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Growing with Unicorns: Can Korea Reboot its Growth Strategy?

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The growth context

Every country irrespective of its position on the income ladder is committed to growing its economy—occasional talk of 'degrowth' notwithstanding (Bokat-Lindell 2021). Countries expressing greater awareness of risks associated with climate change and environmental degradation want growth to be green and sustainable. Those that perceive the political and social costs of inequality add inclusiveness to the growth agenda. Middle- and high-income countries are also discovering that from near the turn of the century, and more decisively since the Financial Crisis of 2009, an increasing share of their growth must be sourced from improvements in total factor productivity derived from innovation and better use of intangibles. Physical capital will continue to play a role, albeit a diminishing one, and increments in the quality of human capital[1] can also contribute a bit; however, most countries are coming to terms with a shrinking workforce, if not immediately then within a decade or less.

The importance assigned to factor productivity has sharpened the focus on firms that generate the lion's share of productivity gains. By identifying the class (or classes) of firms that are the principal drivers of growth, the attributes responsible for their superior performance, and factors conducive to their emergence and proliferation, countries could, in principle, design policies and institutions that promote potentially higher sustainable growth. This leads us to consider the role of unicorns, defined as new firms (start-ups) that have managed to achieve valuations of $1 billion. Quite frequently these high-growth firms begin as gazelles or start-ups that have seen their revenues increase by 20 percent of more in their first four years of existence (Box 1).

Adding to the numbers of gazelles and unicorns can be a means for the Republic of Korea and other OECD countries to reinforce the growth impetus from other sources. But as pointed out by a World Bank report (Goswami et al. 2019), "the fragile and elusive nature of the high-growth firms means that

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targeting them may be neither feasible nor advisable." For this reason, examining the underlying factors that can promote unicorns is a policy priority for many governments seeking to promote new sources of growth.

The importance of the sprinters

Research on firms in mature economies has pointed consistently to the outsized contribution of firms at the global productivity frontier. This relatively small subset of firms are the "movers and shakers" in an economy. On average, they can be 4 to 5 times more productive than firms in the interior of the production space. They lead the field in commercializing and scaling up new technology and they are responsible for incremental innovation. New entrants among them can introduce disruptive innovations that result in desirable churning of an industry. Firms operating at or near the frontier also lead the rest in the net creation of jobs (Andrews et al. 2016; Pugsley et al. 2018).

On closer examination, the frontier-hugging (or superstar) firms are on balance larger than the average, more profitable, are more likely to be engaged in international trade, and some tend to be affiliated with a multinational conglomerate. A striking feature of some of the fastest-growing and most dynamic firms—the ones than can morph into unicorns—is that they tend to be relatively young firms. These so-called gazelles frequently owe their growth surge to their innovativeness, and it is by capitalizing on this capability that they can remain at the forefront of their industry. In fact, many gazelles fail to innovate. Instead, their growth falters and they are squeezed out or taken over by incumbent companies. Over a period of five years, four fifths of gazelles have either exited the industry or are no longer at the leading edge (Haltiwanger 2022; Calvino et al. 2016). Among the survivors, firms that are in the manufacturing business show greater persistence than firms that are providers of services.

Young, fast-growing firms are a conduit for innovation of all sorts. Despite their small numbers (as few as 5 percent of the start-up population), they determine the dynamism of their respective industries. These firms give rise to vertical spillovers by aiding suppliers lower down the production chain and to horizontal spillovers by transferring knowledge, creating networks, or stimulating competition. When an economy is nurturing significant numbers of high-growth firms, it can move into the growth sweet spot with economic momentum largely derived from technological innovation and gains in productivity.

Young, high-growth firms are in the limelight for two additional reasons. One is that large, established firms—long seen as the principal drivers of innovation, productivity, exports, and growth—are punching below their weight (Freund and Pierola 2020; Ciani et al. 2020). In fact, a study of large firms in the United States finds that the firms

dominating industries are contributing less to productivity and to innovation than their counterparts did a few decades back (Gutierrez and Philippon 2020).[2] This is reinforced by the findings of a Brookings study of manufacturing industries in the United States, Germany, and Japan, and by evidence of declining productivity growth in Korea's export-oriented flagship industries in the last decade (Lee 2013; Jones 2022; St. Louis FRED 2022;[3] de Vries 2022; Min-kyung 2021).

