 47.2% of the office stock was situated outside of the CBD and city fringes, followed by 44.3% in the CBD. (Knight Frank LLP, 2017). Due to a new supply of office spaces since 2014, with a sizable proportion in the CBD, and the following decline in average rent especially in top grade offices (A and A+ offices), businesses started to move back into the city. But due to the increasing leasing activities, the new stock of office spaces was apace occupied or pre-committed, e.g. Marina One had an occupancy rate of 90% and a pre-commitment rate of 60% for grade A offices in the 1Q 2017. In the oncoming years, major Premium and Grade A buildings will be completed, such as the Frasers Tower or Park Mall. In the last years,

Case Study

Singapore saw a decline in rental growth of 7.7% which ranks the city at place 118 out of 125 cities in the Global Office Index by JLL, a Fortune 500 property and facility management service firm (JLL, 2017). Average rentals in the CBD start from 60 US\$ for the smallest office up to 96 US\$ per sqm (square meter) for bigger ones. Offices in the fringe and suburban areas are a cheaper with around 44 to 60 US\$ per sqm. Co-working centers and technology firms take up a great deal of the offices in the CBD. Co-working spaces grow popular especially among entrepreneurs, freelancers, and start-ups which seek inexpensive offices for short-term usage. Singapore has 55 co-working operators such as The Work Project or CapitaLand which offer cost-effective co-working spaces. (Knight Frank, 2017, 2015)

Rentals and prices for all industrial land in all planning regions and land-use zoning declined over the last years due to weak market conditions in the manufacturing sector. (JTC, 2017) To boost industrial activities, the government initiated several measures. In 2018 JTC, a state-owned real estate agency, will take over all industrial land and properties from the HDB (Housing & Development Board), which will make it easier for businesses to buy or rent land and properties. Another initiative is the current 60:40²⁸ rule of the URA (Urban Redevelopment Authority), which gives businesses the opportunity to co-locate industrial and R&D activities with headquarters at a moderate price and rent (Mapletree, 2017). But this rule limits the access to land for firms which need more than 40% for non-industrial activities. Hence, the government introduced a more flexible land use strategy for Business1 – light industry – zoning areas, starting in 2018. (URA, 2017) Despite the current running initiatives, the vacancy rate remains relative high. With additional 4,3 million sqm of planned industrial land until 2021, the manufacturing sector needs to grow significant. The vacancy rate in multiple-user and single-user factory saw a rise over the last years to 13% and 9.4% respectively. Business Parks and warehouses experienced an up-and-down in vacancy rate and are now at 16% and 10.1% respectively. With 4,9 million sq. m of vacant spaces for all industrial spaces²⁹, this is an average vacancy rate of 10%. With the upcoming supply of land, rentals and prices will further decline, which opens a window of opportunity to attain cost-effective industrial land. (JTC, 2017)

²⁸ 60% should be used for industrial activity, 40% as offices or common facilities.

²⁹ Including factory spaces, such as multiple-user and single user factories, and business parks; and warehouse spaces (JTC, 2017)

Case Study

The 4Q 2016 marked the end of a 'construction boom' in Seoul. The commercial real estate market consists of 86.7% offices and the remaining 13.3% are retail spaces. The prime office market has three core areas: the CBD with 40 – 45% of all prime office buildings³⁰, the Gangnam Business District (GBD), and the Yeouido Business District (YBD). Both, the CBD and GBD, share a high percentage of foreign firms in Grade A and B offices with 24% and 31% respectively, whereas the YBD has a share of 15%. (Knight Frank LLP, 2017) The Financial and insurance sector followed by the manufacturing sector takes up half of the office spaces in YBD and CBD. In the GBD, the manufacturing sector is more present followed by the financial and insurance sector (CBRE, 2017). Seoul has 58 of all nationwide 72 Prime Office Buildings (KAB, 2017). The Grade A office vacancy rate in 2017 was 10.8%, but an additional supply of 97.800 sqm. of new office spaces in the three districts until the end of 2017, a future lack of tenants, and the mild leasing environment will increase the rate. (Savills, 2017; KAB, 2017) Prices for Grade A offices are between 18 and 26 US\$ per sq. m/month. The relocation of large conglomerates such as Samsung Fire & Marine Insurance Co., which relocated from CBD to GBD in the beginning of 2017, also influences the vacancy rate. The outcome of this relocation was a drop of the vacancy rate in the GDB by 1% to 7.9%. This demonstrates the influence of relocating large companies on the office market. It is expected that other large conglomerates will relocate throughout 2017, as constructions of new major buildings, such as the Lotte World Tower, will be completed or are in the last phase of construction (Colliers International, 2017) With the transfer of several companies, like SK Telecom and SK Gas, the vacancy rate of the CBD increased to 13.9%. The vacancy rates in the GBD and YBD, at 5.8% and 10.9% respectively, will remain stable (KAB, 2017; JLL, 2017). Office spaces are scarce in the GBD with an increasing number in co-working tenants. Both, CBD and GBD, saw a slight increase in rentals of 1.2%, whereas the YBD had only a 0.1% increase. At rank 113th in the Global Office Index, Seoul saw a lower overall rental decline of 3.5% over the last years. Rentals may increase as less Grade A office buildings are planned for the next two years. Consequently, the demand for Grade A offices, with a tendency toward co-working spaces over traditional ones, will exceed the supply. (JLL, 2017) Seoul has only a few co-working spaces, which is due to the still conservative mentality and trend towards classic offices. With the establishment

³⁰ Office buildings with more than 33,000 sqm. or higher than 21 levels.

and boost of new business districts, such as Pangyo Techno Valley, Songdo International Business District, or Sangam Digital Media City, SMEs start to move away from the classic business districts. These new emerging districts not only offer lower rentals and land prices, but are also eligible for government incentives, which are particularly essential for start-ups. (Knight Frank LLP, 2017) The government plans to construct a new CBD in the northeastern area of the city, where empty land is available (Seoul Metropolitan Government, 2017).

Seoul has a total of 19 million sqm of designated industrial zones and 25 million sqm of commercial zones. Free industrial land and the possibility of a new supply is almost non-existent. The usage of available semi-industrial areas for other purposes such as housing further diminishes free industrial land. There are several industrial complexes throughout Seoul, such as the Seoul Digital Complex, Onsu Industrial Complex, and the Magok General Industrial Complex. Companies moving to industrial complexes benefit from different incentives such as local and national tax supports with a tax reduction or financial support. (Seoul Metropolitan Government, 2017a) Concurrent with the decline in office rentals, rentals in the industrial market declined and sellers outnumber buyers. Further information on industrial land in Seoul could not be assessed.

Access to venture capital

Singapore has made many attempts to become a start-up hub in Asia. Sources for VC (venture capital) rank from government funds to venture capital firms. VC companies in Singapore tend to invest in later rather than in early-stage start-ups, which makes it difficult for start-ups in their seed and early stage to obtain VC. To overcome this tendency, the government introduced special programs, funds, and incentives to support start-ups such as the Technopreneurship Investment Fund (TIF), the Technology Incubation Scheme (TIS), or the Early Stage Venture Fund. Typical for Singapore are co-investment schemes; VC companies collaborate with other funds or government linked organizations. In 2017, the Minister of State for Trade and Industry announced that the government will establish an umbrella company, the Startup SG program, to combine all start-up schemes under one program. Singapore offers various exit strategies from trade sales over secondary buyouts to IPO's. Start-ups prefer M&A (merger and acquisition) over an IPO (Initial Public Offering). New partnerships formed between the Singapore Exchange market (SGX) and other

technological authorities should help start-ups in their exit strategies by fostering IPOs, strengthen Singapore's position as a technology hub, and support SME's and start-up's access to funds. A new start-up stock exchange market (SSX) may further help start-ups in raising capital. If the implementation of the new market has a negative or positive effect on the existing VC sector remains uncertain for now. (Cheok, 2017)

The government eased the strict regulations for VC managers and VC firms which in return give start-ups additional funding options. Start-ups in the financial technology (fintech), online marketplaces, and e-commerce sector have the highest potential to attract VC. In 2017, VC investment increased despite the decline in number of closed deals and volume. This indicates that more capital went to less companies. (Hawksford, 2017; Lim, et al., 2017) Singapore ranks 3rd in the Global Competitiveness Index by the WEF in terms VC availability. Until the end of 2017 Singapore closed 112 deals with a total investment of 1.2 billion US\$ and recorded 8 exits (KPMG , 2018).

The lack of a suitable startup culture and the Chaebol³¹ dominated Korean market, makes it difficult for SMEs to not only attract talent but also gain access to finance, especially in early stage funding. Along with other issues, these are reasons many Koreans are afraid to start their own business. In 2017, the entrepreneurial attitudes improved, and the nation saw more opportunity start-ups. Through promoting entrepreneurship and innovation, a plan introduced in 2013 under the Creative Economy Plan, the government actively supports the start-up industry. From government over pension to matching funds, sources for VC in Korea are diverse. But the Korean VC market is still highly dependent on public government funding. Additional to financial support and tax incentives, the national government offers programs for start-ups such as K-Startup, which invests in international technology, finance, and gaming start-ups (K-Startup, 2017). Government-sponsored programs have strict requirements such as mandatory attendance at workshops and submitting monthly financial reports. Additionally, start-ups must pass technological examinations by the Korea Technology Finance Corporation or the Small and Medium Business Corporation (Choi, 2016). There are over 30,000 venture firms in the country, but only a smaller number passed the requirements. Seoul hosts a growing number of venture events for connecting start-ups with partners and investors. With ongoing aggressive

³¹ Conglomerates of different companies around one parent company such as Samsung.

government policies towards the startup ecosystem, the nation may be able to turn the system into that of advanced countries.

Even though 47.1% of companies in their early-stages (three years or less since formation) received VC, only 31.1% of all investment went to this stage. The highest amount of investment went to a smaller number of later stage companies (seven years or more since formation), which creates a so called “Death Valley” for early stage start-ups. This shows that VC companies tend to invest more in established start-ups preparing for their IPO through one of the four security exchange markets. (KVCA, 2016) Furthermore, the VC supply for start-ups is insufficient compared to the nation’s market size. The government is the biggest investor in start-ups through support funds and general financing. Strict requirements for KOSDAQ and KONEX³² make the listing for SMEs and start-ups difficult. The lack of sufficient exit strategies and M&A markets further complicate the access to VC and creates high investment risks for investees. Many early-stage start-ups operate in the K-OTC (Korea Over-The-Counter) and K-OTC BB (Bulletin Board) market which offer no investor protection. The government responded by reducing the listing requirements for KOSDAQ and KONEX such as time of operation, which was 12.2 years on average until 2015, and expanded investment protection. (OECD, 2016a) Korea ranks 76th in the Global Competitiveness Index by the WEF in terms of availability of venture capital (World Economic Forum, 2017).

4.1.2 Infrastructure

Transportation

Singapore has a well-maintained transport system, which ranks the city 2nd in the Global Competitiveness Index. The government will spend over 14billion US\$ on public transport in the oncoming years on public transportation. SBS Transit and SMRT Trains operate and own the transport system, under tight government regulations. Roads in Singapore take up 12% of the land with 9.310 km of paved roads (Statistic Singapore, 2016). Even though available land is scarce, the government is carrying out projects to strategically improve connectivity, like the 2013 completed Marina Coastal Expressway. (Government of Singapore, 2017a) As of 2016, the city registered over 750,000 cars, motorcycles, and other vehicles (Statistic Singapore, 2016). To reduce traffic and congestions, the government is actively promoting public

³² KOSDAQ and KONEX were established to support venture and SME companies in financing and raising capital.

transport, making ownership of a car a luxury through restrictive policies, and increase road usage charges. Singapore has currently five MRT lines, which connect the city from north-south and from east-west. With a share of over 60%, buses are the most popular transport method followed by MRT (Mass Rapid Transit) and LRT (Light Rapid Transit). Under the Land Transport Master Plan 2013, the government wants to achieve a higher share of public transport in peak hours, reduce journey time, and improve connectivity until 2030. Five planned MRT lines, more than 100 new trains and 800 buses should increase the density of public transport and connectivity throughout the city. Since implementation of the plan, the peak hour public transport mode share rose to 75% in 2015 from 64% in 2013 with over 1million passengers in peak AM times. Because of the island wide Barrier Free Accessibility Program in 2011, over 85% of all MRT stations have at least one barrier-free route and more than half of the buses are wheelchair-accessible. All forms of public transport operate on a single distance-based fare structure operated by the Public Transport Council (PTC). The government also provides direct fare subsidies to lower-wage workers and persons with disabilities since 2014. With the new Integrated Payment System, the Symphony for e-payment, credit cards can be used to pay transit and non-transit payments such as parking or road fares. (Government of Singapore, 2017a)

The government has several plans in action to improve and strengthen the competitiveness of its air and sea hubs, from advanced technology, over skilled workforce in the aviation and maritime sector to innovative design (Sng, 2016). Changi airport, situated at the east of the city, ranks 1st in the World's Top 100 Airports Ranking 2017³³ the fourth year in a row. The airport has agreements with 130 states through the ASA (Air Services Agreement) and is a member of the MALIAT³⁴. More than 100 airlines servicing 400 cities worldwide and 45 cities within South East Asia, with 7,000 flights every week and over 60 million passengers in 2017, show that Singapore's air transport is competitive. (Changi Airport, 2017) Until 2020, the airport commences operations of new terminals, which will broaden Singapore's airport capacity by more than 40% (Ministry of Transport, 2017). Changi airport is not only a passenger but also a major cargo airport with over 2,13 million cargo tonnages in 2017 (Statistic

³³ Skytrax awards airports around the world in a yearly survey based on passenger reviews.

³⁴ Multilateral Agreement on the Liberalization of International Air Transportation is an Open Skies Agreement for international air transport.

Case Study

Singapore, 2017). The cargo airport is home to major express players (e.g. DHL, FedEx...), includes a Free Trade Zone and has several cargo agent buildings.

Singapore's geographical location is perfect for sea transport. The maritime sector contributes 7% to the city's GDP and is a major employment sector. The port of Singapore, which acts as a transship port, handles 5% of all containers worldwide with over 590,000 tons of cargo, 138,000 vessels, and a container throughput of over 30 million TEUs³⁵ in 2016 (Statistic Singapore, 2016). The port ranks 2nd in the Top 100 Container Ports Ranking 2017³⁶ behind Shanghai with connections to 600 ports in 120 countries. With the end of the expansion project of Pasir Panjang port, Singapore will be able to handle over 50 million TEU annually. (Lloyd's List, 2017) To remain a leading maritime hub, the responsible authority in co-operation with important stakeholders, initiated the Sea Transport Industry Transformation project. The goals are innovation, productivity enhancement, and skill-upgrading of maritime workers.

Seoul has one of the most comprehensive and user-friendly public transport systems in the world servicing over 8 million people every day and ranks 10th in the Global Competitiveness Report and 27th in the Travel and Tourism ranking. Whereas buses are the main transport mode in Singapore, Koreans main choice of transport is the subway, at 39.3%, which positions it as the most widely used rapid rail transit system in the world with 286km of rail and 307 stations which even stretches to the nearby metropolitans of Suwon and Incheon. Currently over 1,8 million people use the subway in volume peak times, which will further increase by 7% until 2030. The subway system consists of nine lines connecting all districts and six additional lines connecting cities in the outskirt of Seoul as well as the International Airport Incheon and Gimpo Airport. The lines are operated by four different companies with line nine entirely operated by a private operator. Out of 307 stations only 82 stations have a wheelchair lift, 299 an elevator, and 267 an escalator, which makes accessing the subway difficult for elderly and handicapped people. The government has a current investment plan to improve the network density and connectivity of its high-tech subway system by expanding the existing lines. As the focus is on the density, the capacity will be an issue in the future. By promoting a shift to the less utilized bus networks with a 26.5% user share, the capacity problem may decrease. (Credo Business, 2014) Seoul has three types of bus

³⁵ Twenty-foot Equivalent Unit is a measurement for container transportation capacity.

³⁶ For further information on the index please refer to lloydslist.maritimeintelligence.informa.com

Case Study

routes – Ilban, Jwaseok, Maeul – and five different colored bus types which run under a semi-public bus system. The system combines public management by the Seoul government or public enterprises with private operators. Trains and Express buses, starting from different stations inside the city, connects Seoul with major cities across the nation such as Busan or Daejeon. Fares are calculated by the Integrated Distance System. You pay for the distance without additional costs for transfers and type of transportation. Residents can purchase T-Money cards, a reloadable metro-pass including buses, taxis, and subways. There are also other methods of payment such as credit card, Cashbee or Korail Membershipcards. Elderly benefit from “free rides for senior citizens” which also includes permanent residency visa holders aged over 65. (Seoul Metropolitan Government, 2017)

Seoul has well-paved roads and 53 exclusive bus lanes throughout the city. In 2017, there were over 3 million registered vehicles, private cars are the majority followed by commercial and official usage (KOSIS, 2017). The city also has several types of taxis, from regular and deluxe to taxis especially for tourists where the driver either speaks English, Japanese, or Chinese. To counteract the high traffic and increasing number of car ownership, the city government introduced different policies, such as congestion fees, car sharing, and the no-driving day projects.

