Professor Kelly Mua Kingsly
PhD/MBA, MPA, CFA, CFI, PMP, ISO
Finance engineer (Forensic finance and audits)
blog:www.kellykingsly.com
My Papers:SSRN
https://www.linkedin.com/in/kelly-kingsley-ph-d-2a5a1416/

"The Superiority of Knowledge over Natural Resources for Economic Transformation: A Case Study of South Korea"

1. Introduction

In general, it can be asserted that an economy propelled by abundant knowledge resources leads to the emergence of an even more dazzling and luminous world. However, amidst this assertion, an undeniable air of uncertainty engulfs the transformation of the fate of nations that may not have been bestowed with the bountiful gift of knowledge resources during their origins. This present endeavour, encapsulated within the pages of this paper, seeks to bridge this consequential gap in historical understanding and unequivocally demonstrate that the possession of natural resources should never be mistaken as an emblem of inherent superiority. Numerous countries, despite their limited endowment of natural resources, have soared to unprecedented heights of economic prosperity, financial stability, and social progress. Within this context, a compelling case study of South Korea shall be expounded upon, culminating this essay, to present the paramount exemplification of how knowledge surpasses mere reliance on the fortuitously bestowed natural resources that nature may have favoured a specific nation with.

The outstanding perplexity regarding the supreme and utmost value of knowledge resources and endowments may be attributed to the undeniable scarcity of an adequate number of nation-states that may possess only one of the two resources while lacking the other. For instance, the prosperous United States is renowned for being filled with an extraordinary abundance of precious natural resources and highly coveted knowledge resources. It is crucial to acknowledge that no pure and unadulterated nation-state may be isolated, for there is no existence of a solitary nation-state with natural resources alone yet possessing negligible knowledge resources, and vice versa. However, it is worth noting that, regardless of this undeniable reality, there are precisely four distinguished nation-states that may unambiguously serve the purpose of flawlessly authenticating and further exemplifying the extraordinary and unparalleled quality of knowledge resources alone, without the essential backing and harmonious

interconnectedness of natural resources. These noteworthy and remarkable four examples that impeccably showcase this distinct phenomenon encompass the glorious nations of the Netherlands, France, Germany, and the unsurpassed United Kingdom. Through their geographical location in the eminent region of Western Europe, these awe-inspiring and captivating countries stand proudly, projecting a profound absence or, at best, a minimal presence of valuable natural resources such as the illustrious oil reserves, esteemed gas reserves, eminent coal deposits, and influential petroleum reserves. Nevertheless, it is truly remarkable to reflect upon the astonishing fact that these countries have effortlessly risen to the same distinguished level as other well-established and resource-packed nations, whose lands are veritably congested and enveloped by abundantly available natural resources.

1.1. Background and Rationale

Historically and categorically, knowledge accumulation, processing, and utilisation have always been questions of great strategic and economic importance. The concept of human knowledge has forever been an intriguing and conflict-ridden domain. The foundation of wars has often been the pursuit of more excellent knowledge, resulting in participants, protagonists, and even enemies plundering material possessions and knowledge obtained and generated over time. This is because, in reality, knowledge cannot be viewed merely as a category of the environment. It is something much more profound – it must be vested with economic, social, and spiritual dimensions rich with meaning and significance. Traditional knowledge, scientific knowledge, and the knowledge acquired by individuals, families, and nations all play an indispensable role in transforming, developing, and preserving both people and nations. They are crucial elements that contribute to the dignity and progress of societies and should never be underestimated or undervalued. The wisdom passed down through generations, the discoveries made through rigorous scientific inquiry, and the individual experiences and insights gained are all invaluable resources shaping civilisations' course. These various forms of knowledge synergise to empower individuals and societies as they navigate the complex tapestry of existence and strive for a better future. Recognising the immense worth of knowledge in all its forms is crucial for fostering a harmonious and prosperous world where the collective wisdom of humankind can be harnessed to overcome challenges and nurture a more enlightened and interconnected global community.