The increasing concentration in most industries is a second reason why high-growth firms and more churning at the top is becoming a priority.[4] Concentration is blamed for the slackening of competition, a decline in industrial investment, rising market power and corporate profits, and the growing income disparities in several advanced economies including Korea (Philippon 2019, 2021; Cortes and Tschopp 2020; Zingales and Rolnik 2017; OECD 2020; Lee 2020, 2021).[5] While bigger can be better because it facilitates economies of scale and scope, long-term growth pegged to innovation and productivity calls for a mix of firms at the technological frontier. There is a role for both giant multinationals and younger, nimbler, innovative, firms that can compete with the incumbents and displace the ones that are losing their edge.

The challenge for policy makers is to create an ecosystem where gazelles can thrive and multiply the number of unicorns. Even more challenging is how to identify promising firms and help them realize their growth potential and prolong their growth spurt by enhancing their capacity to innovate, mobilize resources, and efficiently harness intangibles. The task of policy makers is made no easier by evidence of flagging entrepreneurship in many if not most OECD countries, with fewer start-ups and too many claimed by the "Valley of Death" (Decker et al. 2014; Haltiwanger 2022; Hathaway and Litan 2016; OECD/European Commission 2021; Pugsley et al 2018).[6] Singling out the swift footed has also proven to be no easy task. Firms that eventually make their way to the forefront of an industry are generally among the larger start-ups or are SMEs that have been in business for a few years and have established a track record. The difficulty that policy makers and investors face is that the recent performance of a firm is no guarantee that it will be repeated and sustained.

Analysis of gazelles has established that only a minority repeat a high-growth episode (Dautzenberg et al. 2012). Almost half of firms that looked like winners will exit the market within three to six years and fewer than 15 percent continue to grow rapidly in subsequent periods. Those entrepreneurs that succeed in the difficult task of starting a firm frequently fail to turn a profit, make the firm grow, or survive the competition. All too often whether a company survives and grows depends not so much on R&D and the quality of innovation as on human and intangible capital. The ability to manage these effectively is something that many entrepreneurs are unable to do

single handedly. Management is often the Achilles heel of start-ups.

Interestingly, although knowledge-intensive industries host more high-growth firms, they are not necessarily high-tech firms. Research intensity is not an essential attribute of a potential highflyer; gazelles can flourish in many different industries and in fact the policy environment should support entry in a broad range of activities. Innovation of many different kinds—organizational, marketing, design, after-sales service, an others—certainly helps impart market power as does the ability to achieve scale and reap the benefits of lower costs.

From start-ups to unicorns: Reviving Korea's growth

Korean policy makers have prioritized the curbing of chaebol dominance and strengthening the capabilities of the SME sector since at least the 1990s, but progress has been limited. The performance of both types of firms (especially providers of services) have fallen short of expectations, and GDP growth has been slowing since 2010 (Swiston 2021). More recently, a boom in start-up activity with 11 firms achieving unicorn status has aroused hopes that growth could be spearheaded by high-growth firms (Box 1). Korea's newly minted unicorns are concentrated in e-commerce, Fintech (Toss, Dunamu), games, (Korea is the world's 4th largest market), cosmetics (L&P Cosmetic, GP Club), hospitality (Yanolja), and wholesale and retail businesses (Danggeun Market, Market Kurly, WeMakePrice). However, there appears to be ample scope for firms to capitalize on opportunities in the life sciences, in medical devices, green technologies, robotics, and in the subfields spawned by AI and digital technologies (Korea is ranked fourth in number of registered AI patents) (No-pil 2021). The resources that Korea is pouring into R&D (4.5 percent of GDP) and the thousands of patents registered each year suggest that there may be plentiful opportunities for entrepreneurs eager to create the next unicorn.

