Healthiness of Business Ecosystems: A Comparison of Korea, Germany, and Japan

Introduction

Despite the immense growth that Korea has experienced in the past decade, it is slowly turning into a low-growth economy. This type of economy is brought about by the lack of entrepreneurship, of entrepreneurs. These entrepreneurs bring life to ideas which could translate into innovation, essential in sustaining and improving business health. Ecosystems should maintain its health and pursue sustainable growth, as opposed to current profits which could be short lived (Collins, 2001). Short-term evolution is easier to achieve and more straightforward, however, long-term evolution proves to be more difficult as it is often fraught by inertia due to myopic learning (Levinthal & March, 1993). Because of this, even if members co-exist within the same ecosystem, some manage to evolve while others are weeded-out. Healthy ecosystems should have marketable products brought about by R&D. Without R&D, marketable products will not exist, and no returns will occur.

Studies in relation to the health indices of business and business ecosystems have been done in the conceptual level and are rarely followed by empirical studies (Anggraeni, Hartigh, & Zegveld, 2007). The Healthiness of Business Ecosystems Index (HeBEx) however not only conceptualized a model for measuring business health, but also operationalized it.

Theoretical Framework

The HeBEx Model

The HeBEx model proposes that Creativity (broken down into: Research and development expenditure, Patent applications, Technology balance of payment, and Knowledge flows and commercialisation), drives Opportunity (in terms of: Export per population, Exports of

goods and services, Market supremacy, and Current account balance). This in turn pushes Productivity (Labor productivity, GDP per person employed, Exchange rate stability, and Total factor productivity). The profits derived from which fuel future innovation and investments in R&D, evidenced by entrepreneurship indices (Global entrepreneurship and development index, Global entrepreneurship monitor, Product Market Regulation) and subsequent reinvestment (Vitality and richness of business ecosystem, and Feedback or reinvestment of last year's profits to R&D).

The work exerted for all the aforementioned variables would be for naught without subsequent reinvestment. It is this reinvestment that fuels future creativity. All these indices, must be existent, well managed, and executed for organizations to attain sustainable growth and longevity. As exploitation without exploration leads to obsolescence, exploration without exploitation would lead to elimination. The optimal balance between the two might be hard to determine, but it can be safely said that firms usually give greater attention to exploitation, and less attention to exploration than what would be ideal (March, 2008).

Methodology

Data from the World Bank, OECD, GEDI, and GEM databases have been used for the purposes of this research. Using the most recent available data from the databases (years 2011 to 2014) mentioned above, we have ranked these countries and assigned an index value for them. Three countries with the highest values get an assigned score (a maximum of 10 per index), with the other countries having the corresponding score counterpart in relation to how far their values are from the highest (country value/highest value*score weights). Those with negative values are adjusted, where the difference between the lowest and highest values as the highest score.

