

The Future of Innovation in Korea

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Abstract

While there has been much confusion about the meaning of a “creative economy”, at its core, the creative economy is President Park Geun-hye’s vision for job creation and economic growth in the Korean economy that is designed to shift the economy from being one of imitation to one driven by innovation. To achieve this shift, President Park hopes to tap into Korea’s economic strengths, information and communications technologies (ICT), and culture, and apply them to existing industries in new and innovative ways. To achieve this paradigm shift, Korea will need to address a series of issues related to entrepreneurship, research and development, venture capitalism, and the role of universities to successfully transition the Korean economy to one based on innovation.

Keywords: Innovation, creative economy, entrepreneurship, venture capital, trade, intellectual property, marketing

Technology, innovation, and scientific advances move in fits and starts. The practical applications of a discovery are often not evident at the time and only later come into focus. However, true innovations can revolutionize an industry or alter how people live their lives. Developments that often seem more a curiosity than an innovation can have a profound impact on technological advances later. In the 1960s, when lasers were first being developed, they were seen as more of a solution looking for a problem than part of the foundation for the modern economy. However, today much of our modern economy runs off of technology that in one shape or fashion is related to laser technology.¹ Lasers are just one example of how a discovery or innovation’s commercial value is not always immediately clear, but over time even the seemingly most mundane item can have a profound impact on daily

lives and economic growth.

After the Korean War, General Douglas MacArthur suggested that it would take 100 years for Korea to rebuild from the devastation. Instead of struggling to rebuild, Korea spent the last half century moving from being one of the poorest nations in the world to having the 15th-largest economy. In doing so, Korea successfully followed the path of nations that had developed before it and learned to do things better and more cheaply than other nations. The result has been five decades in which Korea has produced the highest rate of per capita economic growth of any of the 28 rich countries in the world.² However, if Korea is to continue to experience above-average rates of economic growth over the long run, it will need to shift its economy towards a greater level of innovation. Doing so will require Korea to develop a culture of entrepreneurship, establish a robust network for venture capitalism, and expand the scope of what it perceives to be innovation to successfully make the transition to a creative economy.

What is the Creative Economy?

Under the Lee Myung-bak administration, Korea weathered the Global Financial Crisis and Great Recession better than did other developed economies. As the crash hit, Korea avoided going into recession in 2009 and rebounded the following year with 6.3 percent GDP growth. However, by 2012 GDP growth had slowed to 2 percent and most economists agreed that Korea's days of high economic growth were past. Over the next decade, Korea's GDP growth is projected to slow to 3 percent and to then fall below 3 percent by 2027.³

When Park Geun-hye came into office, the economy was still in decline and faced a series of challenges, ranging from high levels of household debt to demographic transitions that will begin to reduce the size of the workforce during President Park's time in office. But perhaps of more concern, a sense of malaise had begun to set in about Korea's future economic prospects,⁴ as Korea began to reach the limits of the export-oriented growth model that had served it well for the last five decades. President Park perhaps captured this best when she said that:

For the seventh year, Korea has been unable to transcend an annual per capita income of \$20,000. This signifies that the Korean economy's current means of growth has reached its limit. In order to transcend this limit, we need to change our paradigm. I believe we should find the answer in a 'creative

economy.’ We are living in an era where a single individual’s creativity and imagination provides hundreds and thousands of livelihoods.⁵

Traditionally, the term “creative economy” has been more associated with creative industries than an economic paradigm shift such as the one President Park has proposed. In the United Kingdom, creative industries were seen as those where individual creativity and talent would have the ability to foster jobs, while in Japan and Australia the focus was on cultural industries.⁶ This has led to some confusion as to what the creative economy is.

At its core, the creative economy is a platform for job creation and economic growth in the Korean economy that is designed to shift the economy from being one of imitation to being one driven by innovation. To achieve this shift, President Park hopes to tap into Korea’s economic strengths, information and communications technologies (ICT), and culture, and apply them to existing industries in new and innovative ways.

Examples of areas where Korea sees the potential to apply ICT to traditional industries in new and innovative ways include the energy and healthcare sectors. In October 2013, President Park utilized Korea’s hosting of the World Energy Congress in Daegu to lay out her vision for the convergence of ICT and the energy sector. Under her plan, Korea would seek to become a dominate export player in areas such as smart grids, where ICT technology is married with energy storage and management technology.⁷

In the healthcare industry, Korea envisions developing technologies to enhance the ability of physicians to engage in remote healthcare, or telehealth. The technology would be used to enhance the ability of doctors to diagnose patients who live in remote areas and address the growing healthcare demands in aging societies.⁸

Why Does Korea Need to Shift to a Creative Economy?