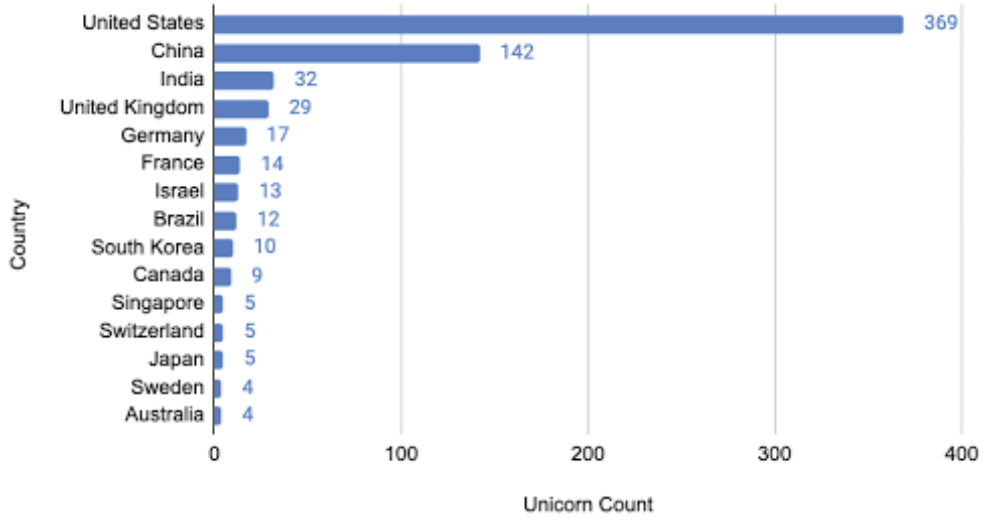
The government has been quick to encourage young firms to reach for unicorn status. It has increased its venture financing by launching the Second Venture Boom Expansion Strategy in 2019 to help foster 20 full-fledged unicorns. This is complemented by the K-Unicorn project to identify 200 baby unicorns and help them cross the threshold into adulthood with the combined infusion of public and private venture capital. In addition, the Ministry of SMEs and Start-ups (MSS) has bigger plans in store for the sector. The intention is to build a pipeline of as many as 500 'preliminary' unicorns (valued at $0.1 billion each) by screening the many start-ups.

The economic shock inflicted by the Covid pandemic has meant that the targets for end-2022 are unlikely to be met. Nevertheless, the interest in unicorns is as strong as ever. This raises at least two important issues: Can Korea successfully hitch its growth prospects to the discovery and grooming of unicorns? And second, what mix of policies

Box 1: Where the unicorns roam

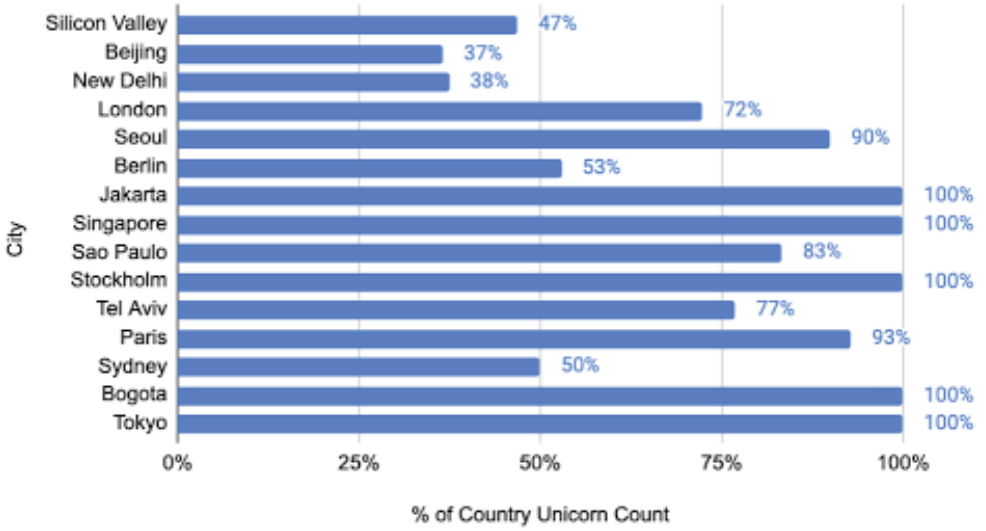
As noted earlier, the unicorn is a rare creature. Worldwide, there were 1,068 unicorns and decacorns in March 2022[12] with 869 added between January 2016 and June 2021—the vast majority in the United States, China, and India (Figure 1) (Zalatimo 2022). By comparison, only 14 unicorns were born between 2005 and 2010 (Eckert 2022). Furthermore, unicorns proliferate in a few highly connected, large metro regions well furnished with research universities, financial institutions, think tanks, and deep pools of workers (Figure 2).