Table 1: Measures and Sources

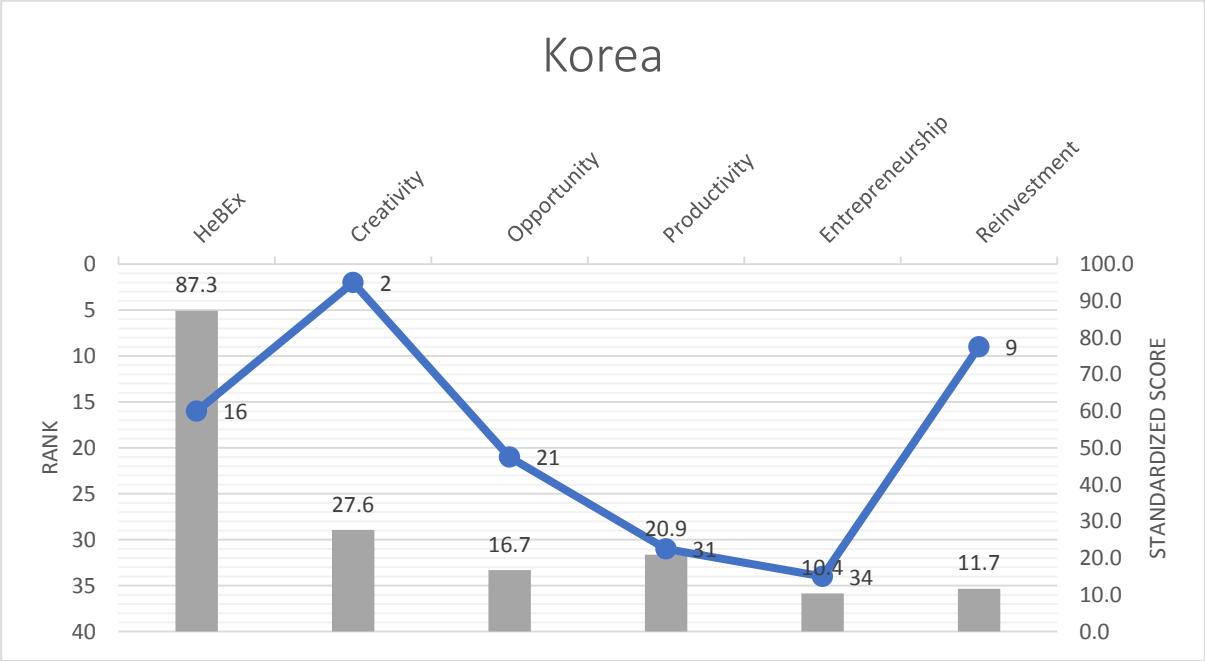
Measure	Description	Source
Creativity		
1) Research and development expenditure (% of GDP)	Expenditures for research and development are current and capital expenditures (both public and private) on creative work undertaken systematically to increase knowledge, including knowledge of humanity, culture, and society, and the use of knowledge for new applications. R&D covers basic research, applied research, and experimental development.	World Bank
2) Patent applications	Patent applications are worldwide patent applications filed through the Patent Cooperation Treaty procedure or with a national patent office for exclusive rights for an invention--a product or process that provides a new way of doing something or offers a new technical solution to a problem.	World Bank
3) Technology balance of payment	The technology balance of payments (TBP) registers the commercial transactions related to international technology and know-how transfers.	OECD
4) Knowledge flows and commercialization (Industry financed public R&D/GDP)	Direct funding of public research by industry takes the form of grants, donations and contracts and influences the scope and orientation of public research, generally steering it towards more applied and commercial activities.	OECD
Opportunity		
5) Export per population	Exports of goods and services (current US$) divided by Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin.	World Bank
6) Exports of goods and services (% of GDP)	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world.	OECD
7) Market supremacy (Number of products with the best market share)	Depicts the number of products which have the best market share per country.	UN Commodity Trade Statistics
8) Current account balance (BoP, current US$)	Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income.	World Bank

Results

HeBEx aims to analyze the national competitiveness of countries and to provide policy recommendations for sustainable growth in the future. For this reason, the researchers look to this report to provide an insight into the relative health of the Korean economy by comparing it to Germany and Japan. These countries have been chosen as comparison points for both prove to perform well and would thereby be good benchmarks for the improvement of the Korean Economy.

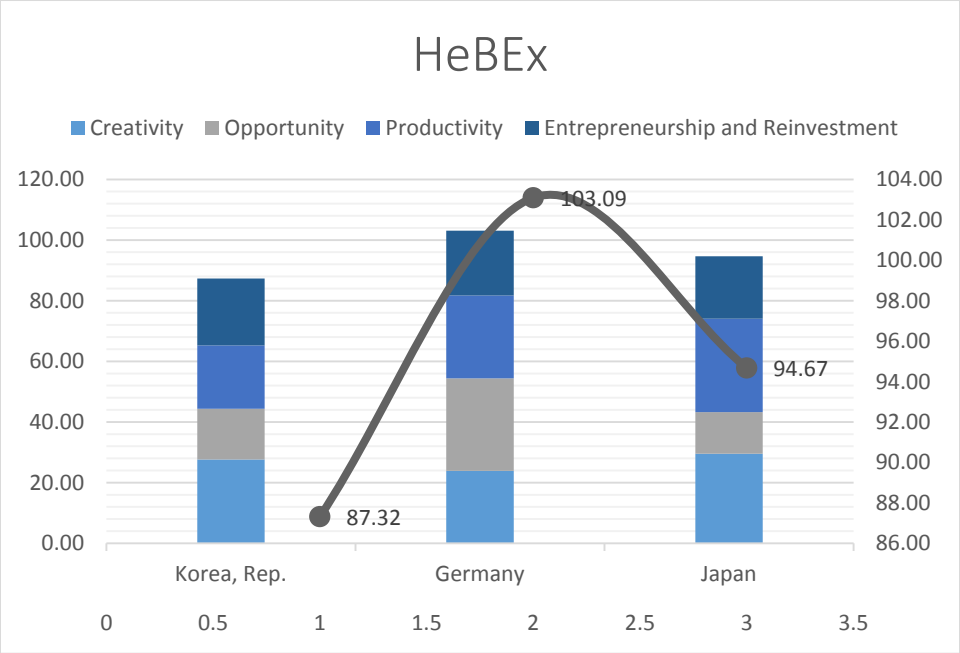
While Germany leads in terms of HeBEx rankings in leaps and bounds, the Japanese economy proves to be one which is quite similar to Korea's. Learning from these countries through comparisons would give insights as to the best practices and attainable goals for the future. Recommendations based on these assessments could then be offered for further development of the Korean economy.