When one thinks of Korea, the image of a high-tech industrial economy often comes to mind. Korea’s economic development has spurred world-leading companies such as Samsung in electronics and Hyundai in autos and shipbuilding. When it comes to the infrastructure needed for an information-based economy, Korea is perhaps the most wired country in the world, boasting the 4th-fastest speed among OECD

countries, the 2nd-fastest median speed, and the cheapest price for broadband internet.⁹

This image is backed up by various rankings of global innovation. In Bloomberg's 2014 rankings of the 30 most innovative countries, Korea ranks number one¹⁰ and comes in at 19 on the 2013 version of the Global Innovation Index¹¹.

The World Economic Forum, which describes Korea as having a "remarkable capacity for innovation," ranks it 17th globally.¹² In its index Korea ranks highly in key areas of innovation, including ranking 22nd for the capacity for innovation, 24th for the quality of scientific research institutions, 20th on company spending on R&D, and 26th on university-industry collaboration on R&D.¹³

However, all of this raises a question. If Korea is as successful an innovative force as the World Economic Forum, Bloomberg, and others would suggest, why does Korea need a paradigm shift to move to an innovation-based or creative economy?

For much of the last 50 years, Korea's economic policy has largely focused on catching up to the technological level of developed countries rather than seeking to develop its own groundbreaking companies and technologies. Despite the presence of a world-class internet infrastructure and of high-tech firms such as Samsung and LG, Korea has yet to produce a startup along the lines of Google, Facebook, or Twitter, or a major new firm, since the initial rise of the *chaebol*. One of the more successful internet startups in Korea, Naver, is still largely confined to Korean language services. Kakao Talk, perhaps one of the more innovative Korean startups in recent years, hasn't broken away from the competition in its mobile messaging app field.¹⁴

Additionally, as the *chaebol* have become more productive and globalized, they are contributing less to domestic employment as they expand abroad. At the same time, the bulk of employment in Korea comes from the underdeveloped services sector which is only 35-45 percent as productive as is the manufacturing sector. As a result of the lower levels of productivity, the services sector and the SMEs that populate it do not provide the type of employment that is needed to support a middle class lifestyle in Korea.¹⁵

By another, perhaps more revealing ranking of innovation, Korea does not fare as well. According to Forbes' list of the 100 most innovative companies, there is not one Korean firm— not even Samsung, despite all its high-tech prowess — that ranks among the 100 most

innovative firms in the world.¹⁶

Looking deeper, Korea's strengths and weaknesses as an innovative nation become more apparent. One of Korea's strengths is its investment in Research & Development (R&D). In 2011, Korea provided nearly \$3 billion in tax incentives to support R&D, the 5th-highest amount in the world and the largest amount for business enterprise R&D as percentage of GDP in the world.¹⁷

After Israel and Japan, Korea has the highest expenditure on R&D by businesses, at 76.5 percent, with universities accounting for 10.1 percent and the government representing an additional 11.7 percent. These percentages are not significantly different than those of the United States, where business is responsible for 68.1 percent of expenditures on R&D, higher education 15.2 percent, and the government 12.1 percent. However, one difference is the larger role played in the United States by non-profits, which contribute 4.1 percent of expenditures, although they only account for 1.6 percent in Korea.¹⁸

Similar types of R&D are conducted in the United States and Korea, where respectively 19 percent and 18.1 percent of R&D is focused on basic research, with 19.6 percent and 20.3 percent on applied research, and 61.5 percent and 61.7 percent on experimental development.¹⁹

However, Korea may not be getting the value out of its research and development that it is expecting. In terms of per capita triadic patents, which are patents applied for in the United States, EU, and Japan, Korea ranks 11th, settling in at the OECD average. It is only 24th in trademarks per capita, which is below the OECD average. The larger emphasis on patents over trademarks, though, is reflective of the makeup of Korea's economy, which is more heavily focused on manufacturing than are the economies of most developed economies, as economies with large manufacturing and ICT sectors tend to pursue patents more than trademarks, while economies that are services-heavy tend to focus their intellectual property protections more on trademarks.