Incheon Airport, 50km from Seoul and situated on an island west of Incheon³⁷, is one of the busiest airports and the most remote one in the world. The airport can be reached in an hour with the Airport Express line from Seoul Station and hosts a culture museum, a culture gallery, and other traditional culture experiences for passengers. The processing capacity of the airport accounts for 6,400 people per hour (Seoul Metropolitan Government, 2017). The airport ranks 3rd in the World's Top 100 Airports Ranking 2017 and hosts over 40 airlines and services over 152 cities worldwide. The cargo terminal has an annual cargo processing capacity of 4.5 million tons. National flights operate from Gimpo Airport, which lies between Incheon and Seoul. International flights to Tokyo and Shanghai are under operation. (Seoul Metropolitan Government, 2017) Seoul has no direct water access. The next port lies in Incheon with good transport connections to Seoul. The Port ranks 58th in the Top 100 Container Ports Ranking and works as a container port as well as a passenger port for

³⁷ Incheon is a port and industry city situated at the west coast of Korea, 28km from Seoul.

international and national travel. In 2016, Incheon port had a container throughput of over 2 million TEUs in 2015 (Lloyd's List, 2017).

Information and Communication Technology

Singapore has positioned itself as an information and technology hub through its proactive strategy and government's active role in e-government. The country ranks 18th in the IDI (ICT Development Index) 2017 with a score of 7.85 out of 10, two ranks up since 2016. In the indexes' sub-categories Singapore ranks 12th in access, 24th in use, and 37th in skills. Singapore has one of the world's fastest mobile and broadband internet speed with over 30 Mbit/s. Over 82.1% of the population has access to and is using the internet. The internet penetration rate is 81.2% due to affordable fixed- and mobile-broadband services. (ITU, 2017) The Telecommunications Act forms the legal framework; overseen by the Info-communications Media Development Authority of Singapore. In 2015, the government established the Infocomm Media 2025 industry development plan with the three main goals "[...] capitalize on data, advanced communications and computational technologies; [...] nurture an infocomm media ecosystem that encourages risk-taking and continues experimentation; and [...] connect people through infocomm media." (ITU, 2017 p.168). Singapore's mobile network coverage is 100% with a total mobile subscription of over 8 million (IMDA, 2018). There are four mobile operators - SingTel, Starhub, M1, and the Australian firm TPG Telecom. Singapore had a mobile penetration rate of 150.8% in 2017, and a wireless broadband penetration rate of 206.7% via 3G, 4G/LTE, and Wi-Fi hotspots. (IMDA, 2018) All MRT stations offer free Wi-Fi, which is why most citizens access the internet over their mobile phone. Singapore's government has shares in all telecom providers through its state agency Temasek. M1 and SingTel are partially privatized. The government has established various e-platforms for citizens and businesses to participate and obtain information under the Smart Nation policy. The CorpPass platform should help businesses and other institutions to access services provided by the government. MyInfo is a platform to help citizens with different transactions such as application for flats or opening a bank account.

The e-commerce sector is growing. Singaporeans are among the highest spenders in Asia, with Blogshops as the most popular shopping sites. The trend toward business-to-consumer transactions via the internet makes it an interesting market for online business. E-commerce is not only growing in the domestic market but also

across borders. The government wants to expand the market by 11.2% in the next four years. In 2017 Singapore ranks 18th in business-to-consumer e-commerce Index by the UNCTAD (UNCTAD, 2017). Most businesses are quickly adopting cloud-based technology such as Software-as-a Service, but SMEs still shy away from investing in ICT expenditures. Through different incentives and programs/trainings, such as the SMEs Go Digital program, the government wants businesses to be more open towards ICT. The Infocomm Media Development Authority, in co-operation with telecom providers and banks, actively help SMEs to easily access and finance technological upgrades. Under the Smart Nation policy, the government is actively supporting IoT (Internet of Things) networks and solutions. Singapore's mobile operators are working on their own IoT networks. The problem is that each separate network operates independently, at different standards, and are not interoperable.

Korea ranks second in the IDI with a score of 8.85 out of ten, behind Iceland, one place down since 2016. In the subcategories the country ranks 7th in access, 4th in use, and 2nd in skills. In the Asia Pacific region, Korea could keep its 1st place from 2016. (ITU, 2017). Seoul has affordable fixed- and mobile-broadband prices for high-speed connections over 30 Mbit/s. In 2016, Korea had a mobile phone ownership of 88%, and a mobile penetration rate of 77.7%. 75% of Korean households had a computer with an internet coverage rate of 98.8%. In 2016, 89.9% of residents aged between 16 and 74 used the internet either on a computer or a mobile phone (ITU, 2017). In the last years, more elderly people started to use the internet, which pushed the internet penetration rate to 89%. Virtually anywhere in Seoul, major internet hotspots offer cheap wireless internet connections be it in the subway or in public parks with an internet usage rate of over 86% for Seoul. (ITU, 2016; KISA, 2015) In the next years, the metropolitan in cooperation with the central government, will invest over 374 million US\$ to install free Wi-Fi in every public place throughout the city. (ITU, 2017) With the Olympic Winter Games 2018, Korea presented its newest technology 5G. Visitors can easily rent a mobile phone from one of the three mobile operators – KT, SKT, and LG U+, access the internet through one of the free Wi-Fi hotspots in cafés or buy a so called 'egg', a portable router. SKT holds the largest market share, followed by KT and LG U+. Despite the government announcement in 2010 to add a fourth mobile operator, none has passed the requirements as to date. To push competition among the existing operators and lower prices for consumers, the Mobile Virtual Network

Operator (MVNO) bill was approved by the government in 2009. New MVNOs can rent existing networks from KT, SKT, or LG U+ and reduce their costs for establishing new lines and marketing. Through this bill, the government hopes to attract more new operators.

The ICT sector is overseen by the Ministry of Science and ICT and regulated by the Telecommunications Business Act. A national governmental plan, released in 2016, should prepare the country for the fourth industrial revolution³⁸. One goal under the creative economy plan “Korean Creative Economy Execution Strategies”, is to improve the ICT industry and increase the share of SMEs using ICT for their businesses (ITU, 2017). 99.6% of enterprises has access to the internet either through fixed or mobile connections but only a small percentage uses cloud computing services. But as cloud storage is one of the next steps in ICT innovation, the government actively supports the growing domestic cloud market. The Cloud Computing Act, established in 2015, supports and encourages businesses to adopt cloud usage. Through incentives for domestic businesses adopting or offering cloud storages, the government gives homegrown companies an unfair advantage over international competitors.

E-government platforms, to interact with public authorities, are mostly used by large companies. (OECD, 2017) The country ranks 5th in the ICT use for business-to-consumer (B2C) transactions, which is below OECD average in the number of e-commerce participating enterprises, but higher in B2C e-commerce than any other Asian country (Japan 8th, Hong Kong 16th) (UNCTAD, 2017). The manufacturing sector, followed by wholesale & retail trade and construction are the main industries which use business-to-business commerce (KOSIS, 2016). Korea is the 3rd biggest e-commerce market in Asia (behind China and Japan), with a growing market of 20.5% y-o-y in 2016 and a penetration rate of 72%. Retail e-commerce sales in 2016 accounted for 19.12 billion US\$. (Statista, 2017) More than half of the internet users shop online and/or use internet banking with a growing number in mobile shopping. A heavily advanced IT infrastructure, high penetration rate and internet speed connection will further expand the e-commerce sector. Due to the high mobile ownership and penetration rate, m-commerce is growing. It already contributes to over half of total business-to-consumer commercial sales.

³⁸ The fourth Industrial Revolution is a digital revolution characterized by a fusion of technologies.

Case Study

The city government, under mayor Park Won-soon, initiated the Global Digital Seoul 2020 plan with the goal of becoming one of the best e-governments worldwide. The plan includes three major points: sharing of government data, e-platforms, and improve services through collecting data from residents. Government services are accessible via mobile phone or web. Citizens and businesses can use over 100 on-offline services, such as filing taxes, send complaints and proposals or business registration, over the Eungdapso or Etax website. Over 80% of residents over 25 use the internet to interact with public authorities. (OECD, 2017) To further improve Seoul's stand as a smart city, the government started experimenting with IoT services, such as smart garbage bins or a parking lot sharing system, using the Buckchon district as a testbed. Mobile operator SK Telecom already launched its LoRaWAN commercial network to connect businesses nationwide. Its competitors, KT and LG Uplus, counteracted by forming an alliance and promoting NB-IoT networks (Narrow Band IoT). Personal services in Korea, such as smart home and healthcare, are already using IoT networks to improve residents' life in a smarter way.

Research facilities

Singapore has a vibrant and diverse R&D sector with various research institutions ranking from universities and public-sector research institutions over hospitals to corporate R&D laboratories (Singapore National Academy of Science, 2017). Since the 1990s, the government focused and invested in R&D, which has a high status for the government as well as the industry. The high-level attention and investment mirror the significant status of the sector it receives. An example for the high-level attention is that the Research, Innovation and Enterprise Council (RIEC), a public and private sector council, is chaired by the Prime Minister Lee Hsien Loong. Since 1995, every five years a new plan for investment in R&D, the Science and Technology Plan, is published. The ongoing interest in R&D also reflects itself in the rising budget, from 1 billion US\$ in 1995 to over 11 billion US\$ for the period 2015 to 2020. 70% of the budget will be invested in public and corporate R&D, compared to last periods investment of 60%. Singapore's Gross Expenditure on R&D (GERD) of GDP is matching the OECD average of 2.4%. (RIEC, 2015) The heavy investment attracts new talent and investment from the private sector. Both, public and corporate expenditure on R&D is steadily growing expressly in electronics, chemicals, and biomedical sciences. With an investment of 4.6 billion US\$ from over 800 companies

Case Study

coming from different industry segments, BERD (Business Expenditure on R&D), with 2.7 billion US\$ or 1.4% of GDP, is much higher than PUBERD (Public Expenditure on R&D) with 0.9% of GDP. (A*STAR, 2016) Since 2010 the number of R&D manpower steadily increased. As of 2015, Singapore had over 50,000 (number may slightly vary according to sources) research scientists and engineers. More than 60% are males, females are still a minority. An official number of research publications could not be evaluated. But the Global Innovation Index and the Nature Index published a ranking of scientific and technical publications. Singapore is ranked 28th in the Global Innovation Index and 17th in the Nature Index (Springer Nature, 2017). The availability of scientists and engineers among other factors, places Singapore at place 9th in the Global Competitiveness ranking. In the scientific research institution quality, Singapore ranks 10th. (World Economic Forum, 2017).

Singapore's universities engage in basic to more specialized research. In 2007, the Ministry of Education and the National Research Foundation established the Research Centers of Excellence, with five research centers within the National University of Singapore and the Nanyang Technological University. Each center has a different research focus. (Government of Singapore, 2017c) The National University of Singapore (1st) and the Nanyang Technological University (4th) are both ranked high in the Times Higher Education Ranking 2017 across Asia (The Times Higher Education, 2017). International partnerships between universities have a five-year funding period, which can be renewed to 10 years maximum. The Agency for Science, Technology and Research (A*STAR), located near Biopolis and Fusionopolis, two research hubs, is an industry-oriented research institute with a focus on biomedical and physical science, and engineering research. In cooperation with Biopolis, A*STAR is working with 30 international pharmaceutical companies such as Novartis International AG. The agency created a new Food and Nutrition and Consumer Care innovation cluster in the city, attract a broader set of talent and new companies through its approach to open innovation such as Danone or P&G. (National Research Foundation , 2017) Singapore has also two large academic-medical centers, the National University Health System and SingHealth/Duke-NUS, which combine medical education with training and research. (Singapore National Academy of Science , 2017) The Campus for Research Excellence and Technological Enterprise combines international world-class research centers in one place such as the UC Berkley's Berkley Education Alliance for Research in Singapore Research Centre or the Cambridge Centre for

Case Study

Carbon Reduction in Chemical Technology. Through these international partnerships, Singapore develops innovations and business opportunities. (Singapore National Academy of Science, 2017) In the Global Competitiveness Index, Singapore ranks 7th in the university-industry collaboration category. (World Economic Forum, 2017).

Over the last decades, R&D in Korea made an impressive progress, which positions the country among the world's leading research countries. In the Global Competitiveness Index, Korea ranks 20th on the innovation pillar (World Economic Forum, 2017). Until 2016, Korea was at the top of OECD countries in terms of GERD. The country now ranks 2nd, slightly behind Israel, at 4.2% of GDP or 60.5 billion US\$, double since 1995. (OECD, 2017) Under the Creative Economy Initiative 2013 – 2017 the government spent 109 billion US\$ on R&D. The goal is to boost and strengthen the creative industry, create new jobs in science and technology, and foster basic research under the new established Ministry of Science, ICT and Future Planning (MSIP). Basic research is a weakness as most of investment went to applied research. Consequently, under the R&D plan for 2018, the government will further expand investment in basic research, up to 40% by 2017, as it may lead to cutting-edge technologies in the future. The business sector has the largest expenditure in R&D, BERD is 3.36% of GDP, followed by the government and higher education sector with 0.87% of GDP (PUBERD). One reason for high investment from the private sector, are government subsidizes in form of tax credits across 11 key sectors. Almost three quarter of R&D is performed by the private sector, especially by large conglomerates and companies, which places the country at rank 23rd in the Global Competitiveness Index in terms of company spending (World Economic Forum, 2017). Despite the lack of technical skilled human capital, which places the country at rank 39th in the Global Competitiveness Index, Korea has one of the world's highest proportion of researchers. The establishment of different plans and scholarships, to identify and nurture future scientists and engineers, should counteract the deficit of lacking skills. Seoul hosts over 70,000 researchers. Like Singapore, South Korea's researchers are mostly male. The hierarchical and patriarchy nature of the Korean culture makes it difficult for women to gain acceptance, especially in the field of research and science. The culture is also reflected in the strict regulations for publications. Korean researchers are required to publish single-author papers to gain recognition and keep evaluation scores, as co-authored papers are counted by fractional contribution.

Case Study

Korean researchers published over 70,000 papers in 2016 which ranks the country 25th in the Global Innovation Index (Cornell, INSEAD, WIPO, 2016) and 10th in the Nature Index (Springer Nature, 2017). This is a drastic increase from just 27 publications in 1973, but still far behind other innovative countries.

25% of Korea's R&D centers are located in Seoul, which accounts for over 14,000 centers and is ranked 34th in quality of scientific research institutions in the Global Competitiveness Index. Korea has various public agencies responsible for planning and supporting technology and innovation such as the National Research Foundation (NRF) or the Korean Institute of Science and Technology Evaluation and Planning (KISTEP), and other government research institutes (GRI) which supply technology for industrial R&D. To improve the quality of institutions, the Park government initiated a Korea Research Fellowship program to bring international scientist to the country's universities. The majority of R&D centers are company-affiliated centers. A smaller number are research centers within companies. Especially big conglomerates have national and international R&D centers such as Samsung with its centers in Herliya and Ramat or Lotte Group with its new research center in Seoul. The Seoul government has currently 4 key investment projects to restructure five districts into innovative R&D hubs. Hongneung, in the north-east of the city, will be an innovative biomedical R&D hub with collaborations between local research centers and hospitals. Research centers and clusters of research institutes in the districts Magok, Gaepo, and Yangjae should further expand the R&D industry and create new jobs. (Seoul Metropolitan Government, 2017) To support basic research, the government also established new centers, specialized in basic science research and knowledge transfer, throughout the country.

Korea has a low level of university-industry collaborations, which is reflected in the Global Competitiveness ranking with place 29th. Only 10% of industries collaborate with universities and 12.8% with government or public research institutes (UNESCO, 2015). The focus of universities on academic publications and research instead of commercialization and industry collaboration is one reason for weak industry-university collaborations. Many Korean universities tend to establish collaborations with only one company, such as the Sungkyunkwan university and Samsung. Universities, which are not as prestigious as Seoul National University or the Korea Advanced Institute for Science and Technology, are in a difficult position to attract interest from the industry sector. On the other side, SMEs also tend to shy away from intense collaborations with

academic institutions. Therefore, the government is actively supporting collaborations by giving incentives to researchers and research facilities.

4.1.3 Economic structure

The economic structure includes the size of companies and their ownership, and the financial institutions as well as services for businesses.