Figure 1: HeBEx Ranking and Standardized Score: Excerpt from the HeBEx Report



Based on the results of HeBEx (Figure 1), it could be seen that while Korea ranks high on creativity and reinvestment, it lags in relation to the other measures of opportunity, productivity and entrepreneurship. Even though Korea's economy highly depends on export, exports per population is still not that high. This means industrial products comprise a large proportion of Korea's exports. Meanwhile exports of natural resources are extremely little, and also transit trade is very weak. The overall productivity of Korea proves to be much lower compared to advanced countries mainly due to the unstable exchange rate as well as low labor productivity.

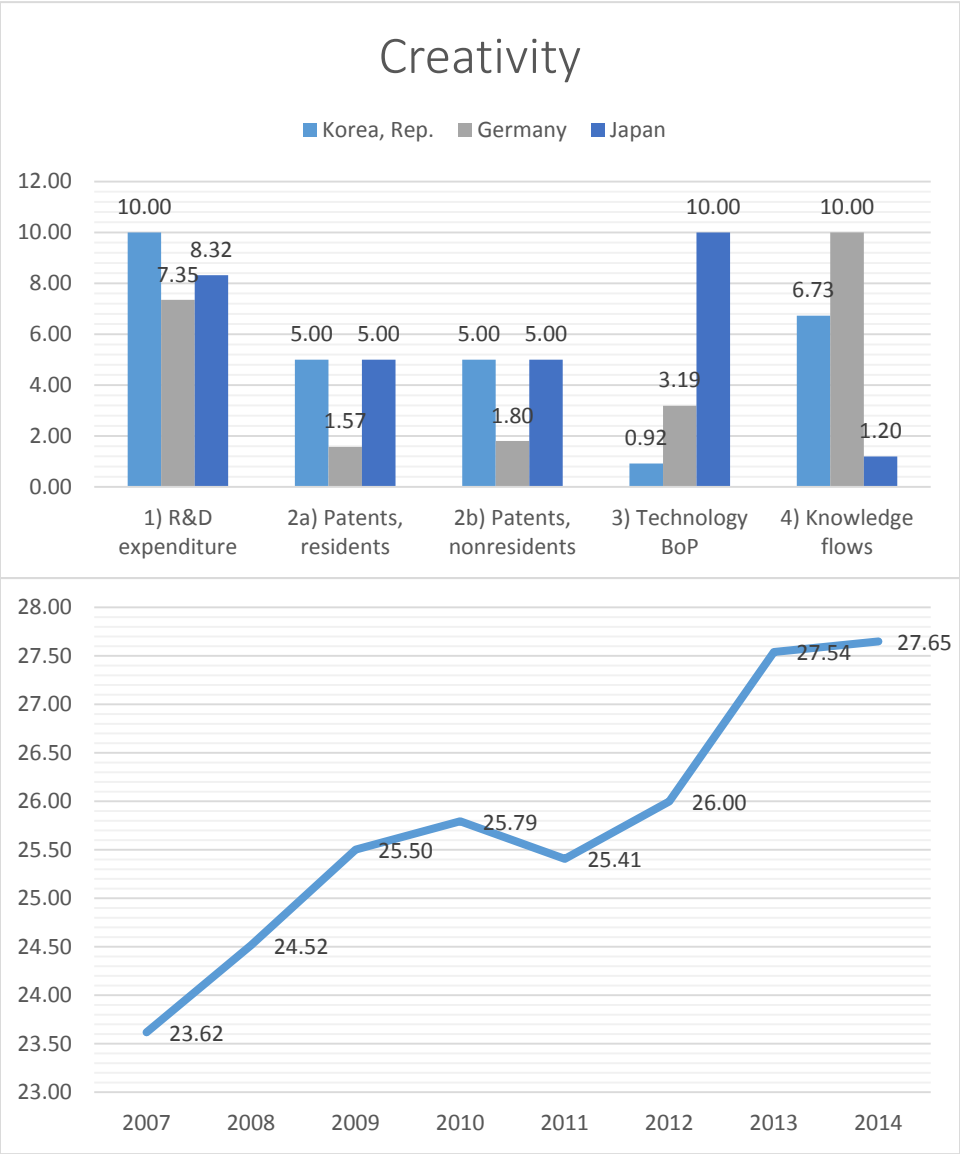
Figure 2: HeBEx Result Overview: Excerpt from the HeBEx Report