However, Korea continues to trail countries such as Canada, France, Italy, Russia, and Brazil in terms of its share of trademarks in knowledge-intensive services, one highly promising area of economic growth, and has seen its global share decline slightly in the last decade. As with most countries, Korea's trademarks in knowledge-intensive services are primarily centered on business services and R&D, but Korea does especially well in ICT trademarks and performs poorly in finance and insurance trademarks.²⁰

Helping to illustrate the challenge of getting more value out of R&D in Korea is the case of the Electronics and Telecommunications Research Institute (ETRI). For the last three years, ETRI has ranked first on the Innovation Anchor Scorecard produced by the patent data consultancy ipIQ, placing it ahead of leading U.S. centers of innovation such as Stanford and MIT. However, the industry impact of its patents was only half of that of MIT's.²¹

Additionally, despite Korea's openness to international trade, it is relatively closed to international scientific collaboration and innovation. Rather than being a primary node for scientific collaboration, Korea remains largely a periphery player whose impact is below the world average in this area. Korea also tends to have low levels of international scientific co-authorship and co-invention and also trails most countries other than Japan in the ownership of innovations from abroad and foreign ownership of domestic innovations.²²

Korea also fairs poorly on international investment in business enterprise R&D. International funding for R&D can come from a variety of sources, including subsidiaries of foreign companies or research grants from international organizations, or it can be provided on behalf of other countries based abroad. For a successful innovative economy like Israel, more than 50 percent of the funds for business enterprise R&D come from abroad. While Israel may be an anomaly, Austria, Ireland, and the United Kingdom all receive more than 20 percent of their business enterprise R&D from abroad. In contrast, only 0.13 percent of Korea's business R&D is funded from abroad.²³

The lack of broader innovation in Korea's economy potentially extends to the real economy in its exports, which account for more than 50 percent of GDP. Since 1995, Korea's value added export ratio has fallen from 76.3 percent to 56.6 percent, placing Korea below every OECD country except Ireland and Luxembourg. In contrast, the domestic content of U.S. exports is 88.7 percent and non-OECD members such as Vietnam have domestic content of 63.4 percent in their exports²⁴.

There are various reasons that the domestic content of Korea's exports could be falling, such as a greater integration into the international economy and a more significant role in production chains, which might be most evident in its trade relationship with China, where there is significant trade in parts for assembly that are then sent to final destinations such as the United States, the European Union, and Japan.

However, Korea likely also faces the same challenge as that faced by Mexico, which has seen its exports increase dramatically since its integration into global value chains, where growth in exports has been driven by high levels of import content, but there has been less domestic value added and job growth.²⁵

However, Korea is not without its strengths when it comes to innovation. The Seoul Capital Region is one of the twenty regional hotspots for innovation, with a focus on ICT innovation.²⁶ Korea is also seeing growth in the royalties earned off of its patents, with international flows of royalties growing at an annual average of 12.3 percent, which is greater than the OECD average of 10.1 percent.²⁷ Korea also does well when it comes to ICT innovation. More than 50 percent of Korea's business enterprise R&D is in information industries, with Korea and Finland being the only two countries to invest more than 1 percent of GDP in ICT R&D. As a result, more than 42 percent of Korea's patents are ICT-related, surpassed only by China and Singapore.²⁸

However, if Korea is to make gains in areas such as biotechnology, healthcare, and green technology, it will have to adjust the focus of its areas of research. As currently allocated, ICT equipment, transportation equipment, and chemicals and minerals are Korea's top three areas of R&D, comprising 49 percent, 13.5 percent, and 11.3 percent of Korea's R&D, respectively.²⁹

Considerations for a Creative Economy

If Korea is to develop into a creative economy, there will not be one single policy that will serve as a catalyst for transforming the economy. However, while no one area will bring about the paradigm shift that President Park is hoping for, certain areas such as R&D, entrepreneurship, venture capitalism, trade policy, university research, and marketing can play important roles if used in concert.

Research and Development. R&D can come in multiple forms. It can be university led, conducted at government-funded institutions, or done by the private sector or some combination of the three. But more important than the type of institution conducting the research is the nature of the research itself – whether it is basic research or applied research.

While applied research is performed with commercial applications in mind, basic research is performed for the purpose of increasing knowledge of a specific subject. Basic research differs from applied

research in that the most significant advances come through basic research, and that the knowledge gained is often applicable across multiple industries, even if firms cannot exploit all of the benefits. Much like the laser, basic research can have significant benefits for a society and firms. For example, DuPont supported the research of William Carothers, which ultimately led to the development of Nylon, which is now widely used in automobiles, textiles, and military hardware.³⁰

In contrast, applied research, which is often done by private firms, will only develop incremental improvements on technologies created through basic research. However, despite the more significant benefits of basic research, a study by the U.S. Congressional Joint Economic Committee argued that basic research is underfunded precisely because it is not performed with specific applications in mind.