Size and ownership of firms

In the past, Singapore's economy relied heavily on multinational and government-linked companies (MNC and GLC) to improve economic growth and therefore neglected the role of SMEs. Today SMEs are the backbone of the economy. Since the 1980s, the government started to support SMEs with the first SME Master Plan. Over the years, several SME assistance schemes followed, and the government redesigned their policy focus from multinational to domestic enterprises. Singapore suffers from a culture of risk-avoiding and lack of entrepreneurship, as failure is seen as a weakness. To encourage the formation of SMEs, the government initiated various schemes and programs such as the Go Digital Program, which gives technological assistance to SMEs who often lack the resources or knowledge. The Working Capital Loan and the Wage Credit schemes should further help SMEs with loans and rising wages. SMEs have difficulties to access finance and are often dependent on governmental help. Singapore has no government-backed export-import bank or other credit agencies to help with cross-border business finance, which could put the countries SMEs at a disadvantage. Temasek Holdings, a government company with shares in over 20 state-owned enterprises, in cooperation with financial institutions created the Project Finance Company to provide longer term financing for SMEs. Partnerships with MNCs are another source for local companies to play on a global field. 99% of all businesses in Singapore are SMEs; 85% of them are local enterprises and contribute nearly half of the GDP. 65% of Singapore's workforce works in SMEs especially in local enterprises. (Statistic Singapore, 2017) Despite the key role of SMEs for the economy, Singapore's GLCs and MNCs still play a dominant part. Singapore's top four conglomerates in terms of profit are SingTel, Wilmar International, Keppel Corporation Limited, and Flextronics International. GLCs are fully or partially owned by Temasek Holding and compete with private enterprises without government interference. According to various sources, GLCs contribute between 12% and 13% of GDP, but a

clear number was not published. The government has plans to privatize CGLs, even though important sectors will stay in the hands of the government. Singapore is still the preferred destination for MNCs as regional or international headquarters due to its business- and family-friendly environment and fiscal incentives among other reasons and is ranked 2nd in Ease of Doing Business (The World Bank, 2017). It serves as the gateway to the rest of Asia for over 40% of Global Fortune 500 companies. In 2016 the number of foreign-owned businesses and mixed shareholding increased, whereas the number of 100% local companies decreased. Singapore is the top-ranking city for FDI, with inward FDI stock of 369% of GDP and FDI flow of approximately 60 million US\$ (UNCTAD, 2017). Due to its liberal entry conditions, easy access to skills, non-fiscal advantages, low taxes, and restrictions and regulation, which are the same as for domestic businesses, Singapore could attract crucial FDI and especially greenfield investment³⁹.

Korea's landscape is dominated by large conglomerations, called Chaebols, even though SMEs take up 99.9% of all enterprises and 37.5% of exports (Ministry of SMEs and Startups, 2017). This makes Korea a dual economy with large productive, and global competitive conglomerates on one side, and a larger pool of less productive SMEs on the other. Chaebols were major players for Korea's export and innovation success due to their close ties with the government and favorable policies. Today the big four – Samsung, Hyundai Motor, LG and SK – are still giant actors and account for half of Korea's GDP. Many of them have their headquarters in Seoul. Samsung alone, accounts for almost a quarter of Korea's exports. But Chaebols, according to experts, are losing their dynamism as the driving engines for economic growth. SMEs contribute to 87.9% of employment, as Chaebols outsourced their production to countries with cheaper labor forces (Ministry of SMEs and Startups, 2017). Even though SMEs are the biggest job creator they still struggle to fill vital positions, as graduates tend to apply for jobs in one of the Chaebols. Another problem is that Chaebols often operate in unrelated business fields, traditionally reserved for SMEs, such as food or retail, and without close ties to Chaebols SME's often cannot survive in the domestic market. Seoul's mayor Park Won-Soon announced that Seoul is an economic democratization city and he wants to support SMEs, create new jobs for the youth, and decrease the

³⁹ Investment form a parent company to ground up build operations in a foreign country.

domination of Chaebols. This goes in hand with presidents Moon Jae-in's plan to reform the Chaebols and create a growth balance. South Korea ranks 5th in the Ease of doing business (The World Bank, 2017). With the establishment of the Korea Commission for Corporate Partnership in 2010, a private entity, the government wants to foster a business ecosystem and relationship between SMEs and large companies.

Korea's state-owned enterprises, over 300, are subjects to the Ministry of Strategy and Finance, which mainly focus on administrative and human resource management. There is no separate government entity with ownership rights as Temasek in Singapore. SOEs in Korea are subject to the same regulations and policies as private companies. In 2010, the government announced the plan of SOE privatization, but the plan is still pending. As an example, the government undertook several attempts to sell its shares of Woori Bank, which only succeeded in 2016. So, SOEs are still dominant in the market, unlike in other advanced countries. Korea's inward FDI stock is below OECD average at 13% and the country is ranked in the middle field in terms of FDI (OECD, 2017). The government encourages investment in all sectors through tax incentives, cash grant, or industrial site support but some specific sectors, such as public administration, are inaccessible for foreign FDI. Both, domestic and international businesses are subject to the same regulations and restrictions. In 2017, Seoul's FDI hit an all-time high, which accounted for almost half of the countries FDI, most notable the increase in greenfield investment. The city government makes active efforts to increase FDI in future potential industries and consequently create jobs and ensure economic growth.

Financial and business services

Singapore ranks 4th in banking in the Global Financial Centres Index 2017 and is one of the largest global financial centers. The financial sector is regulated and supervised by the Monetary Authority of Singapore (MAS), which also operates as a central bank, under the Banking Act. The financial system consists of banks, insurance companies, merchant banks, and advisory institutions supported by active government policies. Through special tax incentives under the Financial Sector Incentive Scheme (FSI), the government actively promotes and encourages high-grow financial institutions. Singapore has five local and 123 foreign commercial banks. United Overseas Bank, Oversea-Chinese Banking Corp, and DBS Group Holdings are among the largest 100 banks worldwide ranked by their total assets. All three banks are rated AA- by Standard

& Poor (S&P). The Development Bank of Singapore (DBS) leads in market share and has received strong credit rating. Its investment in digital innovation is high, and the bank also provides in-house talent development programs. There are no operational, except in merchant banking, but strict legal distinctions between foreign and domestic banks regarding the type of license assigned and number of business branches allowed. Currently 29 full, 59 wholesales, and 35 offshore banks are operating in Singapore. Foreign banks must maintain a Domestic Business Banking Unit and an Asian Currency Unit to receive a license. Foreign banks can seek QFB (Qualifying Full Banks) licenses to receive greater branching privileges and access to the retail market. In 1999, the government erased and lowered restrictions on foreign banks through a banking liberalization program. The limit of foreign shares in local banks and finance companies was removed. 30 merchant banks are responsible for conducting corporate finance, investment banking, and other fee-based activities. The insurance sector is the second largest group behind banks. Singapore has several financial institutions which represent an alternative for SMEs to obtain loans. With the establishment of the Finance Companies Act, the government supports the role of financial institutions in SME finance. To stay competitive financial institutions, offer loans at a cheaper rate than banks but combined with stricter credit criteria.

Singapore ranks 4th in professional services in the Global Financial Centers Index 2017 with over 44,000 various business service companies in accounting, legal and advertising activities, architecture and engineering services, and consulting. The sector takes over 26% of the whole service sector and contributed 15.8% to GDP in 2016. With a growth of 11.7% between 2005 and 2015, the business service sector is one of the fastest growing ones in Singapore. (Statistic Singapore, 2016) In 2018 the government launched a Professional Services Industry Transformation Map (ITM) to develop the professional services sector into a global market leader by new innovations and highly skilled workforces with specialized skills.

The Korean financial sector consists of banks, with the Bank of Korea as the central bank, non-bank deposit institutions, insurance, securities, and collective investment institutions with Seoul as the financial center of the country. Banks and insurance companies have the highest market share followed by non-bank depository institutions. There are five specialized banks, and 13 commercial banks, regional and national, from which 14 are operating under bank holding companies. Korea has 12 dominant

Case Study

financial holding companies which hold about 50% of all financial sector assets. (IMF, 2015) Banks offer a wide variety of services to customers, but cash management services were limited and remained largely with foreign banks. But in recent years, local and regional banks started operating in cash management services not only to SMEs but also to large companies. The Korea Financial Telecommunications and Clearing Institute operates the main retail payment system. The government has also initiated several anti-money laundering and counter-terrorist financing policies and founded institutions responsible for overseeing these policies. Seoul has a total of 2,294 banks throughout the city with a mix of commercial banks such as Hana Bank or Citi Bank, local banks, chartered banks, and export/import and foreign banks. The financial sector is supervised by five, co-operating, authorities with clear mandates and powers: Financial Services Commission, Financial Supervisory Service, Ministry of Finance, Bank of Korea, and Korea Deposit Insurance. Seoul ranks 22nd in the Global Financial Centres Index 2017 and has seven banks on the list of the worlds' 100 largest banks in terms of total asset. Data on the ranking of the banking and professional service sector was not available. S&P gave the country a AA credit rating, following Moody's Aa2 rating. Even though there are strict regulations and a strong government interference, 42 foreign owned banks operate in the country, making up 14% of the banking sector. Foreign financial institutions also have a 10% share in the insurance sector. (IMF, 2015) Korean banks played a key role in helping the country grow, as they operated as funding tools for the government to Chaebols and as a punishment tool for companies which would not follow the development strategy. What helped build up a nation, leaved the banking sector uncompetitive compared with international standards due to heavy government interference and control. After the financial crisis in 1997, the government was forced to start privatizing public banks in order to receive financial help from the International Monetary Fund and lessened its control slightly.

Korean banks have a strong focus on commercial and retail services, and revenues come from the domestic market. A problem Korean banks face is their lack of internationalization, risk-taking, and innovation when it comes to fintech. Which is also why Seoul's dream of becoming the next financial hub could not be achieved. The country ranks especially low on the WEF ranking in terms of its financial market development at place 80th (World Economic Forum, 2017). The government has strict regulations when it comes to ownership rate of banks by non-financial institutions, which is fueled by the fear, that Chaebols may acquire or operate a bank and gain

more power and unfair advantages. New financial markets, such as yuan business and fintech, are rapidly emerging in Seoul because of the city's affordable office rents, advanced ICT, and other major infrastructural advantages in the fields of finance. In 2017, two internet-only banks, the K-Bank and Kakao bank, started their operations in the market as smartphone and online banking is on the rise. Through removing key regulatory obstacles in fintech, such as a rise in technology companies' ownership in banks up by 40%, more internet banks may open in the future. But this means higher competition for banks in the domestic market, who already started to lower fees and upgrade their online performance to attain and keep customers. Online banking is available to every company, called firm banking, and is offered by each bank separately.

The number of companies in the business service sector, professional and technological as well as facility and equipment management, has increased since 2000. In 2014 there were about 13,764 service companies in Seoul which made up to 6% of the whole service sector. (KOSIS, 2017) The city offers support to SMEs and special industries such as culture through their business support institution SBA. The low tendency of large enterprises to co-operate with extern service providers and their closed corporate culture makes the business service sector less productive. Further restrictions and regulations on foreign professional services reduces the competitiveness of the sector.

4.1.4 Urban amenities

Educational institutions

Singapore has the 4th best education system worldwide (NJ MED, 2017). Since Lee Kuan Yew's government, education is an essential element and has a high value for parents, teachers, students, and the government. The system is highly centralized with the Ministry of Education as the responsible body from kindergarten to higher education. The ministry allocates funding and sets the regularly revised curriculum. Furthermore, assignment, management, and supervision of teachers and principals are in the hand of the ministry. To establish equity among students the curriculum is uniform across all levels, subjects, and schools. Independent schools have more freedom in their curriculum, and choice of students. Government spending on education as a percentage of GDP was well below OECD average, which was 4,07%, at 2.92% in 2013. (Statistic Singapore, 2016) The highest percentage of expenditure

was on tertiary education, followed by primary and post-secondary education. With the start of 2017, the government cut funding for independent schools and increased school fees for permanent residents and international students.

Singapore has 182 primary schools divided into 141 government schools and 41 government-aided schools. (MOE, 2017) Primary education is compulsory and is mostly free of charge with just a small fee. Primary education consists of 6 various stages. Stage 1 to 4 is the foundation stage, stage 5 to 6 is a two-year orientation stage. At the end of primary school, students must take the Primary School Leaving Examination and based on the test results choose a mandatory secondary school. Secondary education lasts between four or five years with different schooling options to choose from: normal academic, normal technical, special, and express. There are 154 secondary schools from which 119 are government, 28 are government-aided, and 3 are independent (MOE, 2017). At the end of four years of special or express schools, students achieve the Singapore-Cambridge GCE O Level. Normal academic and technical schools last for five years with a GCE N level after four years and the GCE O Level at the end of the fifth year. Secondary schools can be either public, government aided or private/independent. There are also several schools which offer education for international students up to post-secondary education such as St. Francis Methodist School. After secondary education, students can either start pre-university or post-secondary education, which takes two to three years depending on their choice of school. There is a total of 14 junior colleges and centralized institutions with a majority of government and four government-aided schools (MOE, 2017). The GCE O level is a requirement for junior colleges, technical institutes, and polytechnics. Vocational education and training (VETs) does not have a lower status than universities in society but are an important part of the economy. Junior college students gain the GCE A Level at the end of their education, which give permits to enter one of the university. Throughout primary to post-secondary education, English is a major subject in the curriculum. Additionally, students must take courses in their mother tongue, which gives them a competitive stand regarding language skills. Singapore ranks 1st in PISA 2015 in all three subjects – mathematics, science, and reading. Singaporean students are exposed to a high amount of stress and pressure to achieve perfect grades. Households spent a vast amount on tuition of their children to prepare them for future jobs. Singapore has three main local universities: National University, Nanyang Technological and Singapore Management University. Across Asia,

Case Study

Singapore National University is leading the Times Higher University ranking; ranked 22nd globally. The Nanyang Technological University ranks at place 4th in Asia and 52nd worldwide. (The Times Higher Education, 2017) The SIM university is a unique institution, as it offers practice- and applied-oriented courses not only for new students but also part-time students with work experience. Additional to public schools, Singapore has 29 private institutions which are registered with the Ministry of Education (MOE, 2017). To prevent a shortage in future skills, the government promotes lifelong learning through programs such as SkillsFuture. Lifelong learning education is offered in all three polytechnic schools, in VETs, special programs, and in different skill-based modular courses.

From a country with a high illiterate rate of over 70% a few decades ago, Korea changed to one of the most highly educated countries in the world. The Korean culture puts a high value on higher education, which is reflected by the amount of time and money spend by students and parents. Korea's education system was ranked one of the best in the world by a nonprofit organization of the UN in 2016. (NJ MED, 2017) The school system is highly centralized, the curriculum and funding coming from the Ministry of Education. The ministry dictates the national curriculum, with a revision every five to ten years. Principals and schools have limited freedom in choosing their own goals but are often free to choose their own students. The ministry not only funds 80% of schools, but also public, to a small amount even private, elementary, and secondary teachers' salary as well as preschool programs. Regional education offices can spend the ministry fund as they see fit with small restrictions. Seoul has one metropolitan office and 11 lower offices of education, which execute regional education. Private schools do not get government funding, they are therefore dependent on tuition fees and support from private organizations and donors. The government invests 7.6%, OECD average is 6.3%, of its GDP in education with the majority on primary and lower secondary education, followed by the tertiary level. (OECD, 2017) The metropolitan office selects, assigns, and oversees primary and secondary teachers, which secures a solid level of competence among teachers. Through annually conducted inspections from the ministry and principals, teachers and schools are evaluated for their performance in teaching and adherence to the curriculum.

Case Study

Korea's compulsory education system is a 6-3-3 system. Children start with six years of primary school and then three years of middle school. Seoul has 969 elementary and middle schools. Up to high school, there are no tuition fees. After three years of lower secondary education, students must take an entrance examination for high schools. Throughout the city there are 325 high schools and 29 special schools for students with disabilities. Seoul, among other metropolitan areas such as Busan, has a different approach to high school admissions than the general approach based on academic background and exam results. The city uses a computer lottery system to assign students. High schools are not free of charge, but the tuition fee is affordable. Students can choose between academic, vocational (VET), and specialist colleges, which last three years. The enrollment rate in VET is lower than OECD average. After graduating with a college certificate, students must pass the college scholastic aptitude test (CSAT) to gain access to colleges or universities. Throughout middle and high school, half of all students visit after school private classes, so called Hagwons which offer supplementary education, to increase their grades and gain entry to one of the universities. Hagwons are visited after school, which increases a normal school day for students to 13 hours. This high stress and pressure makes Korea one of the countries with the highest suicidal rate among students. Korea still ranks high on the PISA test, but overall results among all three categories is lower than in the previous years. College and universities usually last for four years – two years for associate degree, then one year of work experience and another year for the bachelor's degree. Seoul is the home to the majority of Korea's top universities, all-in-all there are 37 general universities and 14 specialized universities. The most prestigious ones are the SKY universities – Seoul National, Korean, and Yonsei university. Only Seoul National University and KAIST are among the top 100 universities in the Times Higher University ranking. Even though Korean universities have a lower worldwide reputation they could attract a growing percentage of foreign students and teachers through an implementation of special programs for international students and teachers.

For citizens, who are not or have difficulties entering universities, there is the possibility to visit a lifelong education institution which runs under the credit bank system, an open university, or use other independent study systems. Seoul has 11,549 institutes, offering courses from supplementary and entrance exam courses to specializations in arts, technic, or management. (Seoul Metropolitan Government, 2017a) As Korea has one of the fastest aging population worldwide, the government

also wants to actively support elderly through lifelong education. Seoul has several centers for elderly to gain knowledge or learn the newest technologies.