Today, the world has come to a profound realisation that the past two centuries have solely revolved around utilising nature's bountiful resources. Using coal, petroleum, natural gas, water, and the sun as the primary sources of energy has gradually emerged as the driving force behind economic and industrial progress. The increased reliance on these natural resources has led to an exponential surge in production and consumption, resulting in immense wealth accumulation within societies and individual households. Even those nations and communities with limited access to these energy sources have managed to partake in and reap the benefits of the luxury experienced by their counterparts. Consequently, living standards have experienced an inevitable elevation, intensifying the moral and humane obligations between developed and developing nations, tribes, and societies. In the present day, the expansion of knowledge-based skills has become synonymous with affluence and prosperity. Knowledge production, education, research, development, trade, and the provision of second-generation services have been widely recognised as the critical drivers of progress, often referred to as the "riches from knowledge". The paramount focus lies in acquiring the appropriate knowledge for industrial, economic, financial, political, military, social, philanthropic, media-related, technological, and strategic military advancements, as these domains continue to garner profound importance within the global community and its partnerships. Consequently, energy-related concerns have taken a backseat as preferences and goals are now exclusively directed towards harnessing the immense power of knowledge. Furthermore, it is imperative to acknowledge that the management and generation of information and expertise at the familial, communal, national, and international levels have been established as integral strategic tools for organisational growth and development. A prime example of the transformative impact of knowledge can be observed in the remarkable transition of South Korea. Once reliant on soldier livelihood, mainly through the presence of US armed forces bases as a source of income, South Korea has flawlessly metamorphosed into an information powerhouse, basing its progress on this premise.

1.2. Research Objectives

The prioritised importance of knowledge and information for economic, financial, and social transformation is presented to provide an analytical, easy-to-replicate, and provable case study. The objective is to develop arguments that prove the superiority of the qualitative use of knowledge for economic, financial, and social transformation. The case study aims to demonstrate that knowledge, not natural resources, has transformed South Korea into a developed industrial country. It

also aims to prove how information and communication technology contributes more to the national economy than using natural resources. Additionally, the study seeks to prove the ideas using quantitative and acceptable information exhaustively.

In the contemporary international economic, financial, and industrial system, technological and scientific knowledge holds boundless superiority over natural resources, traditionally believed to be the backbone of financial and economic analysts, researchers, scholars, and international organisations. This research aims to be carried out more analytically to prove the norms in IAEA, estimates and discussions, General Assembly and Scientific Forums, SDGs, SWOT analysis, and economic, financial, and multinational firms. Almost all the world's energies aim to move away from natural resources' multiple and illegal roles and their associated conflicts, disputes, and poverty. This study is only in the preliminary research stages and will be carried to a deeper empirical and methodological level worldwide.

2. Theoretical Framework

The mainstream theoretical lenses, knowledge, and natural resource approaches will be defined at the conceptual level using a non-mathematical language. The formulators of these approaches and their schools mainly developed these concepts based on empirical observations, which makes the approaches more grounded in reality. While the two approaches have followers, many criticisms are carried on these two approaches in equal doses. However, what is essential for this essay is to look at the schools of thought as theoretical formulations, which are a raison d'être for each specific concept at hand. This starting point would enable the identification of the theoretical contributions of knowledge and natural resources.

The Knowledge Economy Theory (KET) emphasises that the new determinant for a country's economic success is "knowledge-enabled management of resources." This state of the world, equipped with advanced technology and innovation, is underpinned by the role of non-material resources, especially knowledge. This innovativeness in this interconnected world necessitates habitual learning by the individual and at the domestic level. As a result, those countries who have high stocks of knowledge (HRD), those who continuously create knowledge (R&D), and those who actively disseminate knowledge through trade, Foreign Direct Investment (FDI), aid, transnational corporations, and education, where the majority are the OBCs, are the ones which are wealthy and no longer hegemonised

by the old accumulation of Capital Keykuissance. The pictorial diagram in the KET generally reflects that countries/knowledge happen to be those who keep on learning in this interconnected world, and the net result of having such proactive countries is the OBCs who are controlling the wealth of nations.

2.1. Knowledge Economy Theory

Introduction Based on the conception of the economy as a value-added chain with production as a transformation of inputs into outputs, the modern economy can also be conceptualised as producing improvements in life quality or human welfare over time. Here, the value-added chain is divided into three stages: intra-production of knowledge-technology-innovation, co-production of knowledge (science)-technology-competence (engineering and employees), and inter-production of products/services and demand (consumption). The economy is a subsystem of a socio-techno-natural system that is profitable for the co-creation of infra, inter, and supra agreements (policy/industry management), architectures (governance standards infrastructure), and habitats (usability and social responsibility). These three stages of growth are caused by the economics of knowledge, as the means of today's production have shifted from heavy duty to high-tech duties, and the role of human factors in the workforce has gradually taken the advanced conceptualization over raw cognition and the dexterous manual work.