Entrepreneurship. Despite the role of large corporate research organizations in the past, such as at Bell Labs, innovation has become associated with entrepreneurs and SMEs. In a sense, this is because entrepreneurship by its nature relates to the conversion of innovations into new products and services. We see this today in the rise of internet firms such as Facebook, Google, and Amazon.

However, some studies indicate that this may not be the full story. In the case of South Africa, research indicates that SMEs are not more innovative than their corporate competitors. While entrepreneurship will play an important role in helping to diversify the Korean economy and creating a more competitive environment between firms, the focus should not be solely on SMEs.³¹

Venture Capital. Venture capital plays an important role in helping to nurture new, high risk firms. While the merits of venture capital have been successfully demonstrated in the United States, Israel, and parts of Europe, the challenge is developing venture capital in areas where it did not previously exist. Two studies indicate that key factors for the development of a venture capital ecosystem include strong formal and informal institutions, as well as government support.

Because of the inherent risk in funding startups, venture capital firms need strong institutions to help reduce the transaction costs associated with new firms and create an environment for proper incentives. Strong informal institutions are necessary as well, as it is ultimately individuals who enforce rules and regulations. Without these institutions in place, a

society with a low tolerance for risk is unlikely to develop a robust venture capital ecosystem.³²

If those institutions are in place, initial government support may still be required to develop venture capital funds. However, government support for venture capital runs the risk of crowding out private investment or attempting to “pick winners.”

Australia, historically a low innovation country, was able to avoid these two downfalls and successfully spur venture capitalism. Under the Innovation Investment Fund, Australia conducted three rounds of venture capital funding, where it would provide funding to match private sources. Perhaps most uniquely, to avoid the potential pitfalls of government involvement, the Australian government does not take an equity stake in either the fund or the companies the fund invests in, while also having no claim on any returns. In the Australian case, there has been a rise in the level of venture capital since 2001, indicating that it may be a viable scheme for other countries looking to help jumpstart venture capital funds.³³

The Role of Trade Policy and the Trans-Pacific Partnership (TPP). While not the primary driver of innovation policy, trade policy can play an important role in Korea’s shift to a creative economy. Because of the limited size of Korea’s market and the impact chaebols have historically had on startups, entrepreneurs may need to look to the outside world for their markets. If they are to do so they need to be assured that the intellectual property behind any innovations they may create will be protected and that they will be able to profit from them.

Korea’s entry into the Trans-Pacific Partnership can help to create a broader regional environment which is more conducive to innovation and helps to spread the cost of research and development for entrepreneurs over a larger market.

As innovation plays a larger role in Korea’s economy, production will shift towards a more knowledge- and services-based economy, and the protection of intellectual property (IP) will become increasingly important. Korean firms will increasingly compete with international rivals not on cost, but on innovation. This is already occurring in some industries, such as shipping, where Korea is addressing the challenge from China by building ever more sophisticated ships.

The development of strong IP protections in foreign markets will help to promote exports and the dissemination of technology by ensuring inventors that they will benefit from their ingenuity and that their IP will not be stolen. Weaker IP protections in neighboring countries would undermine Korea's potential competitive advantage as an innovative economy, as low-wage countries would be able to utilize their cost advantages in combination with Korean IP. Ensuring that there are proper IP protections in place both domestically and internationally, even with other advanced economies, is important, as the ongoing disputes between Samsung and Apple demonstrate.

While it is unclear whether Korea will be able to join the TPP during the negotiation stage, if it does join it should push for the widest level of services opening possible. Chile and Brunei, who are part of the TPP, score poorly on metrics such as the GATS Commitments Restrictiveness Index. As Korea has learned through its own development, restricting the services sector produces lower rates of innovation and economic growth. A stronger commitment to service sector openings in the TPP would benefit emerging Korean service providers, who will likely be leaders in the creative economy, by providing them with new export opportunities. Additionally, unlike tariff benefits, the benefits of expanded services access is something that does not often show up in estimates of the economic benefits of an agreement.

The Role of Universities. Universities, long centers of learning, are becoming increasingly important partners for industry in the process of research and development. Two prime examples of the contribution that universities can play in both the research environment and in helping to facilitate the transfer of knowledge to startups are the roles Stanford plays in Silicon Valley and the role MIT plays in Boston's tech sector.