Cultural institutions

Its multinational residents and history as a British trade port shaped Singapore's culture. The city is one of the most active ones in promoting its creative industries. The cultural and arts sector is subject to the Ministry of Culture, Community and Youth which continually invests in the sector. The National Heritage Board, within the ministry, manages and oversees Singapore's main museums and heritage institutions. The arts and culture sector received over 150 million US\$ in form of cash, in-kind donations, and sponsorships in 2014, and almost one billion US\$ of government funding especially in arts and heritage. The government founded the Cultural Matching Fund; a dollar-for-dollar fund. For each dollar from the private sector, the Ministry of Culture, Community, and Youth gives another dollar to support the arts and culture sector. Singapore has over 5,000 arts and cultural companies, 55 museums, 26 public and one national library, and 71 buildings and structures designated as national monuments. With steady investment from the government to enhance museums and cultural institutions increased the number of visitors in 2017 up to 17 million. (Statistic Singapore, 2017) Many museums have different entry fees for Singaporeans and foreigners, often up to a 100% price difference. With this method, the government wants to encourage citizens to visit museums and take part in the culture but may deter tourists. Singapore's Botanic Gardens were designed as the first UNESCO World Heritage Site in 2015. It is the first tropical botanical garden on the list. Singapore has its own civic and cultural district which hosts historic buildings, museums, and parks. The city government is frequently renovating old and creating new cultural buildings such as the remodeling of the National Museum of Singapore. The Esplanade, a well-known performing art center, is a place for cultural festivals and programs. Throughout the year, the city hosts several festivals such as the International Festivals of Arts or the Night Festival. To achieve the goal of becoming a hub for business events and meetings as well as conventions, the government initiated the Business Events in Singapore scheme to financially support businesses in the MICE – Meetings, Incentive Travel, Conventions, and Exhibitions – industry.

Case Study

Seoul is a city with 2,000 years of history and 600 years as the nation's capital. Throughout the city, Seoul has well preserved Korean architectural structures like palaces, residential dwellings or fortresses and several museums, galleries, and theaters from which many are free of charge. There are 13 private and 147 public museums and a total number of 120 libraries from which are 21 national/public, 26 Junior colleges, and 73 private libraries. Seoul has five ancient palaces, from which one is an UNESCO World Heritage site. (Seoul Metropolitan Government, 2017a) The Han river divides Seoul into two different cultural sites. North of the river, the traditional markets, palaces, and other attractions can be found. The part south of the Han river is the place of the latest trends and modern culture. The southeast part of Seoul and downtown includes most cultural facilities, which creates a cultural imbalance. Over the last years, Seoul expanded its culture industry and became one of the top East Asian tourist attractions. The birth of the Korean Wave or 'Hallyu' changed the perception of Korean culture and goods and created a fresh marketing strategy. Investment from the government as well as from the private sector are main factors for Seoul's cultural enhancement. The city allocates 2.6% of the annual budget to its culture sector. (Seoul Metropolitan Government, 2017a) Through restorations of historic sites, such as the Namsangol Hanok Village, the city wants to turn them into major tourist attractions. In 2016, Seoul recorded more than 13.5 million visitors from across the world, which spent nearly as much as the city's annual budget (Seoul Metropolitan Government, 2017). This development shows the growing impact of culture on the city's economic growth. The city government wants to position Seoul as a hub for the cultural industry supported by the establishment of the Creative Culture City policy, which combines design and culture, and the 'Seoul Culture Vision 2030' plan to be a vibrant cultural and historic city. Seoul offers classic Korean restaurants with a good mix of international cuisine, shopping, nightlife, and amusement facilities. Supported by the city government, several festivals take place throughout the year. The city is also a major hub for business and leisure events supported by the cities 'Seoul Mice Alliance'. The Alliance works as a partnership between the government and private-sector organizations to promote Seoul as a location for events and meetings. The city has three major event locations – COEX, aT Center, and SETEC. In 2016, Seoul hosted 22.3% and 32.1% of worldwide business and leisure events respectively.

Housing stock

Singapore has a unique housing system where more than half of the stock are public housings provided by the Housing and Development Board (HDB), a government organization. The population density and scarcity of land explains the high government intervention in land ownership and housing provision. Every Singaporean and permanent resident is obliged to deposit a mandated amount of 20% of income in the Central Provident Fund (CPF). The employer contributes another 16%. The CPF is a saving plan for funding residents retirement, healthcare, and housing needs. 23% of the savings can be used to purchase a home under the HDB-CPF or the Private Property housing framework, an integrated land-housing supply and financing system. Singapore had a home ownership rate of 90.9% and resident households of over one million in 2016. Most of the housing stock of Singapore consists of public housing, which are managed by the HDB, followed by private housing types such as condominiums, executive condominiums, and landed properties. Executive condominiums are subject to the same regulations as public housings up to eleven years. Singaporeans and foreigners who got a subsidy must wait between three and four years to buy a HDB. 4-room flats are the most common type of public housing. Over 20% live in 5-room and executive flats, 18% in 3-room flats and a smaller number in 1-room and 2-room flats. Singapore experiences a trend toward smaller household sizes and an increase of at least one member over 65 years old in each household. (Statistic Singapore, 2016) The Ethnic Integration Policy, introduced in 1989, sets racial quotas for HDB buildings and should reduce an overrepresentation of ethnic groups.

There are several regulations when it comes to public housing. HDB flats are restricted to citizens (including permanent resident) with a maximal income of 1,500 US\$ for rental and 12,000 US\$ up to 18,000 US \$ for purchase. HDB flats have a 99-year lease agreement in general. Buyers can get loans from banks or the HDB itself, which comes with several restrictions such as at the time acquisition the buyer is not allowed to have an additional home in Singapore or any other country and one person must be Singaporean. HDB loans have steady high interest rates, lend up to 90% of the purchase price, consistent repayment amounts, and lenient late repayment fees when compared to bank loans. Private housings can only be financed through a bank loan and are often dominated by higher-income Singaporeans or foreign investors. Over the last year, prices for private housings dropped. Until the end of 2018, over

Case Study

20,000 new private residential units (including executive condominiums) will be completed. (URA, 2017) There is no data on the vacancy rate of public housing units, but it is estimated at a lower level than private housing vacancy rate. In 2016, more than 24,000 HDB units were completed and an additional 80,000 were under construction. Until 2020, over 70% of future housing unit projects will be HDB flats. (URA, 2017)

Korean types of housing range from detached houses to multi-unit dwellings. Detached houses are general houses, which are in isolated residential areas, and multi-family houses, which are detached houses with fewer stories and units. Multi-unit dwellings are divided into multi-household houses, tenement houses, and apartment buildings. With a decrease of average household sizes, Koreans prefer more smaller units. The change is reflected in the increase of rents, prices, and sales of smaller units. Homeownership in Seoul at 42% is lower than in other Korean cities and Singapore. In 2016, most residents lived in apartments, followed by detached dwellings, and multifamily houses. (Seoul Metropolitan Government, 2017a) The rental system in Korea is more complex. First, there is the Jeonse system. It is an asset-based lease system where the tenant pays a large upfront deposit to the landlord instead of monthly rent for the lease periods. The lease period is usually two years and the deposit is equivalent to 70% or 80% of the house value. The landlord can use the deposit to invest in e.g. other houses. At the end of the leasing period, the tenant can use the returned deposit to obtain the house or flat. The second system is monthly rentals with deposits (MRDs) and the last one is monthly rentals with a small security deposit or key money. Rentals combined with deposits are quite costly, as the deposit, dependent on the size and location of the housing, can be quite high. Both account for 28.5% of all rental types in Seoul. (Seoul Metropolitan Government, 2017a) Over the years house prices and household debts continued to rise. To decrease the high household debt and rent prices, the government established measures, such as a limit on loan for buyers or debt repayments, in 2016. In 2015, Seoul had a housing supply rate of 96%, which accounts for more than three million housing units, but is quite low when compared to the rest of the nation with 100%. The main supply was in apartments followed by multi-family houses and apartment units in private houses. Seoul experiences a discrepancy between homeownership rate and owner-occupancy rate

as many residents own more than one house. (Seoul Metropolitan Government, 2017a)

Through different schemes, plans, and policies, the city government wants to actively support different income classes to obtain public houses. Low-income households are eligible to receive monthly rent assistance, with financial support by the Social Welfare Fund, and pay rental fees accordingly to their income. Since 2015, the Housing Voucher Program further provides cash subsidy for socially vulnerable classes. For newlyweds and families with several children, there is the move-in subsidy. Seoul's districts receive financial support according to the proportion of rental houses through a co-operation between the local government and district offices. SH (Seoul Housing) Corporation was founded by the city government as the central public corporation responsible for stability and welfare of Seoul citizens. The corporation is building houses for low-income families and implementing different programs such as SHIFT among other restoration projects. SH corporation provides 70% of all public houses in Seoul. The LH corporation, a government-owned corporation, provides for the remaining 30% of public houses. Until the end of 2018, SH will provide additional 80,000 public and private units as a part of the city plan. The government encourages semi-public and private housing by easing regulations and giving financial support such as tax incentives and promoting corporate-type rental service providers.

4.2 Strategic determinants

4.2.1 Urban governance

As a city-state, the government of Singapore not only takes the role of the national governing body, but also as the responsible municipal body. Singapore has five Community Development Councils each consisting of a board of members and one mayor. There are no local elections in the city-state. In the Democracy Index 2017, Singapore ranks 69th worldwide with a score of 6.32 out of 10. The low score in electoral process and pluralism, political participation, and political culture contribute up the low ranking. (EIU, 2017)

Political instability and absence of violence and terrorism

In the Worldwide Governance Indicators 2016, Singapore scores +1.5 in terms of political stability and absence of violence and terrorism. (The World Bank Group, 2016) The city-state has a parliamentary system with the prime minister as the head of the government and the president as the head of the state. The first prime minister Lee

Case Study

Kuan Yew, through his long-term vision for the country, introduction of meritocratic principles in civil and political services, and anti-corruption policy, created an environment of political stability and low crime. Since its independence, Singapore has had one ruling party, the People's Action Party (PAP), a center-right political party. Singaporeans have a high level of trust in the ruling PAP, as over the years, with ongoing predictable style of policy making, the party shaped Singapore to what it is today and improved the life of its residents. Singapore has one of the lowest crime rates worldwide with a yearly decrease in all areas of crimes. The city-state ranks 21st out of 163 countries on the Global Peace Index 2017⁴⁰. The strict enforcement of laws, even for small crimes such as pickpocketing, restricted access to weapons, and low terrorist impact makes the city one of the safest worldwide. In the security pillar of the Global Competitiveness Index, Singapore ranks 8th. It has reliable police services with strong public trust in the local police forces and a low crime rate with no terrorist incidence since decades.

Government effectiveness

Singapore scores +2.2 on the WGI index, which shows a strong governance in public service delivery and high competence of its public officials. To attract and retain the most qualifying civil servants and public officers, recruitment and promotion is based on meritocratic principles; their performance mirrors their wages and promotions. The Municipal Services Office, which was established in 2014 under the government and the Ministry of National Development, collaborates with several government organizations to improve citizen-centric service delivery. The government initiated several policies and programs with business- and citizen-centric focus. One key point of the eGov masterplan is to inform and actively engage citizens and the private sector in national policy making through interaction with the government. The PS21 initiative, a future-ready public service, should help public officials and organizations to improve their capacity and responsiveness in public service delivery to meet the demands efficiently, effectively, and innovatively. The Government Technology Agency of Singapore (GovTech) was established to deliver digital services adjusted to businesses and citizens through a participation of citizens, and private as well as public companies. Through the website data.gov.sg, business can engage in developing applications and citizens can give feedback and suggestions.

⁴⁰ The index ranks countries between 1-5 (very low – very high) for different indicators. For further information please refer to www.visionofhumanity.org/indexes/global-peace-index/

Case Study

Voice and Accountability

Singapore ranks especially low in voice and accountability in the WGI index with -0.3. In the electoral process and pluralism subcategory of the Democracy Index 2017, the city scores weak with 4.33 points out of ten. (EIU, 2017) One reason is the lack of an independent electoral commission, which counterfeits Singapore's status as a democracy. Currently the commission is subject to the Prime Minister's office. Another reason for the low rating, is the lack of real competition, choices, or alternatives in elections. Due to the strong ruling PAP, opponents do not stand a chance of winning as they for example have no equal access to mass media, are forced into silence or bankruptcy during election periods, and cannot compete on an even playing field. Citizens feel that they do not have popular control. The ruling PAP deliberately chooses this, kind of authoritarian, style of election to stay in power. But this does not mean that they would not win in more democratic elections. Voting is compulsory for citizens, but the right to vote is not explicitly stated in the constitution of Singapore and the status remains unclear. The constitution of Singapore provides freedom of speech and expression. But the government can and will restrict these rights when it comes to criticism of the administration, which is another reason for the low ranking. Groups of more than 10 persons must register with the government, which in turn can dissolve groups or restrict the freedom of association as stated in the Societies Act. Print and broadcast media are mostly government- or PAP-linked, except BBC World Service radio, and have tight censorships, which also applies to websites and blogs.

Regulatory quality

The city scores well on the WGI index at a +2.2 rating, which was achieved through the continuously effort of the government to cut red tapes and concentrate on a citizen- and business-centric approach towards regulations. Since 2000, the Cut Red Tape Initiative is in progress. Its aim is to simplify, drop, or relax regulations and rules that are no longer needed or a burden on customer and businesses, and in return stay competitive. The Smart Regulation Committee, established to support the Cut Red Tape initiative, oversees and reviews regulations and rules to form a business and investment friendly regulatory regime with effective and responsive regulations. The review is conducted by government officials from various regulatory agencies every three to five years. Other cut red tape supporting panels are the Pro-Enterprise Panel, which reduces unresponsive rules and regulations that hinder businesses; and the

Case Study

Zero-in-Process Panel, which works as an intermediate agency for issues from the public that cut across public agency boundaries.

Control of corruption

Singapore ranks 6th in the Corruption Perception Index 2017 (Transparency International, 2017) and scores +2.1 in the WGI index. As the PAP won the first elections in the 1960s, one priority was to reduce corruption in all tiers of the government and public, which bloomed during the colonial government as policies and anti-corruption organizations were ineffective. Due to an increase of public officers' and civil servants' wage to competitive market standards and increased penalties for bribery, the PAP could minimize the opportunities for corruption. Through a revision of the ineffective Prevention of Corruption Ordinance in 1960, the Prevention of Corruption Act (PCA), the primary anti-corruption law, alongside the Corruption, Drug Trafficking and Other Serious Crimes Act, was enacted. PCA gives the Corrupt Practices Investigation Bureau more power to enact the law and punishments. An, almost, independent judiciary system and responsive public services complement the anti-corruption strategy. The rankings indicate that the strategy and framework are effective in curbing corruption from the executive branch over judiciary, police, and legislature.

Korea has a two-tier local government system consisting of an upper-level and a lower-level of government. The government of Seoul is centralized, as the city is both the capital and headquarter of the national government. The upper level is the Seoul Metropolitan Government (SMG), and the lower-level consists of the 25 districts called 'gu'. Then there are several administrative units called 'dong' or neighborhoods. The administrative system consists of three vice-mayors, eight headquarters and bureaus, 14 department groups, 145 divisions, three authorities, and 75 institutions. The mayor is the head of the local government supported by the Local Metropolitan Council as the legislative body. (Seoul Metropolitan Government, 2017) As Seoul is designated as a special city, the SMG is subject to the authority of the prime minister and the mayor holds a position which is equivalent to that of ministers. Local city governments in Korea in general are semi-autonomous as stated by the Local Autonomy Act, with their own executive and legislative bodies. Through a, although slow, decentralization process more autonomy has been given to the local governments. The SMG has been granted special authority over governance aspects as stated in the Act on Special

Measures for the Administration of the SMG in 1962. Under the uprightness campaign, the SMG emphasizes three key strategies for the city: reduction of corruption, enhancement of integrity, and together with the people. (Seoul Metropolitan Government, 2017) The rankings in this chapter refer to Korea in general as there is no ranking for cities per se and to keep a level of comparability with Singapore. Korea ranks 20th on the Democracy Index 2017 by the EIU with a score of 8.00 out of 10 (EIU, 2017).