Figure 1: Where unicorns congregate (2021)



Source: Gil 2021.

Figure 2: Urban havens for unicorns (2021)



Source: Gil 2021.

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Box 1 (continued)

The recent flood of new, high-valued companies is largely the result of an abundance of financing from publicly supported VC funds as in Korea and China. VC is growing because of easy credit policies and low interest rates and a glut of savings seeking high returns (many from the increasingly affluent top 1 percent). Moreover, investors are enthusiastic about the potential of Fintech, digital commerce, consumer technology, new mobility solutions, and entertainment media. These activities, which were boosted by demand during the Covid pandemic, attracted a flood of venture financing as returns from other assets proved to be meager.

There have been booms before and the Dotcom bubble is a reminder that promising firms launched by rational or irrational exuberance can be forced to exit if economic headwinds arise. Some high-growth firms have had a good run but how many of the newly minted enterprises will survive is unclear. Moreover, it is not obvious that unicorns will continue proliferating at the rate they have over the past 5–6 years (unicorn creation slowed from early 2022). And even if they do proliferate, can countries like Korea, Brazil, Israel, France, and Germany, with less than 20 unicorns apiece in 2021, rapidly add to their numbers? Perhaps.

might serve to increase the number of high-growth firms whether they join the ranks of unicorns or not?

As always, the evidence on the first question is mixed. Korea's start-up scene is encouraging with the number of entrants exceeding rates in several comparator economies. This is also reflected in the early-stage entrepreneurship rate, which rose to 15 in 2019 from 6.7 in 2016 and is well above rates of Japan (5.4) and Taiwan, China (8.4). Korea's ranking on the GEM National Entrepreneurship Context Index in 2020 was 9th in a list of 44 countries (GEM 2022). The increase was especially marked in the tech-intensive businesses, but services also attracted many new entrants into the hospitality and restaurant subsectors. Many start-ups in Korea—as well as in China and the United States since 2020—are by individuals engaging in business activity out of necessity and mostly as a vehicle for self-employment (Djankov and Zhang 2021). Offsetting the rise in entry is a high failure rate and subsequent exit. Korean start-ups had lower one- and two-year survival rates than those in comparators with almost two thirds exiting in the first year and another 50 percent of the remainder in the second year, an unhelpful trend. Moreover, as in China, where net company formation rose from 1 million per annum before 2012 to 4 million per annum since 2016, the impact on productivity and growth has been negligible.[7]

In order to increase survivorship and enable more firms to make a bid for preliminary unicorn status, Korea has plowed public funds into the venture capital market and crowded in venture capital both domestic and foreign. With venture financing amounting to

0.16 percent of the GDP, and 165 active players in 2020, Korea's market is the OECD's third largest. But there is some catching up left to do, as the Global Start-up Ecosystem Report for 2021 gives Seoul a middling grade—ranking it 16th among 40 countries with its score improving over the previous year (Startup Genome 2021).