Korea is still undertaking the transition to entrepreneurial universities,³⁴ which are universities that have "developed a comprehensive internal system for the commercialization and commodification of its knowledge" and are not merely offices for the transfer of technology. Instead, an entrepreneurial university adjusts its research and budget allocations based on the needs of the public and private sectors.³⁵

Universities could play an important role in the development of the creative economy by providing environments for the basic research that Korea will need to spur disruptive innovations that could have the

significant windfalls President Park is hoping the creative economy will produce.

However, Korea will need to develop a plan to integrate universities better into the research process. A crucial step will be to adjust how Korea allocates funds for R&D in two ways: a shift from predominately business enterprise R&D to more basic research at universities, and from project grants to institutional grants.

Currently, Korea's spending on R&D at institutions of higher education is below the OECD average, and while universities in most countries also fund research from general grants, there are no data available on funding from general grants for research.³⁶

Korea also has the highest level of project-funded research, rather than institutional-funded research, in the OECD. This means that long-run funding for research is not assured at Korean institutions, potentially hindering basic research due to concerns about researchers' ability to carry research on to its conclusion. In contrast, government funding in Israel, a country possessing a highly innovative economy, allocates more than 95 percent of its support for research on an institutional basis, while Korea only allocates 15.7 percent. In terms of basic research, only 20.6 percent is performed in Korean universities. Of the countries surveyed by the OECD, only Russia, Slovenia, Japan, the Czech Republic, and Hungary conducted less than 50 percent of basic research in universities.³⁷

This lack of funding may help to explain why research at Korean universities does not have the impact of research done in other countries. In terms of the contribution of universities to innovation research, the 50 leading universities in many fields are located in the United States and the United Kingdom. While Korea trails many Western countries and China in terms of the impact of university research, Korean schools do place among the most influential in the fields of veterinary science, material science, engineering, energy, chemistry, chemical engineering, and biochemistry.³⁸

While Korea's efforts to bring in research talent through the Korea Research Fellowship are important, it should couple those efforts with entrepreneurial incentives for researchers to seek out commercial applications for their work. According to a case study done in Sweden, where the researcher rather than the university or the state receives the right to the intellectual property they develop through government funding, granting IP rights to researchers helps to facilitate the

dissemination and commercialization of knowledge. It also found that multilevel actors help to serve as an “interface and catalyst for industrial linkages and commercialization of research.”³⁹ This would suggest that top-down approaches might be counterproductive.

Marketing. One area often overlooked when discussing innovation is marketing. Marketing plays an important role in the innovative and entrepreneurial process by helping to create markets where they did not previously exist, and by helping firms to identify untapped areas for new products. At its most basic level, the “goal of marketing is to earn the firm a profit through the skillful promotion and distribution of products.”⁴⁰

Despite the importance of marketing to the success of a firm, it is something which entrepreneurs often give a low priority, as they are more focused on innovation. Entrepreneurs also tend to approach marketing differently than do established firms. For startups, marketing is a bottom-up approach that entails the drawing in of an initial customer base that fits the profile of its product or service, and utilizing face-to-face and word of mouth marketing to expand the product to additional customers who fit a similar profile. In contrast, established firms take a top-down approach that begins with a process of customer research to develop profiles of market segments, an evaluation of which segment is the most promising target, and the development of a communications strategy to differentiate its product or service from that of its competitors. While the top-down approach requires resources that SMEs often lack, the bottom-up approach tends to be inefficient in reaching new customers and limits them to those of a similar profile.⁴¹

However, because of the export-driven nature of Korea’s economy, aspects of traditional marketing may hold important lessons for startups in Korea as they look to expand abroad, especially as foreign customers are likely to have different preferences from domestic customers in the Korean market. As firms move into foreign markets, they will have to adapt their products to local tastes and customs, as not all products and business models are universally transferable. Despite its overwhelming success in North America, Walmart has failed in markets as diverse as those in Germany and Korea. The Chevy Nova is also an example of the failure of proper marketing in Spanish speaking markets where a lack of proper research meant that Chevy was trying to sell a product whose name translated as “no go” in the local language – perhaps not the best

marketing strategy for a product designed to move people. To avoid these mistakes as Korean entrepreneurs try to sell their innovative products and services abroad, they will need to undertake market research to appropriately adapt their products to foreign markets.⁴²

More traditional forms of marketing can also help firms be more innovative and agile. Having a greater understanding of customers' needs can help firms to create new and pioneering products, as well as find to new markets. It can also help firms become more nimble in making changes to existing products as their customers' needs change. Lastly, it can help reduce a firm's risk exposure by pointing it in the direction of the most profitable products and markets.⁴³

Developing the Creative Economy⁴⁴

According to Nobel Prize nominee Paul Romer, "The first step to fulfill the creative economy is to create the right condition for innovative firms that can immediately replace Samsung Electronics when it is faltering,"⁴⁵ because of the oversized role Samsung plays in the Korean economy. However, the real goal is to create an environment to allow innovative firms to prosper alongside Samsung regardless of how it is performing. To achieve this and address many of the issues related to innovation discussed above, the Park administration has taken a series of steps related to investment funds, entrepreneurship, identifying new industries and markets, intellectual property, and green energy.