Korea has performed as well, or in some aspects, even better than its contemporaries. Marks above 20 were generally given to Korea's performance, save for opportunity. However, Korea has recently been experiencing a relative standstill in relation to growth. There hardly is any improvement, instead, a gradual decrease can be observed. As these information merely

touch the surface of why Korea has performed the way it did, the following sections would discuss these measures in better detail.

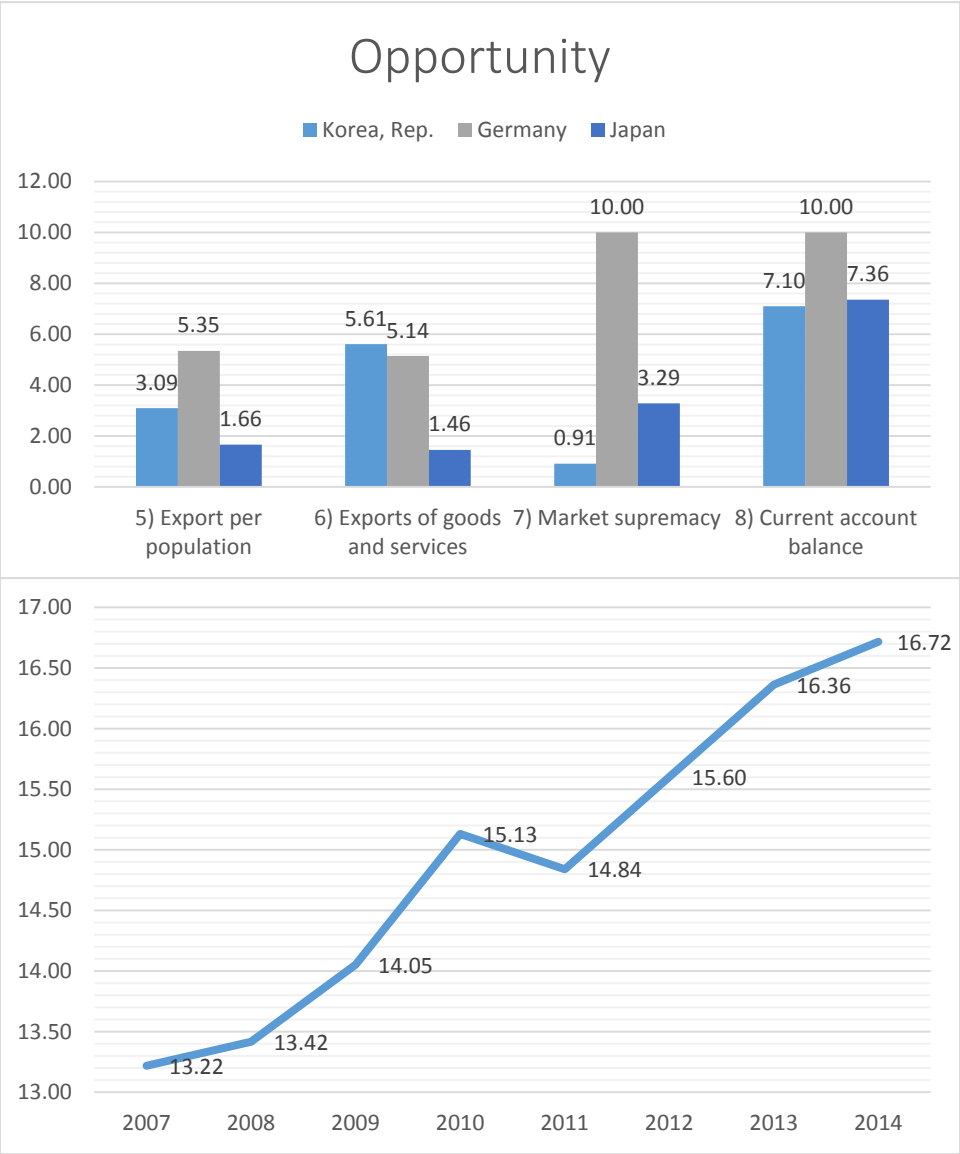
Figure 3: Creativity: Excerpt from the HeBEx Report