Clearly, Korea views the new breed of unicorns as a means of diversifying its economy and lessening dependence on commodified manufactures and other low-margin manufactures such as steel and petrochemicals, where it faces competition from China and other countries. Unicorns can complement the strengths of chaebol in machinery and electronics industries and diminish industrial concentration if they are allowed to do so. Unicorns and other high-growth firms can also breathe vigor into Korea's services sector and reduce its dependence on exports of manufactures, which would be a welcome trend, especially if unicorns can break into new innovative areas beyond their current pattern of activity.

Korea is aiming high and banking on unicorns and budding unicorns to buttress its growth over the coming decades. To achieve a degree of success it will need to craft the requisite enabling environment for a decade likely to be filled with uncertainty emanating from several quarters. Economic (real estate bubbles, private debt), epidemiological, political, and climatic headwinds are likely, as well as from international tensions arising in a fractionated global environment (Swiston 2021; Economist 2022). Perhaps even more importantly, when viewed from a Schumpeterian perspective, is whether "creation" by unicorns can handily exceed "destruction" to credibly add value, with winners gaining well in excess of the losses of victims of the evolutionary spiral. Many have pointed out that it is difficult to divorce public policies aimed at supporting gazelles and eventual unicorns from active competition policy. If these new start-ups cannot gain a foothold because of excessive market power wielded by incumbents, policies to promote them can easily waste resources and not produce the desired results.

Farming unicorns in Korea: Is it feasible?

A growth strategy focused on improvements in productivity led by value-adding innovations is desirable for a country at Korea's level of development. An earlier strategy that relied on high levels of investment in export-oriented manufacturing and a growing, youthful, better-educated workforce can no longer be repeated. On the contrary, Korea's demographics will be a drag on its economic performance over the foreseeable future. Moreover, given Korea's current and trending incremental capital-output ratio (ICOR), gross investment averaging 32 percent of GDP generates very modest growth. In all likelihood, if Korea follows the path other advanced OECD economies have taken, gross investment will fall into the mid-20

percent range of GDP. Manufacturing as a share of GDP, currently 25 percent and far above the OECD average of 13 percent, will also shrink.[8] If so, growth will need to be sourced from other drivers—and high-growth firms leveraging digital technologies and engaged in servitized manufacturing could deliver productivity-led growth of between 2 percent and 4 percent per annum.

Many countries are experimenting with a panoply of policies that could multiply high-growth firms. These include investment in R&D, incentives for venture capital and other kinds of risk financing, the creation of tech zones bundled with fiscal and financial incentives, inducing university-industry linkages, establishing incubators and accelerators, crowd sourcing innovations, and using tournaments and prizes to cultivate ideas. But with good ideas becoming "harder to find" as Bloom et. al (2020) and Thompson (2021) show, a scattershot policy approach might be less effective than a systematic strategy that aims to promote high-growth firms across a range of manufacturing and services industries likely to have the greatest traction in tomorrow's economy.

The bedrock for this strategy must be a system for producing ideas at home and assimilating ideas from elsewhere through collaboration, smart FDI, licensing, and joint ventures. In other words, participating actively in an open, globalized innovation system backstopped by substantial domestic investment in basic research holds promise. Korea does plenty of research, but not necessarily enough new idea-producing basic research—and international collaboration is low (OECD 2018). During 2009–18, 1 percent of GDP invested in R&D translated into only a 0.1 percent growth in total factor productivity. Furthermore, while patent quality is comparable to that of countries such as France and Sweden, from among 10 high-income countries, Korea's innovation quality was ranked 10th by the WIPO (2020). So, there is scope for improvement.

What next

A brief policy note is not the place to delve into details of a strategy. Suffice it to say, a viable strategy must bring together policies in a coordinated way that has an impact on the overall competitiveness of the market environment. The Korean product market is seen by many analysts as overregulated compared to many OECD economies (OECD 2020).[9] Policy areas in which to consider changes include those affecting risk capital, how it is allocated, and the amounts available to firms at different stages of their life cycle. Equally important are mentorship and support services provided to potentially high-growth firms to enhance the quality of entrepreneurship and improve managerial capabilities. Other possible areas for policy action include initiatives that encourage firms to build and effectively leverage intangible capital, which could be the key ingredient enabling some firms to pull ahead of the pack (Haskel and Westlake 2022).[10] Finally, in many

successful environments, actions taken that augment agglomeration economies in urban centers have been fruitful as most unicorns germinate in major metropolitan areas (Box 1).[11] This is the milieu in which the creative class, joined by many from abroad, and labor with specialized skills can together work their magic and grow the herd of unicorns.