Entrepreneurship. One of the challenges in developing a creative economy in Korea is the aversion towards risk taking. Unlike in the United States, bankruptcy laws in Korea often make it difficult for an entrepreneur to try again after failure, and IP protection is relatively weak, reducing the incentive for innovation and startups.⁴⁶ SME wages tend to be about half of those paid by large companies, and Korea's success as a "fast follower" has helped to lessen the value of innovation through startups in society.⁴⁷ As a result, parents often push their children to take well salaried jobs at major firms rather than to assume the risks associated with entrepreneurship.

To help address these challenges, the Park administration is focusing on promoting entrepreneurship among the youth. By 2017, it plans to introduce a "biz-cool program" in 5 percent of high schools, middle schools, and elementary schools and to increase the number of universities with programs specializing in entrepreneurship to 40. The

universities will offer training, an environment to create prototypes, and a venue for teaching young entrepreneurs how to commercialize their ideas. A fund is also being created to help promising young entrepreneurs intern at venture capital firms.

In addition to its focus on Korean youth, the administration is planning on streamlining its existing business incubators and creating regional “creative economy” centers to bring together regional resources for entrepreneurs and mentors.

Investment Funds, Venture Capitalism, and R&D. One of the keys to any successful innovation-driven economy is financing. In the United States and countries such as Israel, venture capital plays an important role in nurturing startups. Without a robust venture capital system in place, financing for startups has historically been a challenge in Korea, where entrepreneurs have largely been dependent on a securities-based system. The drawback of a securities-based system for financing startups is that there is no good way to liquidate the debts of companies that fail, preventing potential entrepreneurs from engaging in future entrepreneurial attempts and also preventing them from carrying their lessons learned forward into future ventures.

To foster a venture capital ecosystem that would capture the full cycle, from creation to withdrawal and reinvestment, Korea is taking a series of steps to move away from its current system. The government is introducing regulatory reforms to make mergers and acquisitions easier so as to provide investors a means by which to realize their gains; creating tax incentives and matching funds to increase the pool of angel investors; supporting a crowd funding scheme; and introducing incentives for Koreans living abroad to invest.⁴⁸

Seoul is also planning to create a venture capital fund modeled off of the successful Yozma Fund in Israel, which itself was modeled off of Silicon Valley. The fund would work to attract foreign investment in Korean startups and help firms looking to list on foreign stock exchanges.

Additionally, Korea plans on boosting government funding of R&D to 5 percent of GDP by 2017. However, given that Korea already is one of the highest spenders of GDP on a per capita basis, how this additional funding is utilized will be a key.

Foreign Talent. As noted earlier, Korea does not score well in terms of its openness to foreign collaboration on innovation. One way the Park

administration is seeking to address this challenge is through the recruitment of 300 of the top one percent of scientists around the world. As an incentive to encourage top flight foreign researchers to come to Korea, the government plans on creating the “Korea Research Fellowship,” which will provide incentives such as research funds, as well as airfare and living costs.

Intellectual Property. In light of the important role that intellectual property plays in innovation, Korea is seeking to increase both the level of IP protection and the dissemination of technology. It seeks to do this by tightening enforcement of IP and providing support to SMEs that face IP disputes overseas. At the same time, the Park administration is expanding a “patent box” to mid-sized firms to help encourage technology transfers through tax exemptions on income streams and establishing a “creative fund” for the joint commercialization of technologies between the public and private sectors.

Building a Creative Korea

Innovation is about more than creativity. It is about reshaping the business environment in Korea. To successfully drive an innovative economy, Korea will need to develop a business climate that fosters imaginative applications of new discoveries and technologies, as well as the ability to develop the marketing and promotion that will create new consumer markets where none previously existed.

If its transition to a creative economy is to be successful, Korea will need to avoid developing too narrow a definition of innovation, and must work to foster an entrepreneurial environment not only among business leaders, but in the political class as well. In addition, while it should draw upon the best practice of other nations, it will need to adapt solutions from abroad specifically for the Korean context.