Compared to the other countries, creativity proves to be Korea's strong point. Korea leads R&D expenditures, even higher than Japan, the HeBEx leader for creativity. However, Japan's technology balance of payment is significantly higher than Korea's. Korea could consider improving in this aspect in order to do better in the future. The constant growth in

creativity through the years however should be coupled by efforts to find new market opportunity. Thus, it is important to consider the factors in the succeeding section.

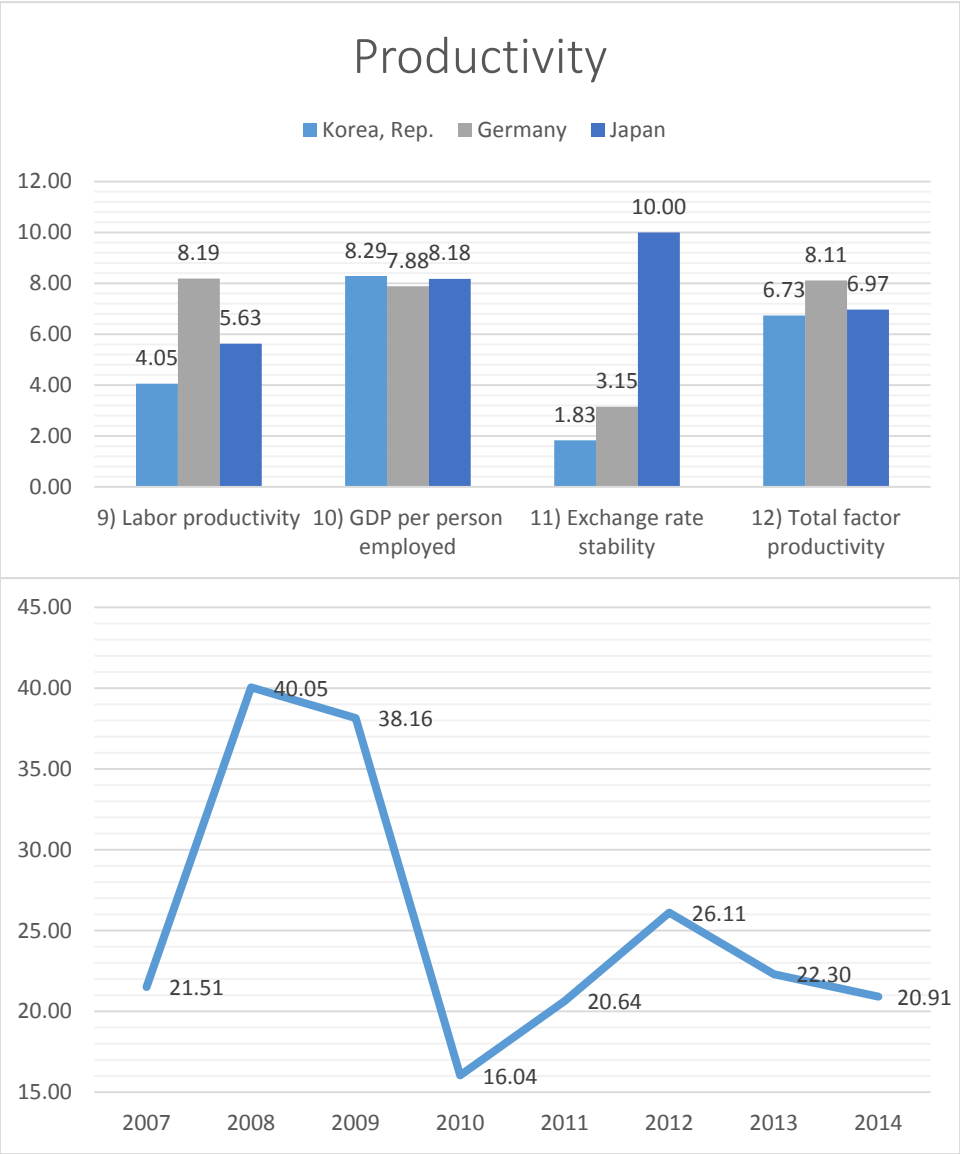
Figure 4: Opportunity: Excerpt from the HeBEx Report