Political instability and absence of violence and terrorism

In the WGI index, Korea scores +0.2 on political stability and absence of violence and terrorism (The World Bank Group, 2016). The national political uncertainty following the impeachment of former president Park Geun-hye in 2016 attributes to the low score. After the accusation of corruption and nationwide mass protests, Park had to transfer her power to Prime Minister Hwang Kyo-ahn, who was not popular among citizens. In 2017, progressive candidate Moon Jae-in, from the Minjoo Party, won the presidential elections and brought the decade of conservative rule to an end and changed the political landscape. Korea has political pluralism with several parties, the Minjoo and Saenuri being the strongest ones. Korea is ranked 47th in the Global Peace Index 2017. Crime rate in Seoul is low and there is no risk of terrorism. There are smaller crimes such as pickpocketing or assault, but crimes involving firearms are low, as there are strict gun control laws. Despite the missile and nuclear tests from North Korea, Koreans do not think that another war will break out and are becoming quite indifferent to the threat. Due to its high level of its ICT infrastructure, Korea faces an increase in cybercrime such as phishing. Seoul has created a tourist police who are patrolling major tourist districts. In the security pillar of the Global Competitiveness Index, Korea ranks 58th. The police are often seen as corrupt and not effectively enough, and organized crime is still a problem in Seoul.

Government effectiveness

Korea scores +1.1 in the WGI index, which is lower than Singapore. The national government undertakes efforts to reform and innovate their government effectiveness. Through the government 3.0 plan, the government implemented a more citizen-centric approach in public services. Seoul's mayor Park Won-soon created the slogan 'Citizens are the Mayor' to highlight the importance of citizen-centric governance with active participation from citizens, the public, and the private sector. The SMG fosters public-private-industry-academia partnerships, public-private-people cooperative

Case Study

community, and strategic partnerships with global IT companies through several programs to deliver better public services such as eGov, the smart city program, and Seoul Open Plaza initiative. Seoul's eGov platform comprises all areas of public services from construction over welfare to planning and is one of the leading eGov systems in the world. The Civil Service Commission is responsible for a meritocratic and neutral appointment of local and national civil servants. In the past, civil service job applications occurred in a closed system; vacant positions were often filled by internal promotions. The introduction of an open position system, with open competitive exams and positions available to experts outside the government, allows a more competitive, open, and responsive civil service workforce. Despite the introduction of the new system, the public service sector is still fragmented. The Local Government Officials Development Institute provides training and education for government officials and civil servants and the Ministry of Personnel Management is responsible for public-service ethics policies.

Voice and Accountability

Korea scores weak on voice and accountability in the WGI index with a score of +0.63. To gain information or place complaints citizens had to go to or call the City Hall in the past. The feedback from the City Hall had been unsatisfactory and citizen satisfaction was low. The SMG launched the 120 Dasan Call Center to improve city governments accountability and actively engage citizens in policy making. Feedbacks and complaints are saved in a databank and are available for public officials and administrators. Under the anti-corruption and transparency policy promotion plan, the SMG wants to establish a transparent and trusted administration through an open system. Seoulites can submit their ideas and proposals for improvements through a Transparent Policy Idea Contest. Through the Seoul Open Plaza Initiative and the smart city program, citizens can participate in several services and work together with the city government in addressing and solving problems. (Seoul Metropolitan Government, 2017) The citizen participatory budget system gives citizens the possibility to engage in city governments budget planning and allocation. The country scores 9.17 points out of ten in the Democracy Index regarding electoral process and pluralism. Citizens have the right to vote as stated in the constitution without restrictions, but voting is not compulsory. Voting can be used to hold public officials and the government accountable and press for new elections. But the time between elections, accountability from citizens is less effective and often ignored by the local

Case Study

and national government. Elected officials in Seoul can be held accountable for their actions by citizens. The constitution of Korea, in practice, guarantees freedom of speech and expression, media, and association. As the Park administration could not tolerate and deal with criticism, stricter regulations for the media and expression, such as the law on defamation, were introduced. Consequently, the relationship between the government and media were and are still tense. Even citizens can be accused of defamation as several incidents have shown in the past. Furthermore, expressing sympathy with North Korea is forbidden as constituted in the National Security Law. This too diminishes the practical freedom of speech and expression. The press is partly free, as many newspapers are controlled by Chaebols, which in turn uses the media for advertising their products. Broadcast media are both private and public owned, and foreign media are easy accessible except for press and broadcasting media from North Korea. Websites are in general accessible without restraints, but some sites such as pornographic or North Korean friendly sites are blocked. The freedom of associations is stated in the constitution, but there are a few restrictions such as a prohibition on demonstrations which may create social unrest. The police forces must be informed of every demonstration.

Regulatory quality

Nationwide reforms started well before the 1990s, but it was after the financial crisis in 1997 that reforms were taken more seriously. In the reform of 1998 over half of the regulations were cut. The Administrative Reform Commission was the first establishment to screen and review regulations and policies which are overly regulated. With the enactment of the Basic Law of Administrative Regulation, the Regulatory Reform Committee was established. The committee is a part of the Prime Minister's office and is responsible for all regulatory reform activities by including stakeholders in the review process. Korea still has high administrative burdens but has started to lessen or delete obsolete regulations such as stream water usage. As a part of the three-year economic innovation plan, the government introduced several reform systems such as the cost-in cost-out system, Sin-Moon-Go, and the regulatory guillotine. Scoring +1.1 on the WGI index, Korea has effectively changed their regulatory quality through a qualitative approach of regulations instead of a quantitative.

Control of corruption

Korea scores +0.4 on the WGI index and ranks 51st on the Corruption Perception Index 2017. (Transparency International, 2017) The Civil Rights Commission of Korea is the responsible body for establishing anti-corruption strategies and related policies. There is a high perception of corruption among citizens, especially when it comes to Chaebols and other large conglomerates. In 2017, Samsung's chairman was convicted of bribery and sentenced to five years in prison. The chairman of Lotte Group was the second one charged with bribery. Both men are connected with the bribery and corruption scandal surrounding former president Park Geun-hye. This shows corruption at the highest level of government and businesses and increases the mistrust of citizens. Public officials including their families must disclose their private assets and monetary interests. To tackle corruption in the government and business sector, the government established the Park Won-soon Act and Kim Young-ran Act. The Park Won-soon Act, an anti-bribery law, affects all organizations and officials connected with the SMG, by prohibiting and punishing even lesser amounts of bribery related or not related to work. The act came into life under the uprightness campaign and the anti-corruption and transparency policy promotion plan initiated by the city government to reduce corruption and monitor sectors prone to corruption. The Kim young-ran Act, regulates monetary limits for gifts and solicitations by businesses and officials using a 30/50/100 rule; 30,000won for food and drinks, 50,000won for gifts, and 100,000won for flowers or congratulatory and condolence money. The act is seen as controversial, as it does not differentiate between bribes and gifts, and goes against Korean business culture, where gifts are seen as a way to build partnerships and relationships.

4.2.2 Urban strategy

The Concept plan is the main long-term plan of Singapore. The plan is a strategic plan with a lifespan of 40-50 years, reviewed every 10 years, including broad long-term strategies of land use, economic performance, and sustainability. To create a plan that can shape the city and reflect concerns and issues of its citizens, the government carries out public surveys and group discussions. The master plan is a medium-term statutory plan which realizes the concept plan's strategies into detailed plans for implementation. Since its first approval in 1958, Singapore's master plan has had nine revisions. The current medium-term plan started in 2014 and will run for 10-15 years with reviews every five years. The urban master plan in Singapore attempts to create

Case Study

a livable, economic vibrant, and sustainable environment for all citizens. With its holistic approach, public actors are integrated in the planning process from the beginning on. Housing, economy, recreation, identity, transport, and public spaces are the six key areas of the plan. Together both plans form a comprehensive framework for sustainable development. Control plans, such as landed housing area plan or activity generating use plan, are complementing the main master plan. Another urban strategic plan is the Intelligent Nation 2015 master plan. The 6th 10-year multi-agency plan focuses on a transformation into a global and intelligent infocomm city. It targets the economic, government, and social sector.

Seoul's urban master plans, which work as urban strategy plans since 1990, are comprehensive long-term frameworks for the city. They run for twenty years with reviews by the city mayor every five years. Master plans are based on the Urban Planning Act, which stipulates the use, development, and preservation of land. With the revision of the Urban Planning Act in 2009, local governments received more authority over the urban master plan and can create plans reflecting the needs of the city and its citizens. The current master plan runs until 2030 with its vision of transforming Seoul into an international city of nature, people, history, and technology. The 2030 Seoul Plan, a revision of the 2020 plan and the highest legal plan, includes 17 goals and 58 implementation strategies under its vision of a smart and sustainable city for all citizens and visitors. The plan has several new features. First, there is a triangular system including citizens, experts, and administrators in a close collaboration which increases transparency. Active citizen participation from the beginning on is a main feature in urban planning. Second, issues and goals are shortened to make them more feasible and understandable. Third, the scope of goals is broadened to other themes and not only includes spatial and physical features. Fourth, the zoning system was expanded to three international centers, seven metropolitan centers, and 12 regional centers with the goal of increasing development and urban competitiveness. To distribute information about urban planning and improve the administrative process, the government established the Urban Planning Information System. Under the broader 2030 plan, Seoul has other intermediate plans in action. The neighborhood plan, a division into five regions and further into different neighborhood areas, identifies issues of these regions and neighborhoods. The historic city center master plan is concerned with management development of the historic part

of the city and the Han riverfront master plan gives guidelines for all areas of development along the Han river. (Seoul Metropolitan Government, 2017)

4.2.3 Public-private-sector co-operation

PPP projects are not new to Singapore and have been implemented since years. Singapore has no legal framework for PPPs, they instead follow general laws. Further guidance, definitions, and structures are provided by the Ministry of Finance's PPP handbook. All projects over 35 million US\$ are eligible for PPP especially projects in ICT infrastructure, education, healthcare, sports facilities, and water and sewage treatment. The procurement process can last up to two years and consists of four stages: sourcing/tender stage, evaluation, approval, and contract management. To ensure transparency and fairness in the competitive bidding stage, open tenders are included in the process. There is no central PPP agency. Relevant agencies and ministries are the Ministry of Finance which regulates PPPs, concerned departments, statutory boards such as the Singapore Sports Council, and the PPP Advisory Council which works as an adviser. PPP projects are a variation of Design-Build-Finance-Operate, which is the most common one, or Design-Build-Operate model. Both models leave the private sector in charge of design, building, finance and/or operating projects, and the government bear the political and regulatory risks. In terms of a bankruptcy of the contractor, the government established the step-in rights for all parties involved in the project. In the last years, Singapore has canceled several PPPs. The new terminal five at Changi airport, first considered as a PPP project, will now be run by a government-linked company which gives the government greater oversight and control of the project. Singapore Sports Hub and SMRT or ITE College West are one of the successful PPP projects.

The PPP market in Korea developed into a strong and profitable market. Korea has a transparent, consistent, and effective PPP framework with clear responsibilities between all involved actors. Strong government supply and strict monitoring processes make the nation an attractive place for PPPs. The legal framework consists of the special PPP Act and the PPP Act Enforcement Decrees. The Act, first initiated in 1994 with two enactments in 1998 and 2005, defines the details and outlines for PPP processes such as the category of projects, selection and contract bidding, timeframe of each period, and mandatory contents. The act distinguishes two major types of

projects: build-transfer-lease and build-transfer-operate. The government additionally publishes annual reviewed principle guidelines for each PPP project. The structure allows the government to adjust its policies according to market conditions. The Private Infrastructure Investment Center and, since 2005, the Public-Private Infrastructure Investment Management Center (PIMAC) offer technical assistance and support services for various PPP projects. Other major players are the Ministry of Finance and Strategy and other concerned ministries. The roles and functions of each actor are clearly defined in the law and several regulations, with the Ministry of Finance and Strategy as the head of PPP projects. Among government policies such as tax incentives or construction subsidies, the government also created risk sharing mechanism such as a compensation for base costs, credit guarantees, or guidelines for early termination. Local governments can undertake local PPP projects; larger projects are defined as national projects to maintain transparency and consistency. Seoul has initiated several successful PPPs. The Seoul Energy Welfare PPP, which aims at decreasing energy poverty and greenhouse gas emissions, was even awarded with the international C40 award. The Cheonggyecheon restoration in 2004 was a well-designed PPP with a triangular implementation system consisting of a public committee, a headquarter including several departments, and a special research group.

4.2.4 Institutional and regulatory environment

The institutional environment includes public and private institutions as stated in the Global Competitive Index by the WEF.

Institutions

Singapore ranks 4th in terms of property rights on the Global Competitiveness Index. (World Economic Forum, 2017) The government has the right and legislative power to designate a physical property, such as land, when it is in national interest without considering the rights of the property owner. Foreigners can purchase private sector housings and industrial and commercial real estates without further need of approval from the government. Landed residential property and vacant residential land require approval. Ownership restrictions are stated in the Residential Property Act. Singapore has strong and tight protections of intellectual property. The law protects several types of intellectual property (IP), which positions the country at rank 5th on the Global

Case Study

Competitiveness Index. The responsible body for the protection of intellectual property is the Intellectual Property Office of Singapore under the Ministry of Law. Singapore is a member of several regional and international conventions such as the ASEAN Patent Examination Co-operation, the WIPO, or the Paris Convention. The IP Hub Master Plan came to life with the goal of transforming Singapore into a global IP Hub. The plan includes several incentives and benefits for businesses and individuals to support IP development. Companies, which spend money on the development of IPs, can either receive a cash payout or tax deduction under the Productivity and Innovation Credit incentive. Singapore's legal system supports IP rights and protection. The city-state created a separate IP court with seven judges for IP cases. The WIPO set up a Singapore Arbitration and Mediation Center, with 19 international IP arbitrators, to settle disputes. The city has a first to file principle for patents, which lasts for a maximum of 20 years with annual renewal fees and gives the owner a monopoly right. The Patents Act and other subsidiary legislations regulate patents. The Copyright Act protect copyrights, which do not need to be renewed. Their validity depends on the type of design and can last between 25 years for published musical or artistic work and 70 years for performances. A patent on design has a validity of five years with the option of renewal, but only up to 15 years. The Registered Designs Act protect designs. Trademarks have a validity of 10 years and can be renewed. Singapore protects other IPs such as geographical indications or confidential information and trade secrets. Industrial Models, protected by the Layout-Designs of Integrated Circuits Act, have a maximum duration period of 15 years.

Singapore ranks 23rd for judicial independence which is protected by the constitution and several statutes. (World Economic Forum, 2017) The judiciary is impartial and independent as it does not fall under the authority of any ministry. The government, in coordination with the parliament, appoints judges, which can only be removed from their position for misbehavior or incapacity. Judges and judicial officers are immune to civil suits and are prohibited from cases in which they are personally involved. The constitution states the independence of Supreme Court judges. Singapore has legislative safeguards to protect the judiciary from external pressures. There are critics that the judiciary is not as independent as it may seem, especially when it comes to cases of government defamation. The court often rules in favor of the ruling party. Singapore's government officials show less favoritism towards connected firms and individuals in terms of policy and contract decisions. Singapore's companies

Case Study

have good ethical behavior which ranks the city at place three on the Global Competitiveness Index. (World Economic Forum, 2017) It is not mandatory for businesses to comply with the social responsibility principles or international standards, except for firms listed on the SGX. The government actively encourages businesses to adopt corporate social responsibility principles regarding corruption, human and labor rights, and environmental conservation. Few companies have publicly available code of conducts on their websites. The Monetary Authority of Singapore established the Code of Corporate Governance under the Companies Act, the last review was in 2012, with guidelines and objectives for auditing and reporting standards, the efficacy of corporate boards, and the protection of shareholders' interest. The code is mandatory for listed companies under a comply or explain basis. Companies can either comply with the guidelines or must explain why they do not and risk not being listed. In 2017, the MAS founded the Corporate Governance Council, which will further monitor and improve the Code of Corporate Governance.

Korea ranks lower in public and private institutions compared to Singapore with places 56 and 73 respectively on the Global Competitiveness Index by the WEF. Private property rights and interests are protected under the Civil Act. Foreigners and foreign companies have the same rights as citizens and Korean companies when buying land as stated in the Alien Land Acquisition Act. Once legally acquired property, cannot be transmitted to other owners by the government. Korea ranks 37th in public and private institutions and 54th in intellectual property on the Global Competitiveness Index 2017. It is surprising that the country ranks low on the index as the government enforces IP rights and fights violations. The elevated risk of online piracy is of great concern to the internet-savvy country and may be an explanation for the rating. The government offers three ways to enforce IP rights. First, through mediation. There are two commissions, one for copyright and another for the other IPs to settle disputes. Civil action is the second way to enforce rights. Here too, copyright and the remaining IPs are separated. In the first instance, copyrights are handled by the Ministry of Culture, and the Korean Intellectual Property Office Tribunal is responsible for patents, utility models, and trademarks, with the patent court as the intermediate appeal court. Korea has five district courts which can handle IP litigations. The Seoul District Court reorganized and established new IP specialized litigation divisions with judges who have a background in IP and technology. Criminal prosecution is the last method to enforce rights. The

Case Study

Korean Copyright Act of 1957 protects copyright. It is not mandatory to register a copyright but highly encouraged by the government. The responsible body for copyright registration is the Ministry of Culture, Sports and Tourism, except for software copyright. Here, the Ministry of Information and Communication is responsible. Korea has also a first-to-file rule when it comes to patents, which are regulated in the Patent Act and the Utility Model Act. The Korean law distinguishes between patent and utility model. Both can be registered at the Korean Intellectual Property Office, the patent for at least 20 years of patent protection and the utility model for 10 years. Industrial designs are protected for a maximum of 15 years. Trade marks should be registered, even when not used, to protect them. The protection is valid for 10 years with the possibility to pay for another 10 years maximum.