In the early stages of a transition to a more creative economy, utilizing Korea’s strengths such as ICT to help foster innovation and prove the value of entrepreneurship and innovation to society is likely a wise course to pursue. However, in a survey by *The Atlantic* of the 50 greatest innovations since the wheel, ICT-based innovations such the smartphone or similar types of convergence technologies did not make the list. Instead, the most significant innovations tend to be the building blocks off of which ICT is built, such as the computer and the internet.⁴⁹ In time, however, Korea will also need to work to spur innovation across

a range of fields, and will need to specifically seek to create the disruptive type of innovation that will create market opportunities that did not exist before.

At the same time, the transition to a creative economy will not take place overnight. Korea will need to take interim steps that address immediate challenges, such as the lower level of impact of Korea's current patents, to attain greater value for its research and innovation. Perhaps most importantly, Korea will need to spur the type of policy support across the political spectrum that will be necessary to create the paradigm change that President Park is hoping for. Developing the ecosystem necessary for an innovative economy will take time and require political support beyond the current administration. Without long-term political support, the creative economy may not flourish as hoped.

Notes:

¹ "Zapping with the Light Fantastic," *The Economist*, March 27, 2008, available at: <http://www.economist.com/node/10918079>.

² Richard Katz. "Time Enough to Make Remedies; Time Enough to Avoid Remedies: Does Korea Risk Reprising Japan's Lost Decades?" *The Oriental Economist*, March 17, 2014.

³ GDP Growth Projections, Economist Intelligence Unit.

⁴ While the author was residing in Seoul during the 2012 presidential campaign, Koreans would often express their concerns regarding the state of the economy, despite Korea having avoided the more dire troubles of European nations such as Greece and Spain.

⁵ "A New Era of Innovation Begins," *The Inside Korea*, April 10, 2014, available at: <http://theinsidekorea.com/2014/04/new-era-innovation-begins/>.

⁶ Shin Ji-hye. "Korea Sets Sights on Creative Industries," *The Korea Herald*, August 8, 2013.

⁷ George Hutchinson. "Korea's Evolving Energy Strategy: A Different Shad of Green." *Korea's Economy 2013*. Korea Economic Institute of America, Vol. 29, p. 14.

⁸ "Telehealth Market Push in South Korea," *Healthcare IT News*, January 30, 2014.

⁹ OECD (2013), “Broadband price and quality,” in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-35-en.

¹⁰ Wei Lu & Marcus Chan. “30 Most Innovative Countries.” *Bloomberg*, January 22, 2014, available at: <http://www.bloomberg.com/slideshow/2014-01-22/30-most-innovative-countries.html#slide31>.

¹¹ “The Global Innovation Index 2013” by Cornell University, INSEAD, and the World Intellectual Property Organization, available at: <http://www.globalinnovationindex.org/content.aspx?page=GII-Home>.

¹² Klaus Schwab, ed. “The Global Competitiveness Report: 2013-2014,” World Economic Forum, p. 34, 2013. Available at <http://reports.weforum.org/the-global-competitiveness-report-2013-2014/#section=inside-cover>.

¹³ *Ibid*, p. 239.

¹⁴ Kakao Talk only ranks 7th worldwide with 100 million users. The most used service is WeChat, with 600 million registered users followed by WhatsApp, Facebook Messenger, Line, Viber, and Snapchat. From Catherine Clifford. “Top 10 Apps for Instant Messaging (Infographic),” *Entrepreneur.com*, December 11, 2013, available at: <http://www.entrepreneur.com/article/230335#>.

¹⁵ Wonsik Choi, et al. *Beyond Korean Style: Shaping a new growth formula*. McKinsey Global Institute, April 2013, p. 2.

¹⁶ “The World’s Most Innovative Companies.” *Forbes.com*, available at: <http://www.forbes.com/innovative-companies/list/>.

¹⁷ OECD (2013), “The changing landscape of innovation”, in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 51, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-72-en.

¹⁸ OECD (2013), “R and D,” in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 100, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-13-en.

¹⁹ OECD (2013), “R and D,” in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 101, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-13-en.

²⁰ OECD (2013), “The changing landscape of innovation,” in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 56, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-72-en.

²¹ Lee, Seung-hoon. "ETRI tops U.S. patent evaluation for 3rd year," *Maeil Economic Daily*, April 2, 2014.

²² OECD (2013), "Science and innovation today," in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, pp. 59-65, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-73-en.