A knowledge-based economy is a society in which a significant part of the labour force is involved in creating, distributing, and controlling data, interpreting information, and applying knowledge to the production and service sectors and the other two. It is a society where knowledge and information play a critical role in the growth and development of markets, consumer choice and demand, creation and distribution of economic and political power, national security, and the composition and character of culture and community life. The economy of knowledge posits that there are products/services whose value is knowledge and can be manufactured and that wealth comes from individuals, businesses, communities, and regions using information, knowledge, and technology to leverage their ideas into sales and profits in a global market.

2.2. Resource Curse Theory

According to Sachs and Warner (1995; 1997), the resource curse phenomenon describes situations in which countries rich in natural resources are trapped at lower levels of economic growth and development than those less well-endowed. Collier and Goderis (2007) argue that Hirschman (1958) was the first to draw

attention to a curious puzzle: the contrast between large capital flows to countries with good prospects for economic growth, primarily based on human resource capabilities, and large new oil exporters with a poor economic growth outlook due to extreme dependence on natural resources, combined with sudden capital flight upon natural resource discovery. Within academia, various theoretical explanations have been offered to explain the phenomenon of the resource curse with no consensus yet on which theoretical paradigm offers the best explanation (Humphreys et al., 2007).

However, claims are supporting alternative perspectives from resource curse and pollution heaven argument theories. For example, Bart and Ross (2017) argue that the country and industry size moderate the negative influence of natural resources, with the civilised nature of a country playing a pivotal role. Their argument extends this relationship to five states with a strong presence of immigrants in the United States. Similarly, Brunnschweiler and Valente (2011) argue that natural resources are necessary for economic growth. Economic practitioners have also identified the importance of moving away from generalising Africa as a continent trapped in the resource curse, pointing out that commodity-dependent African nations provide counterarguments to the resource curse theory. Instead, industry value addition is celebrated through various African success stories.

3. Historical Context of South Korea

South Korea turned into a solid maritime country in the late 20th century as it built a sea dyke in 1969. Tracing the country's financial history a little further takes us back to when the seas dried up in 1973 and when the national treasury was on the brink of default 39 years ago. This is where we will start the story of the country's transformation in the 20th and 21st centuries in the following sections.

However, before going into these details, it is necessary to briefly touch on the history before and after industrialisation in this country. For hundreds of years since the 14th century, Korea had been a tributary state and colony (de facto or de jure) of its two powerful neighbours, China and Japan, until South Korea became a sovereign state in 1948. All had a folk, primarily rural, economy, and foreign and general trade accounted for only a tiny proportion of the national economy. Nevertheless, Korea had a sound geopolitical status of being a bridge connecting China, northern nomads, and Japan and acting as an intermediary connecting the East and West. In January 1962, President Park Chung-hee emphasised the need to integrate capitalism and communism in North Korea. In 1964, he declared it the

first year of the Sam-il Development Era, and in 1965, he advanced the so-called garment-galoshes (shoe insoles) development era. From a historical perspective, it can be explained as an essentially political concept that incorporates humanism, which considers the eminent deity as the end and humans as informative, economic development ahead toward the quality of life, and objective administrative prosperity living abroad. With hindsight, it is also a touchstone of its national policy that has been repeated by government officials who attempt to create momentum for change amidst adversity.

3.1. Pre-Industrialization Period

The transformation of the South Korean economy from an agrarian-based economy into an industry-based one was fundamentally shaped by its natural hypothesis in Korea effect. This hypothesis assumes that the historical path of the South Korean economy was shaped by three initial conditions (factors), which were influenced by its natural surroundings: the availability of water resources, the presence of war potential, and the degree of dependence on neighbours for the demand market. Those initial conditions have guaranteed that the South Korean economy had some advantages over others in terms of exogenous economic, financial, and social development, which eventually initiated economic transformation.

Turning to the case of South Korea, for centuries, Korea was captured by the influence of other countries of nowadays, China and Japan, which kept it in a kind of eternal region over the centuries, especially during the pre-industrialization era. Thus, from the 13th to the 19th centuries, Korea did not experience radical economic, social, and political transformation. At the beginning of the 20th century, Korea was still an economically underdeveloped country due to a high dominance of agrarian economic activities which occurred throughout the peninsula. As a result, those affected large landowners' interests, and most of the population became agricultural workers, temporarily becoming like a fiefdom without any legal rights. Historically, two events characterised the Korean population's sense of identity and connection with the nation at the time of pre-industrialization, which were the Korean War devastating as a new impetus for radical post-war social transformation besetting.