Despite passable scores for exports and current account balance, market supremacy can be considered Korea's weak point. Although the country produces good products and services, they still do not garner the best market share for these products. It is good to note that there is an

increasing trend in opportunity for the past eight years. These increases however are still quite far from Germany's lead mainly because of the lack of supremacy in a global scale.

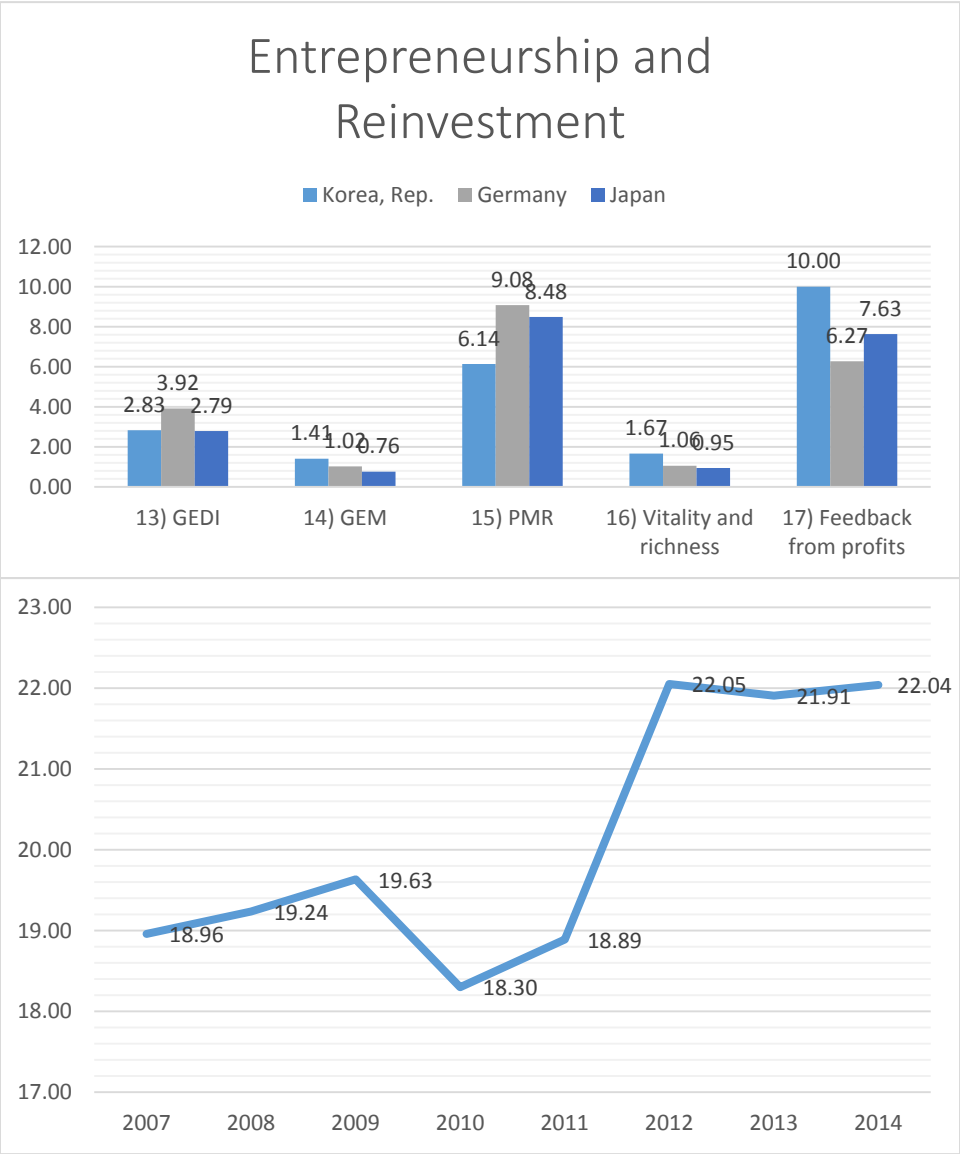
Figure 5: Productivity: Excerpt from the HeBEx Report