²³ OECD (2013), "International funding of R and D," in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 108, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-17-en.

²⁴ OECD (2013), "The new geography of growth," in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-71-en. Data from attached tables.

²⁵ Angel Gurría. "The Emergence of Global Value Chains: What Do They Mean for Business?" Remarks at the G20 Trade and Investment Promotion Summit Mexico City, November 5, 2012, available at: <http://www.oecd.org/about/secretary-general/theemergenceofglobalvaluechainswhatdotheymeanforbusiness.htm>.

²⁶ OECD (2013), "The Changing Landscape of Innovation," in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 55, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-72-en.

²⁷ OECD (2013), "Technology Flows and Markets", in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 142, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-28-en.

²⁸ OECD (2013), "ICT innovation," in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, pp. 162-3, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-28-en.

²⁹ OECD (2013), "R and D Funding and Specialization," in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 152, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-29-en.

³⁰ Ufuk Akcigit, et. al. "Back to Basics: Basic Research Spillovers, Innovation Policy and Growth." National Bureau of Economic Research Working Article No. 19473, September 2013.

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- ³¹ Irma Booyens. "Are Small, Medium, and Micro-sized Enterprises Engines of Innovation? The Reality in South Africa," *Science and Public Policy*, February 2011.
- ³² Yong Li and Shaker A. Zahra. "Formal Institutions, Culture, and Venture Capital Activity: A Cross-country Analysis." *Journal of Business Venturing* 27 (2012): pp. 95-111.
- ³³ Mark Humphery-Jenner. "Stimulating Venture Activity through Government Investment in Venture Funds." *European Business Organization Law Review* 13 (2012): pp. 103-124.
- ³⁴ Boo-Young Eom and Keun Lee. "Finding Effective Combinations of Knowledge Transfer Mode in Public Research Organizations and firm Interactions: The Case of Korea." In *The Economics of Intellectual Property in the Republic of Korea*. World Intellectual Property Organization, p. 94.
- ³⁵ Jacob, M., Lundqvist, M. and Hellsmark, H. *The Search for Excellence: Organizations, Institutions, and Major Discoveries in Biomedical Sciences*. (New York, NY: Cambridge University Press, 2003).
- ³⁶ However, this is not dissimilar from the United States.
- ³⁷ OECD (2013), "Higher Education and Basic Research", in OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth, OECD Publishing, pp. 102-3, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-14-en.
- ³⁸ OECD (2013), "The Changing Landscape of Innovation," in *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, p. 54, available at: http://dx.doi.org/10.1787/sti_scoreboard-2013-72-en.
- ³⁹ Fumi Kitagawa and Caroline Wigren. "From Basic Research to Innovation: Entrepreneurial Intermediaries for Research Commercialization at Swedish 'Strong Research Environments.'" Center for Innovation, Research and Competence in Learning Economy, Lund University, January 2009.
- ⁴⁰ Gary Knight. "Entrepreneurship and Marketing Strategy: The SME under Globalization." *Journal of International Marketing* Vol. 8, no. 2 (2000): pp. 12-32.
- ⁴¹ David Stokes. "Putting Entrepreneurship into Marketing." *Journal of Research in Marketing & Entrepreneurship*, Vol. 2, no. 1: Spring 2000, pp. 1-16.
- ⁴² Knight, p. 30.

⁴³ H.T. Keh et. al. “The Effects of Entrepreneurial Orientation and Marketing Information on the Performance of SMEs.” *Journal of Business Venturing* Vol. 22 (2007): pp. 592-611.

⁴⁴ Much of this section is drawn from information in “A New Era of Innovation Begins.” *The Inside Korea*, April 10, 2014, available at: <http://theinsidekorea.com/2014/04/new-era-innovation-begins/>.

⁴⁵ “Paul Romer Says Creating Corporate Environment for Innovative Firms Matters.” *Maeil Economic Daily*, March 27, 2014.

⁴⁶ McKinsey. “Beyond Korean Style,” p. 67.

⁴⁷ *Ibid*, pp. 35-7.

⁴⁸ Sean Connell. “Building a Creative Economy in South Korea: Analyzing the Plans and Possibilities for New Economic Growth.” Academic Article Series No. 62, Korea Economic Institute of America, December 10, 2013, p. 8.

⁴⁹ “The 50 Greatest Breakthroughs Since the Wheel,” James Fallows, *The Atlantic*, November 2013/October 23, 2013, available at: <http://www.theatlantic.com/magazine/archive/2013/11/innovations-list/309536/>.