The nation has an independent and effective judiciary, but is not entirely without government and political pressure, which reflects in the low rating on the Competitiveness Index at rank 75. Even though the government established and enforces anti-corruption policies, there is still an elevated risk of bribery to change court decisions in ones' favor. Citizens and businesses often see the judiciary as corrupt and ineffective when it comes to setting disputes and challenge regulations. The judiciary consists of two main courts. The Constitutional Court is the head of the judiciary and is the only body to change constitutional laws. The Supreme Court in Seoul, responsible for reviewing ministerial and governmental decrees, has one Chief Justice, appointed by the president in consultation with the national assembly, who then appoints all other judges on the Supreme Court. This system is often criticized as it gives one person too much power over personnel policies. Another problem is the high favoritism from government officials in policy and contract decisions towards government-connected firms and individuals.

Korea ranks at place 90 in ethical behavior. Many Korean companies have their own set of corporate ethic codes and offer intern programs for ethical behavior. But ethic codes are often violated, especially concerning illegal price agreements. There are also several company scandals and reputation disasters regarding ethics. Korea has an own Korean Business Ethic Index under the Ministry of Knowledge Economy which provides the framework and guidelines for corporate ethics. Accountability is another weakness in the business environment. The Code for Best Practice for Corporate Governance was established as a voluntary guide for companies with key areas from shareholders and board of directors to stakeholders, audit systems, and

management monitoring. Over the last years, the government made efforts to improve corporate governance by increasing minority shareholders rights, implement new accounting and reporting standards, or by a stipulation of independent director majority in companies. To counteract the low whistleblower rate, the government established the Korean Whistleblower Protection System. Despite these efforts, independent boards are still a rarity among businesses, corruption still exists, businesses often stick to old standards of corporate governance, and employees are often hesitant to speak up.

Regulatory environment

Singapore ranks 2nd in the Doing Business Index by the World Bank (The World Bank, 2017). It is an easy place to start a business, employ workers, or pay taxes. The city ranks 6th in starting a business, one place up since 2016. The median time to start a business is 2.5 days and costs 0.6% of income per capita for men and women, which is lower than OECD average. There are three administrative procedures: online registering, making a company seal, and sign up at an insurance company for employee compensation. (The World Bank, 2017)

Ranked 8th in the index, Singapore has an efficient and simple taxation system, which is attractive for businesses. Taxes can be paid through an online electronic system provided by the Inland Revenue Authority of Singapore, which reduces costs and time. The city-state has signed several Double Taxation Avoidance agreements. Corporate income tax is 17% whether it is a Singaporean or foreign company and only applicable to income gained in or from Singapore. The government offers several incentives to reduce the corporate tax for e.g. start-ups or specific industries. Singapore has no tax on capital gains or foreign-sourced income, which makes the city-state attractive for doing business. The value added tax, named goods and services tax in Singapore, has a rate of 7% and is regulated in the Goods and Services Act. There are no export taxes and import taxes are only imposed on tobacco, liquor, vehicles, and petroleum products. Singapore has special stamp duties for company shares and real estate property transfer, but the rate is very small. The annual value of all properties calculates property tax. Citizens and permanent residents must pay the mandatory social security contribution or personal tax, which adapts to the income with a maximum rate of 22%, to the Central Provident Fund (CPF). Foreigners pay the flat rate of 15% on income. (The World Bank, 2017) Singapore ranks 19th regarding

Case Study

registering property. Businesses must overcome six different procedures, OECD average is 4.7, in registering property with a median duration of 4.5 days, which is quite lower than the average days among OECD countries with 22.4 days. The registering process costs 2.9% of the property value. The government has undertaken several measures to make the registering process easier. Businesses must pay a stamp duty fee which can be paid online. Singapore rose 14 ranks since 2016 to place 10 in terms of dealing with construction permits. Time and procedures are lower than OECD average, but costs are much higher with 6.1% of the warehouse value; OECD average is 1.6%. There are stricter regulations and tighter control over building quality. A reform in 2017 made it easier to deal with construction permits through an online one-stop shop. (The World Bank, 2017)

Entrepreneurs have easier access to credit; the city ranks 20th on the Ease of Doing Businesses Index. Legal rights for borrowers and lenders are protected. Several planned changes to the Companies Act should protect businesses during their bankruptcy process such as globally applicable court decisions. Due to two reforms in the last ten years, the government could improve its credit information system by collecting information on firms and give special rights to borrowers by law. But credit information can only be requested from credit bureaus; credit registries do not give information.

Regulations and protections for hiring employees are stated in the Employment Act without unemployment benefits or protection. Singapore has a six-day working week, without restrictions on night work, and overtime pay of 50% of hourly wages. Wages are determined by the free market without a minimum wage law. The probationary period in Singapore is six months. Workers who have been with the company less than one year have seven days of leave, which increases to 11 days up to five years tenure and 14 days of leave for workers with 10 years of tenure. A contract can be terminated by the employer, the employee, or by natural termination with severance payment as stated in the working contract. The Ministry of Manpower has to be notified of the termination within five days. The government actively encourages businesses to hire national workers before foreigners. Businesses who want to employ foreign workers need to apply for an Employment Pass or S Pass with additional fees. The application process for the pass is linked with burdensome documentation requirements and qualification criteria, which complicates the hiring process, such as advertising the vacant job on the Workforce Singapore job bank open for all citizens.

Case Study

Other factors such as increased salaries for EP applicants and experience requirements reduces Singapore's image as an immigration destination. Statutory maternity leave is 15 weeks at full salary; a male employee can take on week of paid leave. Dismissal during maternity leave is prohibited. (The World Bank, 2017)

Singapore has one of the most open and liberal trade markets in the world with several free trade agreements. The trade ratio to GDP is 318%. Except for a few products the tariff rate on products is 0%. There are a few import restrictions on specific sectors such as media services, and strict regulations on food import. Despite all these positive factors, Singapore ranks lower on the ease of trading across borders at place 41. Even Hong Kong, another major trading country, ranks low on the index at place 42. A reason for the low ranking could not be found.

Korea ranks 5th in the Doing Business Index by the World Bank (The World Bank, 2017). It is an easy place to start a business, employ workers, or pay taxes. The nation ranks 11th in starting a business, six places up since 2016. The median time to start a business is 2 days and costs 14.6% of income per capita for men and women, which is higher than OECD average and the costs in Singapore. There are two administrative procedures: online registering at the one-stop shop by Start-Biz and paying incorporation fess and making a company seal. The government eliminated post-registration procedures to make it easier and faster for businesses to register. (The World Bank, 2017) Foreign companies must follow the same starting a business procedures as national companies.

Korea ranks 23rd in terms of taxation system and has various tax treaties. Through several reforms, the government made the administrative burden for companies easier and less costly by reducing the profit tax rate. Since 2016, the administrative process and costs increased as the government increased the taxes on unemployment and national health insurance and established new requirements for filing and paying the local income tax. (The World Bank, 2017) Businesses in Korea must pay national and local taxes. National taxes include corporate income tax, surtax, minimum tax, value added tax, excise tax, and education and security tax. Local taxes are local income surtax, local inhabitants tax, acquisition tax, and registration tax. There are also additional taxes for foreign branches in Korea such as a branch tax. There are tax incentives for specific industries such as the high-tech industry. The corporate national income tax is a progressive tax starting from 10% up to 22% based

Case Study

on the income. For national companies, income includes worldwide income, whereas for foreign businesses only the income in Korea is taxable. The progressive corporate local income tax ranges between 1% and 2.2%. The value added tax has a flat rate of 10% with some exceptions on goods and services. Foreign suppliers of electronic services must pay a higher value added tax. The tax is not imposed on exports. The tax rate for imported goods is at 8%, with higher taxes on luxury goods and petroleum taxes. When acquiring a building, the company must pay 2% of the acquisition price and a community facility tax from the statutory standard price of the building. Property tax differs according to building, land, or city planning. There are additional taxes for certain industries such as an education tax for businesses in the finance or banking sector. Employers must pay an unemployment insurance tax, a local income tax in proportion to employee salaries, a per capita resident tax, and long-term care insurance tax. Employees must pay pension, health insurance, employment insurance, and individual income taxes. (The World Bank, 2017)

Korea ranks 39th on the ease of dealing with construction permits. (The World Bank, 2017) Businesses must complete 10 procedures in general for obtaining land and register a property, which can last up to 28 days. The costs are limited to 4.3% of the building value. Getting access to electricity is easiest in Korea, ranks 1st, with three procedures, a maximum duration of 18 days, and costs accounting for 38.8% of income per capita. Since 2016, Korea jumped up two places to place 39 in terms of registering a property. Registering a property is not easy as there are several procedures for businesses combined with higher costs than the OECD average. The full registering process lasts for six days. (The World Bank, 2017) Korea ranks 44th in terms of getting credit, which reflects the weak legal rights for borrowers and lenders even though credit information is easy to access.

Korea has a six-day working week with the second longest working hours in the OECD, even though the Labour Standards Act restricts them to 40 hours per week. The probationary period is three months and employees have an unemployment protection after one year of employment. The contribution period for unemployment protection is six months. Employees have 15 days of paid annual leave in the first year of employment, 17 days up to five years of employment, and 19 days over five years of employment. There are annually reviews of the minimum wage per hour, and overtime payment is 50% of the hourly pay as stated in the Labor Standards Act, the main act for standard work regulations, and the Minimum Wages Act. The government

Case Study

does not actively support hiring nationals over foreigners. The government even established the Employment Permit System to support and protect the rights for foreign workers from 15 countries. Foreign workers only need a business or employment visa. Businesses who hire workers who were unemployed, elderly, veterans, disabled, or interns can apply for grants or incentives. There is no obligation to set up a written employment contract as a verbal agreement is binding. But terms concerning wages, working hours, paid leave, and weekly holidays must be in written form. Companies with more than ten employees are required to fill out the Rules of Employment and submit them to the Ministry of Employment and Labour. Pregnant women can take 90 days, or 120 days for twins, of maternity leave by full salary and a dismissal protection of 30 days after returning to work. The employer pays only for the first 60 to 75 days; the government for the remaining days. Paternity leave should be at least five days. The Korean constitution and the Labour Standards Act both prohibit gender discrimination and retirement grants are mandatory in Korea. (The World Bank, 2017)

Korea ranks better in trading across borders than Singapore at place 32nd. The trade ratio to GDP is 78%. There is 13.3% import tax on commercial goods; tobacco products and alcohol have higher taxes. Companies need three documents for import: customer declaration, bill of lading, and delivery order. A license is not obligatory. Korea has several free trade agreements which makes trade free from tariffs and other controls. The Ministry of Trade, Industry, and Energy imposes restrictions on the import of raw materials and products, and products for military use. (The World Bank, 2017)

5. Key findings

Including information from chapter four, this chapter analyzes the similarities and differences between Singapore and Seoul and outlines their strengths and/or weaknesses.

5.1 Factors of production

Singapore and Seoul have many similarities concerning their factors of production, especially in human capital and office spaces. Differences arise in the access to venture capital, which is much easier in Singapore than in Seoul. Over the last decades, Singapore and Seoul transformed from cities with a high illiterate rate and low educated population to one with highly competitive and educated workforces. This process was driven by heavy government expenditure on education by both cities. From primary up to tertiary education, Singapore's education system thrives towards the goal of creating competitive and highly educated human capital. Due to heavy governmental expenditure on tertiary education the number of graduates rose significantly despite the high psychological stress and pressure. Tertiary enrolment is higher in Seoul than in Singapore. But the focus on higher education has its shortcomings. This attitude produced a pool of too many over-educated workers. Furthermore, many young people choose education over entering the labor market. The outcome is a shortfall and mismatch in the demand-supply market. Both cities suffer from a lack of technical skilled workers. Singapore implemented successful programs for skill upgrading, which shows in the Human capital ranking, and companies are more willing to invest in employee training. Seoul still could not overcome the deficiency despite several programs and initiatives for skill upgrading and training. This is mostly due to the low reputation of and enrolment rate in VETs and the low willingness of companies to invest in training and employee development. In the education driven Korean culture, the pressure to achieve a university degree or diploma is high. It is a precondition to eventually get a job in one of the large companies but makes it difficult for SMEs to hire workers as they often cannot afford them. A rapidly aging population and gender gap are additional problems that both governments approach through special initiatives and programs for elderly and women.

Key findings

Seoul has a stable real estate market with cost-effective Grade A offices in the core business districts. New business districts at the periphery of the city offer spaces at lower rents and land prices, often eligible for government incentives, which is important for start-ups and SMEs as co-working spaces are scarce. Seoul experiences more relocations than expansions and quick absorptions of offices spaces in the main CBD districts. Offices in the major business district and even in the fringe of the city are much costlier in Singapore. To attract start-ups and entrepreneurs, several co-working spaces have been established throughout the city. With an ongoing re-designation of available semi-industrial land for other purposes, free industrial land is almost non-existent in Seoul. This forces large industrial companies to move towards other cities in the nation. Government incentives, such as tax reductions, should make existing free spaces in industrial complexes more attractive for companies. Singapore's supply of industrial and commercial land exceeds the demand. To lower the vacancy rate, the government established special initiatives and strategies to rent out available land. With the upcoming supply of land, rentals and prices will further decline, which opens a window of opportunity to attain cost-effective industrial land. But without a significant growth in the manufacturing sector, these initiatives may remain ineffective.

Both cities are attractive places for start-ups, but they differ in their access to venture capital, which is easier in Singapore. Singapore's entrepreneurial environment has changed visibly over the last decade. The drive to become an innovation and start-up hub has caused the government to provide more incentives, schemes, and funding opportunities for entrepreneurs and start-ups and created a thriving ecosystem. With more exit strategies available, VC firms are more willing to invest in early-stage start-ups. Relaxed regulations, such as a simplified authorization process, should attract more VC firms in the future and in return generate more capital for the start-up scene. Even though the Korean government supports start-ups, especially in the technology industry, through several initiatives and programs, access to finance is difficult for start-ups. Limited possibilities for market exits and the uncertainty of investment return, makes VC firms more hesitant to invest and creates a so called 'Death Valley' for start-ups. The government established special programs and initiatives to boost the start-up scene and attract more VC firms and managers. Aggressive government policies helped to improve the startup ecosystem and entrepreneurial attitudes which led to an

Key findings

increase in opportunity-driven startups. With ongoing efforts, the nation may turn its startup ecosystem into that of advanced countries.

	Strengths	Weaknesses
Singapore	- Highly educated workforce and PMTEs - Attractive start-up scene and access to venture capital - M&A markets and exit strategies - Attractive commercial estate market - Language diversity	- Lack of technical skilled workforce and gender gap - Strict IPO listing regulations for start-ups - Land scarcity
Seoul	- Highly educated workforce - Heavy government investment in education - Attractive commercial estate market - Programs and initiatives for start-ups	- Rapid aging population - Lack of technical skilled workforce and gender gap - Early stage funding for start-ups (Death Valley) - Underdeveloped M&A markets, exit strategies and strict listing requirements - Lack of industrial spaces - Language barriers

Table 2: Factors of production

5.2 Infrastructure

Singapore and Seoul have quite similar user friendly public transport systems with high quality services and capacities. As we will see the difference lies in the public transport operation system. As there is not enough land to build new roads, both city governments actively promote public transport as a mean of transport. Singapore and Seoul are actively expanding the density of different transport modes, especially the subway network, so that residents can reach public transports within 10 minutes of their homes. Due to the focus on density, capacity may be a future problem for both cities. Singapore's public transport system, overseen by the PTC in terms of fares and standards, runs under two separate operators, which have a permanent monopoly over

Key findings

their own zone. The arrangement is a good basic, but as both operators run separate websites and hotlines, neither of them provides useful service information about the other. Singapore's hands-off approach further limits the direct influence of the government on the public transport system. The government can only indirectly, through standards, impose customer-oriented innovations. The port of Singapore is a major employer and works as a trading point between East and West. Short- and long-term upgrades for the airport and port should further secure the competitive stand in the oncoming years. Even though Seoul's public transport methods are run by more than four different companies, the local government has more direct influence over decisions. The semi-public operation system, which permits private and public companies but leaves the decisions for routes, schedules, and fares in the hand of the local government, makes the public transport more receptive for changes. Seoul has no direct water access and the airport is 50km away but with good connections to the city. Air and sea transport are key advantages for Singapore. The Changi airport is one of the region's and world's most competitive airport with connections to 380 cities and a passenger capacity of over 50 million per year.