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Endnotes

1. See Baily, Bosworth, and Kennedy (2021) on issues with education, training, absorption of foreign workers and international collaboration that affect labor productivity in the United States, Germany, and Japan.

2. From an analysis of U.S. data, Manera (2021) shows that "high-concentration sectors are absorbing excessive R&D resources, depressing aggregate research productivity. First, researchers accrued mostly to incumbent firms in concentrated sectors. Second, the quality of patents in sectors with increased concentration has fallen, as measured by patent forward citations. Third, inventors' productivity, [measured as growth in output per worker per inventor] has decreased in these sectors. These findings suggest that additional inventors have accrued to incumbents who employed them on "defensive innovation", that is, projects with a low growth footprint conducted with the primary aim of preventing further entry and sheltering existing dominant positions."

3. TFP at constant national prices for ROK. https://fred.stlouisfed.org/series/RTFPNAKRA632NRUG.

4. Celltrion, Naver, NCSoft, Coupang, and Kakao are some of the large, listed companies that have emerged in the past 20 years and taken their place alongside companies belonging to the Hyundai, Samsung, and LG chaebols.

5. From his review of the market power literature and analysis, Syverson (2019) identifies several trends including, "labor's declining share of income, increasing corporate profits, increasing margins, increasing concentration, slower productivity growth, decreasing firm entry and dynamism, and reduced investment rates. While none of these metrics are perfect, many (but not all) have been replicated in multiple venues with multiple techniques, and as such can be considered quite robust.... Where the literature, at this point at least, has not yet reached a conclusion is whether and to what extent increases in the average level of market power in the industry is responsible for each or all of these trends … more needs to happen before we can attribute these changes to greater market power."

6. An OECD/European Commission (2021) report points to as many as 35 million missing entrepreneurs. The sudden spurt in business formation in 2021 is related to the numbers laid off by many services providers during the Covid pandemic and may not persist (Haltiwanger 2021).

7. Start-up activity is welcomed because it sustains creative destruction, but it is a plus only when creation exceeds destruction and preferably by a sizable margin. But that is not always the case. Komlos (2014) for example, points to strategies pursued by the digital products industry that contribute little to welfare and in fact, some kinds of social media have diminished well-being of users. He goes on to note: "Obsolescence is a favorite strategy for products such as video games, textbooks, software, consumer electronics, where upgrades and the latest versions with minor improvements are introduced periodically with the aim of convincing the consumer of its superiority."

8. "Curbing financialization and restoring manufacturing strength" as proposed by Keun Lee (2021) will in all probability not bring back the high rates of growth with equity that Korea enjoyed during much of the last quarter of the 20th century. Two recent studies of Korea's industrialization in the 1970s point to the likelihood of resource misallocation and the negative effects that had on aggregate total factor productivity (Page 2021).

9. Other administrative entry barriers for start-ups have been lowered and are close to the OECD average. (OECD product market regulation database).

10. Although the ratio of intangible investment to GDP in Korea is comparable to other western economies, intangibles contribute much less to growth than tangible capital possibly because of the composition of intangible capital is heavily weighted towards R&D (Chun et al. 2015).

11. The expense of housing in the Seoul metro areas is a major issue as property prices have doubled over the past decade. This affects labor supply and start-up activity and undermines agglomeration effects. San Francisco/Silicon Valley and New York confront very similar problems (*Economist* 2022).

12. Another nearly 200 were added between mid-2021 and March 2022 for a total of 1,260 collectively valued at $4.3 trillion by the Crunchbase Unicorn Board (Teare 2022).