When we look at the Korean workforce, it can be said that productivity might not be the first thing that comes to mind. Compared to Germany and Japan, Korea's productivity rating has been hampered by low labor productivity and poor exchange rate stability. Looking at the productivity in recent years, it could be said that this is true. Korea's HeBEx score for

productivity is currently at around 20, from a high point of 40 in 2008. Improving productivity should thereby be a priority for the country.

Figure 6: Entrepreneurship and Reinvestment: Excerpt from the HeBEx Report



Entrepreneurship and reinvestment in Korea is still generally lower than Germany and Japan. Although Korea has focused on reinvestment, the environment for entrepreneurship in the country is still not so ideal or encouraging. The Korean government should focus on strengthening and empowering entrepreneurs in the country in order to be able to compete in a

more global scale. The international market might be the opportunity that the country needs, and by supporting start-ups and encouraging entrepreneurs, Korea could possibly outperform the other countries.

Table 2: Comparison between Korea, Germany, and Japan

Creativity	Korea, Rep.	Germany	Japan
1) Research and development expenditure (% of GDP)	4.00%	2.94%	3.33%
2a) Patent applications, residents	148,136	46,620	148,136
2b) Patent applications, nonresidents	40,779	14,720	40,779
3) Technology balance of payment	0.36	1.24	3.89
4) Knowledge flows and commercialisation			
(Industry-financed public R&D by GDP)	116.93	173.70	20.82
Opportunity			
5) Export per population	12,764	22,077	6,851
6) Exports of goods and services (% of GDP)	56.50	51.79	14.66
7) Market supremacy			
(Number of products with the best market share)	64.00	703.00	231.00
8) Current account balance (BoP, current US$)	43,335,100,000	240,743,211,202	60,859,455,180
Productivity			
9) Labor productivity (GDP per hour worked)	45.00	90.90	62.50
10) GDP per person employed (constant 1990 PPP $)	45,478	43,243	44,851
11) Exchange rate stability	-4.51%	-2.99%	4.88%
12) Total factor productivity	68.29%	82.26%	70.66%
Entrepreneurship & Reinvestment			
GEDI: Global entrepreneurship and development index	46.70	64.60	46.10
GEM: Global entrepreneurship monitor	6.85	4.98	3.72
PMR: Product Market Regulation	1.22	1.80	1.69
Vitality and richness of business ecosystem			
(new registrations per 1,000 people ages 15-64)	2.03	1.29	1.15
Feedback: Reinvestment of last year's profits			
to this year's R&D	4.42	2.77	3.37

Strategic Implications

The road towards growth may be long and riddled with challenges. However, the path towards it appears to be simple enough. As Korea's economy has turned into a low-growth economy, Korea needs to find new growth engines for sustainable economy development. Korea needs to focus on the development of advanced technology, and accelerate commercialization of R&D outcome. Aside from this, the Korean government needs to support and encourage more SMEs to penetrate the global market, as Korea suffers from Galapagos syndrome. This happens when there is limited growth as only domestic opportunities are focused on. Because of this, the Korean government needs to set an environment and conditions to rebuild and encourage entrepreneurship. The creativity that is given exclusively to the domestic market should be offered outside the country as well. The future looks promising for Korea, but should focus more on Globalization for its future economic sustainability.

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