Singapore and Seoul have an excellent ICT infrastructure with elevated levels of investment and strong government support. They have one of the world's fastest mobile and broadband internet speed combined with affordable subscription costs. Korea is a world leader in the provision of ICT goods and one of the most connected countries worldwide, which positions it in the upper ranking of major ICT indices. The economy benefits from the extensive ICT infrastructure, thanks to its home-grown IT firms and strong government support. In Singapore, four mobile operators, which have government shares through the government holding company Temasek, ensure a high mobile and internet penetration and coverage rate. It makes the country a good testbed for international and national ICT companies. Singapore's and Seoul's population and workforces are tech-savvy. Although the ICT infrastructure in Seoul is one of the best worldwide with tech-savvy citizens, the use of ICT in businesses cannot compete on the same level. Especially non-ICT businesses avoid using technology to enhance their productivity. Cloud computing, numbers of enterprises in e-commerce, and e-government use for businesses is lower than OECD average. The digitalization and strengthening of innovative capabilities of SMEs, through programs for workers or financial incentives, is therefore one of the main policies of the city government. Cloud service usage among Singaporean businesses is higher than in Seoul. As proximity

Key findings

between the cloud and businesses is of advantage, Singapore's small size combined with active government support and new innovations makes it an attractive space for cloud services. But still SMEs are hesitant to use ICT or cloud services in their businesses due to excessive costs and risks. The government therefore initiated special programs for SMEs, in co-operation with mobile operators, to make it easier and more affordable. Singaporeans belong to the highest spender in e-commerce and m-commerce in Asia. The market is rapidly growing, not only domestically but also across borders. Through its Smart Nation policy, the government has established liberalized and competitive ICT markets. One key element in the policy is to foster IoT networks. Some mobile operators already started building their own IoT networks. But as all operators have their own standards, the problem of a non-interoperability between these networks arises. Through its smart city program, linking government processes and citizens participation in a top-down and bottom-up way, Seoul wants to position itself as one of the world leading cities in e-government services. E-commerce and m-commerce markets are growing, due to the advanced IT infrastructure, high penetration rate and internet speed connection. The next step is to implement city- and nation-wide IoT services and next generation networks. Korea will be the first nations to implement such networks. Currently three mobile operators are competing with two different network styles: LoRaWAN and NB-IoT.

Although Singapore does perform well in transportation and ICT, its strength lies in the research facility indicator. The high commitment of the government to attract and develop talent, English as the primary language in schools, and their openness to foreign talent are reasons for the rapid development of R&D in Singapore. Most R&D investment comes from the business sector but is still lower than BERD of R&D intensive nations. Singapore has a well-funded government R&D environment. Due to the increase of public and private sector investment in R&D, it has overtaken a dozen of OECD countries over the last decades. GERD reached the median OECD ranking, but is still behind Korea. Through a strategic approach to innovation, high government support, and accompanied by a strong ITC sector, Korea build a comprehensive R&D sector over the last decades. It has one of the highest R&D investment-to-GDP ratio, second to Israel, with more than 60 universities and research institutes in Seoul. Business expenditure on R&D is high, but comes to a large extent from large conglomerates, who spend billions on research; SMEs are more hesitant to invest. Through subsidies and incentives, the government wants to increase the innovation

Key findings

culture in SMEs. Weak collaborations between actors such as universities, research facilities, and the industry, lead to lower R&D productivity. Many large companies have their own research facilities with a focus on applied research, which leaves the sector vulnerable and dependent on private actors and creates a weak basic research environment. The R&D sector in Singapore focused on available technology and applied research. In recent years, the attention of the government shifted to more basic research to create and commercialize own innovations. Different to Seoul, Singapore has good knowledge-transfers between universities and businesses and several national and international research co-operations. The focus of Seoul's universities on academic publications and research, instead of commercialization and industry collaborations, and the resulting low expectations of businesses to receive economically valuable knowledge from universities, creates a poor R&D environment. Despite the similar focus of universities on research publications, the scientific output in terms of international publications and co-authorships is lower in Seoul than in Singapore.

	Strengths	Weaknesses
Singapore	- good public transportation system - competitive air and sea infrastructure - developed and cost-effective ICT infrastructure - tech-savvy citizens - increasing IoT networks and cloud services - good knowledge-transfer	- limited influence of the local government on public transport (hands-off approach) - IoT networks are non-interoperable - Higher costs for ICT and cloud services - R&D environment still needs improvement
Seoul	- role model for public transportation system (semi-public system) - competitive air transport - most connected nation with tech-savvy citizens and cost-effective mobile and fixed broadband prices	- no direct sea transports - low knowledge-transfer and scientific output - weak university-industry collaborations in R&D

Key findings

	- fastest internet connection - cloud services and IoT networks - high R&D spending	
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Table 3: Infrastructure

5.3 Economic structure

Singapore and Seoul have many differences in the economic structure pillar. Both cities are similar in their strong government support for SMEs. But whereas Singapore effectively reduced the role and influence of large conglomerates in favor of SMEs, Seoul's SMEs still suffer from the influence of Chaebols on the market. In the past both cities heavily relied on large companies, multinational and government-linked companies in Singapore and Chaebols in Korea, for their economic growth and therefore neglected the role of SMEs, which are now the backbone of the economy and the biggest employer. Whereas Singapore's SMEs contribute to half of the cities GDP, Korea's dual economy consists of many large productive, and global competitive conglomerates on one side, and a larger pool of less productive SMEs on the other. The Korean economy benefited from these large conglomerations, which helped form the nation into what it is today. But the close tie between the government and Chaebols is criticized to be the reason which prevents the nation from moving forward. GLCs in Singapore still play a dominant role in the economy and there are monopolies in certain industry sectors, but they are closely monitored by the government holding company Temasek, which operates as a supervisory institution. Korea's state-owned enterprises are subjects to the Ministry of Strategy and Finance, without a singular government institution exercising ownership rights. SOEs are still dominant in specific sectors such as infrastructure or energy, but the government starts to privatize SOEs and make more room for private companies. SMEs in both cities face a labor shortage, even though they are the biggest employer. Graduates want to work for large conglomerations instead of SMEs as wages, benefits, and advancement opportunities are better. To counteract the progression, the Korean government promoted and upgraded vocational education, expanded training and school-to-work transitions. There are several programs, subsidies, incentives, and tax reductions for SMEs. A strong government support can help SMEs to thrive and make the market more competitive as it is the case in Singapore, but in Korea it turned in the wrong direction.

Key findings

Through strong financial support and easy access to loans even unprofitable SMEs can survive for years and tend to keep themselves small as to not lose these advantages. The protection of SMEs also has a negative impact on new emerging businesses and start-ups, as they have fewer resources, less support, and more restrictions and regulations. SMEs in Singapore struggle to extend regionally and internationally. Through different interventions and programs, the government, tries to support SMEs going international and to form partnerships between SMEs and MNCs. Foreign ownership in Singapore is much higher than in Seoul. With its strategic location, many MNCs choose Singapore as their headquarters or branches to do business. Foreign companies are subject to the same company laws and policies as domestic companies.

Singapore has one of the largest financial centers in the world with a wide range of financial and non-financial institutions. Seoul has an underdeveloped and highly domestic financial sector. One reason is the tight government control over the financial sector and the other reason the mismanagement from decades ago, when banks were the tool for funding large conglomerates and punish others who were not working according to the economic plan. The underdeveloped sector was a reason for the financial crisis in 1997. The government saw this crisis as an opportunity to restructure the sector through injection of public funds and a decrease in the number of unprofitable financial institutions. Singapore's banking system has a three-tier structure consisting of banks, wholesale, and offshore banks. The MAS is the supervisory and regulatory body of the financial system. Singapore has no central bank; the MAS conduct monetary policies and banks are the dominant players in the market. The Korean financial sector consists of banks, with the Bank of Korea as the central bank, non-bank deposit institutions, insurance, securities, and collective investment institutions. Seoul is the financial center of the country. There are five comprehensive and co-operating supervision bodies responsible for the financial sector, each with clear roles, mandates, and responsibilities. Through its efficient domestic market, active government policies, and high observance to international standards, Singapore is attractive for major foreign banks. Seoul has fewer foreign owned banks, which is due to the high regulations and strong government interference. The business and professional service sector in Singapore is one of the fastest growing and ranks the city among the top five in the Global Financial Centres Index. Seoul's business and professional service sector is smaller which is due to the low tendency

Key findings

of large companies to co-operate with extern service providers and tight regulations on foreign professional services.

	Strengths	Weaknesses
Singapore	- Government incentives for SMEs - Supervisory body for conglomerates - Good business-service sector - Developed financial sector - High number of foreign banks	- Still dominant roles of GLCs - Bank-dominated financial sector - No central bank
Seoul	- Tax reductions, subsidies, and programs for SMEs - Clear roles of financial supervision bodies - Online-only banks development	- Dominant role of Chaebols (dual-economy) - Labor shortage for SMEs - Intensive government support for SMEs hinder the development of start-ups - Underdeveloped bank sector and tight government control

Table 4: Economic structure

5.4 Urban amenities

Urban amenities include educational and cultural institutions, as well as the housing system. Singapore and Seoul have similar education systems with several choices for higher education and no to low tuition fees for primary and secondary education. Both nations score well on the PISA ranking. Differences occur in the universities' international recognition and in language skills. In both fields Singapore is more competitive. Singapore and Korea are one of the best educated countries in the world with a strong value on education. According to the information from chapter 4.1.4, we can conclude that Singapore's education system is more competitive despite the lower government spending on education. In the last PISA ranking, the city-state scored best in all three categories. Korea's students rank among the top countries in the PISA ranking, even though it lost a few places in 2015. One would think this is due to heavy investment on education by the government, but more effectively is the private

Key findings

spending on tuition in Hagwons and the students' strong ability to memorize. Primary and secondary education is free of charge in both cities, except for a small fee. Since 2017, international students and children of permanent residents in Singapore must pay an additional schooling fee. Both cities have a similarity in private spending on tuition outside of schools. The drive to be more competitive and the grade obsession puts students under high stress and psychological pressure. Korea is one of the countries with the highest suicide rate among students. The school systems are highly centralized with both Ministries of Education responsible for the curriculum, with annual revisions, and allocation of funds. Teachers keep strict to the curriculum, which leaves no space for flexibility, creativity, or other forms of teaching. The Korean education system lacks bilingualism with Korean as the main language for subjects, which leaves students with less language competencies than other countries. Singaporean students not only have subjects taught in English but also learn an official mother tongue, which gives students a competitive language advantage over other nations in the region. Another strength of Singapore's education system is the more flexible and responsive secondary education structure. It provides more possibilities to enhance different abilities and needs of students. Less academically inclined students often choose technical and vocational schools as their secondary education. Singapore's three main universities gained international recognition for their academic and research qualities. Together with five polytechnics they make the backbone for tertiary education. Due to the governments heavy expenditure on tertiary education the number of graduates rose significantly. Only two Korean universities are included in world's top university ranking, which reflects their low competitive stand. Both cities contain institutions with practice- and applied-oriented courses and life-long education institutions for citizens.

As each city has a different historical background each has its own significant cultural facilities and historical sites. What Singapore and Seoul have in common is the strong financial support coming from their governments and the private. Singapore has a shorter historical background than Seoul and less historical sites but is shaped by its multinational citizens. The city is one of the most active cities in promoting and funding its creative and cultural industries. With its own civic and cultural district, the city created an area for historic buildings from the times as a British colony, museums, and parks. Singapore's Botanic Garden was designed as the first UNESCO World Heritage Site. The city has several public and private museums, which offer different entry fees for residents and foreigners. Entry fees can be 100% more expensive for foreigners,

Key findings

which may deter tourists. The Esplanade, a performing art center, is the place for cultural festivals and programs. Throughout the year, the city hosts several festivals such as the International Festivals of Arts or the Night Festival. Seoul is the center of the creative and cultural industry and provides a complete range of attractions. From diverse historic places in a modern convenient environment to various markets, shops, restaurants, theaters, and parks. With its long history as the capital of Korea, Seoul offers several historic places which are integrated in the modern design of the city; financially supported by the city government and private sector. From palaces and fortresses to museums, galleries, and theaters; Seoul's cultural offers are diverse. Seoul hosts two UNESCO World Heritage sites – Jongmyo shrine and Changdeokgung Palace Complex. Whereas the northern part of the city, north of the Han river, is the place for traditional markets, palace, and other historic attractions, the southern part is the place for the latest trends and modern culture such as Gangnam district, the birthplace of the Korean Wave. Museums in Seoul are inexpensive and often free of charge such as the Seoul Museum of History. The city is an attractive place for shopping, leisure activities, with a good mix of national and international restaurants, and festivals. Furthermore, Seoul is a popular place for international and national business and leisure events.

Singapore and Seoul have very different housing systems. Singapore' housing system is a unique one. Over 80% of residents live in public housing provided by the Housing Development Board (HDB). The government strongly encourages home ownership rather than rent. As a result, Singapore has one of the highest ownership rates in the world at over 90%. To guarantee affordable housing the government, in co-operation with the HDB, provides a variety of housing for every budget and income. A policy allows residents the use of the Central Provident Fund (CPF) savings to pay for their homes or rents. The CPF is Singapore's social security system, and 23% of the savings may be used for housing. It is a housing system with a symbiotic relationship between HDB and CPF which works quite well. Critics are that the HDB has too much control as it not only works as a housing provider, but also as a mortgage lender. The high vacancy rate in private housing is due to a huge new supply of houses and the completion of projects. Additional muted leasing interests, unaffordable prices, and housing restrictions for many foreigners further contributes to the high rate. Seoul has a complex housing system which consists of Jeonse, monthly rentals with deposit, and monthly rentals with small security deposits. Most Koreans still prefer Jeonse even

Key findings

though a trend towards monthly rentals can be seen. Seoul has a lower homeownership rate than Singapore, as Koreans tend to rent rather than purchase their homes. The Seoul Housing Corporation, a city-government owned company, and the LH corporation, a government-owned company, are the provider for public housing in Seoul. Huge deposits for small tenancies are a big burden on Korean households. Depending on the current market situation, deposits can rank from 60% up to 80% of housing value. As a result, Korea suffers from high household debts. Although the government is trying to reduce the debt by limitations, restrictions, and a new supply of affordable housing, the debt is still high. For lower income classes, the Seoul government offers financial assistance and different programs.

	Strengths	Weaknesses
Singapore	- One of the best education system worldwide - English as a major language - good international reputation of universities - effective Public housing system (HDB) - Affordable housing prices - Creative and cultural industry support by the government	- Strong financial burden on households - Stress and psychological pressure on students - Higher fees for foreign residents - Less historical sites
Seoul	- One of the best education system worldwide - Strong value on higher education - Diverse cultural sector - Attractive for business- and leisure events - financial support for low-income families in terms of housing	- High pressure and suicide rate among students - Mismatch between labor market demand and supply - High financial burden on households - Lower language competency - High household debt

Table 5: Urban amenities

5.5 Urban governance

Urban governance includes political stability and the absence of violence and terrorism, an effective government, voice and accountability, regulatory quality, and control of corruption. Both cities implemented similar programs and initiatives to actively engage their citizens in urban governance and fight corruption. Singapore has a strong governance in public service delivery and highly competent public officials. Several policies and programs are business- and citizen-centric to engage both actors in national policy making processes. Singapore sustains an elevated level of incorruptibility, thanks to effective laws and enforcement, and the strong political will to eradicate corruption. An almost independent judiciary system and responsive public services complement the anti-corruption strategy. Local governments in Korea have limited autonomy, a semi local autonomy, to make decisions due to the highly centralized administrative landscape. Decentralization is a slow process in Korea. Cities are mayor dominant, who is at the top of the decision-making process and does not share his power with the local councils. Local councils work as the legislative body but are not as efficient as they can be due to the lack of official powers. The central government, as well as the SMG, have initiated several citizen participation measures to strengthen their engagement in local processes. Due to the higher local autonomy of Seoul, citizens have a strong voice in local policymaking. The low score in government effectiveness can only be attributed to the political uncertainties during the impeachment of former president Park Geun-hye, as the country has an effective and efficient governance. Public officials and civil servants are undergoing a rigorous and merit application process, which should guarantee that only the best will be selected. Since decades, fighting corruption was always a prime goal for every ruling party in Korea. With the introduction of new laws and stricter regulations, the government wants to improve public opinion regarding corruption. Nevertheless, the impeachment of former president Park and two chairmen of the biggest Chaebols brought light to the level of corruption in the highest tiers of government and conglomerates. Singapore ranks low on voice and accountability. Reasons are the lack on an independent electoral commission and real competition in elections, and the absence of local elections. Even though freedom of expression and speech are stated in the constitution, the government can and will restrict these rights when it comes to government and party criticism. The government can also dissolve groups and restrict the freedom of association as stated in a special Societies Act. Print and broadcast

Key findings

media are mostly government- or PAP-linked and are subjects to tight censorship. The constitution of Korea guarantees the basic rights such as freedom of speech and expression, press, media, and association as well as the right to vote. There are some restrictions when it comes to North Korea, defamation of the government, and the freedom of press. Through continuously efforts from the government to cut red tapes, Singapore scores well in the WGI rating. Several initiatives and panels are responsible to simplify, drop, or relax regulations and rules that are no longer needed or are a burden on customer and businesses. Korea has still high regulatory burdens on the corporate sector but started a process of cutting obsolete regulations and concentrate on the qualitative approach rather than the quantitative one. The last point is political instability and absence of violence and terrorism. Singapore is one of the safest places worldwide with a low crime rate and no threat of terrorism. Apart from the ever-present danger from North Korea and an increasing number of cybercrime, Seoul is a safe place too with a low crime rate. Whereas Singapore could maintain political stability and security throughout the years, due to the predictable style of policy making by the ruling party, Korea' political stability is often unstable. The recent political unrest was triggered by the scandal surrounding the former president Park Geun-hye.

	Strengths	Weaknesses
Singapore	- Political stability - Strong governance in public service delivery - Competent public officials - Citizen-centric policy making - Reduced burdens for businesses - Low level of corruption	- Lack of independent electoral commission - No real competition in elections - Semi-freedom of expression and speech - Tight media censorship
Seoul	- Overall political stability - Good eGovernment - Citizen-centric policy making - Protection of basic rights such as freedom of speech - strict anti-corruption and bribery laws	- Limited authority for local government - Low level of decentralization - Political uncertainty - Corruption among the highest level of government and businesses

Key findings

		- High regulatory burden on businesses
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Table 6: Urban governance

5.6 Urban strategy

Singapore and Seoul are similar in their urban strategies. Both have long-term strategies combined with mid-level plans focusing on special parts of the city or economy. Singapore has an overriding strategic plan for long-term strategies, the concept plan, and a medium-term plan for implementing these strategies, the master plan. In combination they create a comprehensive and effective framework which reflects the issues and concerns of the city and its citizens. Several smaller urban strategy plans, such as the Intelligent Nation plan, focus on one part of the economy and city. With its Seoul 2030 master plan the city is working towards a smart and sustainable city for its citizens and visitors. Through an integration of citizens, experts, and administrators the local government can better address the needs of the city and its inhabitants. Accompanied and supported by several mid-level plans and a legal act, the SMG created a comprehensive, understandable, and feasible urban strategy.

	Strengths	Weaknesses
Singapore	- Combination of long-term and medium-term urban strategies - Holistic approach - Mid-level/control plans	- Concept plan has a long lifespan - No legal framework
Seoul	- Long-term, clear, flexible, and effective urban strategy - Triangular system with citizens, experts, and administrators - Active citizen participation in urban planning - New zoning system - Mid-level plans	- No clear statement on long-term side effects

Table 7: Urban strategy

5.7 Public-Private Co-operations

Singapore and Seoul are complete different when it comes to public-private co-operations or partnerships. Whereas Seoul successfully implemented several co-operations, Singapore has its shortcomings. Even though the Singaporean government supports PPP projects only a handful of PPP projects were successfully implemented since its establishment. The PPP handbook states the guidelines and definitions of PPPs, but a legal framework is missing. The PPP market not only lacks a legal framework but also a centralized body responsible for supervision. Four different actors make a clear definition of separate roles and functions blurry. The procurement process is clear, fair, and transparent including several steps. Seoul has a clear, solid, and effective legal framework for PPP projects. With dedicated support from the government and assistance by supportive agencies, the nation is attractive for foreign and national investors, which are equally treated. National applicable guidelines and policies for PPPs further strengthen alliances and the PPP market. The hierarchical structure of the legal arrangements makes it easier to adjust policies and guidelines to the current market situations. Roles and functions of each player are defined and are distinguishable by regulations. The independent PPP unit PIMAC further strengthens the market by supporting the ministry and other actors, as well as by giving technical assistance.

	Strengths	Weaknesses
Singapore	- Handbook for PPP guidelines - Clear, fair, and transparent procurement process	- Small number of successful implemented PPPs - No PPP agency or special law
Seoul	- Clear, solid, and effective legal framework and guidelines - Protected by law - Flexible framework - Clear definition of roles and functions for each actor	- Weak public confidence in PPPs

Table 8: Public-Private Co-operations

5.8 Institutional and regulatory environment

Singapore's institutional environment is good which shows in international rankings. The city-state has one of the most efficient legal regimes for IP protection with good general and alternative dispute resolutions. Businesses benefit from government incentives for the development of IPs. The power of the government to designate a physical property when it is in national interests without consideration of the property owner is a critical factor. The institutional environment in Korea does not perform as well as in Singapore. Physical property is protected, and the same rights are given to foreigners as well as citizens in Korea. Several laws protect IP rights and violations are severely punished. But as a tech-savvy nation online piracy is a major problem and affects the competitiveness of IP rights. Singapore's judiciary is independent, as it is not subject to any government ministry, but there are critics when it comes to court decisions in terms of government defamation as the judges often rule in the favor of the government. The public sees the Korean judiciary as prime to corruption and bribery. The appointment system for the Supreme Court in Seoul does not help to change this opinion. The appointment of Supreme Court judges solely lies in the hands of one person which gives too much power to one person. Another problem is the high favoritism from government officials in policy and contract decisions towards government-connected firms and individuals. Corporate ethics are not mandatory in both cities. Singapore's companies often comply with social responsibility principles or international standards. Listed companies are subjects to a comply or explain procedure. Either they comply with the MAS Code of Corporate Governance or explain why they do not and risk not being listed. Even though numerous Korean companies have their own code of conduct and are following the guidelines of ethical behavior, the ranking in the Global Competitive Index shows a violation of these codes.

Singapore and Seoul are both easy places to start, operate, and close a business. Both cities have time-effective procedures for starting and registering a company. The process is costlier in Seoul than in Singapore. Registering a property and dealing with construction permits is more difficult in Seoul due to the time and costs needed. The tax system in Singapore is reasonable and simple, which makes it an attractive destination for companies and entrepreneurs. The new online system for paying taxes reduces the costs and time for businesses. There are also several incentives and tax exemptions for start-ups or specific industries. Taxation in Seoul is simple even though there are some burdens from the government in the administrative

Key findings

process. The double taxation system, businesses must pay national and local taxes, increases the financial burden on businesses. There are additional taxes for certain industries such as an education tax for businesses in the finance or banking sector. Regulations and protections for hiring employees are stated in the Employment Act of Singapore. The government actively encourages businesses to hire national workers before foreigners. Businesses who want to employ foreign workers need to apply for an Employment Pass or S Pass with additional fees. The application process for the pass is linked with burdensome documentation requirements and qualification criteria, which complicates the hiring process, such as advertising the vacant job on the Workforce Singapore job bank open for all citizens. The city does not offer unemployment benefits, protection, or a minimum wage. Korean employment laws apply to foreign and national workers. The legal framework only provides the minimum rights and conditions for employment including working hours, minimum wage, unemployment protection, redundancy, or annual paid leave. Hiring foreign workers is easy as they only need a working visa. The government even established the Employment Permit System to support and protect the rights for foreign workers from 15 countries. Open-trade policies, free trade agreements, few restrictions, and simple tariff structure make trading in both cities easy. Singapore has a zero tax on imports, which makes it an attractive market. Except for a few import restrictions both cities are open for all products.

	Strengths	Weaknesses
Singapore	- Ease of doing business - Simple and easy taxation system with several incentives - Easy access to credit - Protection of IP rights - Liberal open-trade policies	- Court decisions often in favor of the government - Difficult procedure for hiring workers especially for foreign workers
Seoul	- Ease of doing business - Simple taxation - Ease of hiring workers - Protection of physical and IP rights - Businesses follow guidelines of ethical behavior	- Taxation burden on businesses (national and local taxes) - Weak legal rights for borrowers and lenders - online piracy - Supreme court judges' appointment by one person

Key findings

	- Open-trade policies	- Violation of code of conduct by businesses - minimum rights for workers
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Table 9: Institutional and regulatory environment

6. Conclusion

With increasing mobility among people and companies, cities must be more competitive than ever. Although it is no new concept there is no general consensus of its definition among academics. Academics such as Paul Krugman state that cities and regions do not compete as they cannot go out of business as firms do. But many academics soon dismissed this notion by stating that nations and cities in fact do compete. Jane Jacobs and Saskia Sassen are among the first ones to point out that cities are the driving force behind trade, innovation, labor markets, and capital formation, and not nations per se and can compete. Accompanied by strong local and national governments, public officials, a private sector, and a clear strategy, competitive cities focus on attracting foreign investment and businesses, expanding their existing competitive firms, creating highly skilled labor forces, and shape an environment in which citizens and businesses can flourish. There are several different indexes measuring and analyzing city competitiveness. The underlying methodology of this master thesis, by Kresl & Singh, introduces two main determinants for city competitiveness: economic and strategic. Both determinants are further divided into eight indicators from human capital over urban amenities to institutional and regulatory environment.

In chapter 5 the main research question "*What are the strengths and weaknesses in Singapore's and Seoul's economic and strategic competitive performance?*" is discussed. Singapore and Seoul show strengths and weaknesses when it comes to competitiveness, which is a principal factor for both. These two cities have more similarities than differences in their approach. The implementation of several policies, incentives, and programs reflect their effort to become more competitive, not only among Asian countries but globally. Singapore and Seoul have created business- and citizen-friendly environments backed up by their strong national and local governments. Singapore is the third most competitive city according to the WEF. Over the last years the city-state could maintain an elevated position among the most competitive cities worldwide. Home to 10 million people, and over 25 million people including the metropolitan region, Seoul is one of the biggest urban areas worldwide. The transformation over the last decades from a poor city to a modern leading global city is often referred to as the miracle on the Han river. The government

Conclusion

implemented several policies and strategies to make Seoul more competitive. The nation ranks among the top 50 competitive countries worldwide at place 26. There is no ranking for Seoul, but one could assume that the city is as competitive as the nation itself.

Singapore and Seoul have as many similarities as they have differences. Highly educated and talented workforces, support of SMEs, good infrastructure with fast internet connections and a high mobile phone rate, city-wide public transport system, and ease of doing business are one of these similarities. Seoul is exceptional in its provision of public transport and communication services. With its user-friendly subway system and the provision of affordable mobile and internet connections, the city works as a benchmark for others worldwide. Both cities have highly educated workforces, but whereas there is a shortage in technical-skilled human capital in Seoul, Singapore does perform better. With only a few differences in e.g. taxation and hiring procedures, both created business-friendly environments benefitting from a highly educated workforce. Of the dimensions examined, the most differences occur in the financial and business service sector, public-private partnerships, size and ownership of firms, research facilities, housing stock, and urban governance and amenities. Especially Seoul's banks lag in global competitiveness as they are still underdeveloped, and the number of foreign banks is low. The dominance of Chaebols further makes it difficult for SMEs to survive in the market. Singapore's government actively and effectively supports ownership of houses and flats accompanied by a unique way of financing through the CPF and a focus on home ownership rather than rent. Ownership is low in Seoul and the prices for houses and flats are high. Seoul has successfully implemented PPPs throughout the years, whereas Singapore struggled with its PPPs due to the lack of an effective legal and outlining framework. Further differences occur in their institutional and regulatory environment. There is still the problem of corruption and public mistrust in politicians, fueled by the latest incidents, among Seoul's residents. Singapore has effectively fought corruption and is nowadays one of the places where corruption is mostly under control.

So, *is Seoul more competitive than Singapore?* The answer is neither yes nor no. Over the last decades Seoul has gained a reputation of a world city, a leading Asian city and, as mentioned in the introduction, is a current candidate for the "Big Six" cities. This shows that Seoul has improved its performance and could compete with world class cities such as New York or Hong Kong in the future. Seoul already outranks

Conclusion

Singapore and many other Asian cities in fields such as livability, technology, communication, or transportation. Strong investment in R&D, a high concentration of science labs and research institutes, and R&D centers in globally competitive companies such as Samsung or LG makes Seoul a major driver of innovation. The limited possibilities and resources of SMEs to invest in and have access to R&D poses future challenges for the city and its biggest employment sector. Seoul's government was also able to overcome some bureaucratic and financial inflexibilities and created a competitive governance system for its residents. Seoul's cultural heritage, its business' and investment friendly environment, Free Trade Agreements and stable real estate market are additional assets which may put the city in a position to become more competitive than Singapore and other leading cities worldwide in the future. To further strengthen and encourage international investment the government needs to establish new regulations, tariffs, taxes, and better labor regulations. Seoul has gained attention of a corporate hub for Korean multinational firms, rather than for mobile global firms, and cultural industries and has further ambitions of becoming the Asian cultural and creative center. According to various indices, Singapore still is one of the most competitive countries and cities in the world and Seoul has a lot to catch up on. Whereas Singapore was able to position itself as a main financial and business center for global operating companies, Korea's financial and banking sector is still underdeveloped and uncompetitive despite reforms from the city and central government. Further unrealized potential in important sectors, e.g. higher education, and high-tech R&D, are obstacles to Seoul's global competitiveness. Singapore and Seoul face future challenges such as to improve housing affordability, social care, and infrastructure for the growing and aging population, expand co-operations among actors to address imbalances and inefficiencies and create sustainability.

6.1 Limitations and further research

There are several limitations to the study. Despite the importance of competitiveness, a high number of diverse methodologies and the narrow scope of academic studies makes an understanding and comparison of different cities complicated. A missing clear definition of city competitiveness and its contributing factors creates a wide scope of possibilities of what to include as factors for competitiveness. Therefore, a universal set of indicators do not exist. The applied methodology contains a high number of different economic and strategic indicators, which further gives limitations to an in-

Conclusion

depth study. Limited public access to data and information puts further restrictions on the research. For several indicators data is only available on the national and not on the metropolitan level, especially in the case of Seoul. Furthermore, with data coming from official government sites, there could be a bias in the way they are presented and generated. For comparison purpose all currencies in this paper are converted to US dollars, based on the exchange rate listed in the appendix II. Other limitations are documented as they arose. We must acknowledge that the case study compares one city-state and one city. This made data access a challenge as most data was not available on the same level. For further research an analysis with data on the same level (city vs. city or city-state vs. city-state) should be taken into consideration. Potential further research could also include more factors of competitiveness (e.g. clusters, sustainability) to create a more elaborate picture of the competitiveness of Singapore and Seoul. Or focus on one specific aspect or field of competitiveness such as labor force or strategic determinants.

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8. Appendix I

Abstract English

With the increasing rapid process of urbanization, competitiveness has become a central focus for cities and academic research. Previous studies and researches have shown that competitive cities are the engines and driving forces of economies and are essential for economic growth. This master thesis evaluates the competitive performance of Singapore and Seoul. The underlying methodology of the thesis examines the performance across two levels – economic and strategic – including eight key indicators. Two research questions motivate this thesis: What are the strengths or weaknesses in Singapore's and Seoul's economic and strategic competitive performance? Is Seoul more competitive than Singapore? The economic and strategic performance of both cities are explored through a comparative case study which further illustrates the strengths and weaknesses of each sector. The findings show that both cities are competitive, but in some areas Seoul's performance is inferior to Singapore's.

Abstrakt Deutsch

Mit dem rasch zunehmenden Urbanisierungsprozess ist die Wettbewerbsfähigkeit ein zentraler Schwerpunkt für Städte und akademische Forschung geworden. Vorherige Studien und Recherchen haben gezeigt, dass wettbewerbsfähige Städte der Motor und die treibende Kraft für die Wirtschaft sind und essentiell für das Wirtschaftswachstum. Diese Masterthesis evaluiert die Wettbewerbsfähigkeit von Singapur und Seoul. Die zugrundeliegende Methodik der Arbeit untersucht die Leistung auf zwei Ebenen – ökonomisch und strategisch – einschließlich acht Schlüsselindikatoren. Zwei Forschungsfragen motivieren diese Thesis: Wo liegen die Stärken oder Schwächen in der wettbewerbsfähigen wirtschaftlichen und strategischen Performance von Singapur und Seoul? Ist Seoul mehr wettbewerbsfähig als Singapur? Die ökonomische und strategische Leistung beider Städte wird anhand einer vergleichenden Fallstudie untersucht, in der die Stärken und Schwächen der einzelnen Sektoren näher erläutert werden. Die Ergebnisse zeigen, dass beide Städte wettbewerbsfähig sind, aber in manchen Bereichen ist die Leistung von Seoul geringer als in Singapur.

9. Appendix II

Major Exchange Rates to US Dollar (November 12, 2017)	
	United States Dollar (USD)
South Korean Won (KRW)	0,000892
Singapore Dollar (SGD)	0,735000

Table 10: Major Exchange Rates to US Dollar (November 12, 2017)

10. Table

Table 1: new framework by the author (Kresl & Singh, 1999, 2012, 2013)	11
Table 2: Factors of production.....	80
Table 3: Infrastructure	84
Table 4: Economic structure.....	86
Table 5: Urban amenities	89
Table 6: Urban governance.....	92
Table 7: Urban strategy.....	92
Table 8: Public-Private Co-operations.....	93
Table 9: Institutional and regulatory environment.....	96
Table 10: Major Exchange Rates to US Dollar (November 12, 2017)	115