3.2. Industrialization and Economic Development

After the Korean War, South Korea entered a new period of transformation. As of 1961, according to the World Bank, the country was still one of the poorest in the world, with a per capita income of US$82 in 1961. That same year, General Park

Chung Hee took over the government and launched an ambitious economic plan, the New Community Movement. The purpose was "to improve the quality of life of the rural masses, by establishing an industrial basis and through the mobilisation of human and material resources in the Four-drives: drive for labour, drive for capital, drive for students, and drive for science and technology". General Park also sought to harness the capacity and inculcate the nation's spirit of self-help and self-reliance. General Park's Economic Plan was founded on several independent but equally important main strategies to accomplish this objective. These he listed as being capable of solving the problem of poverty. Promoting light industries in the rural areas was the independent force to escalate economic growth. Capital and technology were equally important as vehicles of transformation. This plan and its author were terminated before its goals were realized.

The First Republic thus possessed some of the features of strongman modernisation, which elsewhere produced the groundwork for "guided development" and developmental states. Socially, President Rhee encouraged capital accumulation and entrepreneurship. On the other hand, the Korean government made several abortive attempts to implement effective population control mechanisms. The Third Republic under President Park was characterised by the installation of a foreign and economic planning team, which placed heavy emphasis on the development of a heavy chemical industry, even though its administration was embroiled in a running battle with the international community over human rights and was to end with Park's assassination in 1960 following a decade of dictatorial rule. When Major General Park became President Park in 1963, the dawn of an intensive and effective industrial revolution unfolded.

4. Knowledge-Based Economy in South Korea

As we can see in the next part, for South Korea's government, a knowledge economy is essential. One mark of a knowledge economy is its external orientation – i.e., the successful penetration of inland economies into the developed economies of the USA, Europe, and Japan. This chapter then focuses on the approaches and strategies of the Korean government and local government to the built environment and the role of science and technology. It turns first to the development of a knowledge-based economy in South Korea. This case study provides an example of a country in which a society built on natural resources has adapted to transformation through urban and industrial structure and cultural creative activities.

Efforts and policies initially centred on information and communication technology (ICT), biotechnology, and nanotechnology, but recent policies, led by a change in the administration to focus more on the creation of more excellent added value from public and private sector relationships through culture, leisure, tourism, and sport. There is significant government investment in research and development (2.9% of GDP in 2004), human resources (education 4.8% in 2004), and their reward (15% of the government budget). One-third of administrative staff has tertiary science qualifications. It is also worthwhile mentioning the investment in GDP of 5.7% of GDP in higher education and the widespread use of information and computer technology. This can be seen in the state of e-government initiatives. In 2006, South Korea ranked the third-party country with e-government maturity, just after the USA and Singapore. In addition, it was the first-ranked country in the online service index and e-participation global index.

4.1. Government Initiatives and Policies

In 1990, the South Korean government pursued a knowledge-based strategy to enhance its economy and society. In 1991, the Korean Institute for the Advancement of Technology was established to monitor technology and coordinate the entire technology system. These efforts were redoubled in 1995 when the government announced a seven-year National New Technology Development programme, funded with US$2.8 billion to effectively mobilise technology know-how of local corporations, research institutes, and the R&D capability of the government. In 1995, the Korea Telecom Institute for Future Multimedia Technologies was established and was in charge of developing advanced microelectronics devices, communication networks, and multimedia systems. This was followed one year later by the creation of the Electronic and Telecommunication Research Institute. It was later announced that a total of US$20 billion would be spent over the next ten years to develop telecommunications, information services, and the hardware and software industries. Later, it will be occupation areas.

In the late 1990s, the South Korean government initiated a program to develop the e-economy using electronic commerce to enhance the performance of both the private and public sectors. The government revealed that the goal of its Electronic Commerce Promotion Initiative (ECPI) is to facilitate the development of an efficient, secure, and user-friendly electronic commerce environment embracing all aspects of the transaction process without regard to either the type of purchaser

or seller involved or the end product consumed. In addition, South Korea held the first World Electronic Commerce Forum in June 1999.

4.2. Investment in Education and Research

The idea of allocating resources towards education and research has deep roots in Korean culture. This was highlighted in many interview findings where culture and study ethics traced to long-standing traditions, teachings, and instructions from Confucian classics and scholars have been instrumental in explaining Korean's interest and investment in human resources, especially education. A number of interview responses embedded the role of ethics, values, and cultural readiness in understanding why the Korean population spends so much in educating themselves.

The following case study tries to inform why Post-Korea war has placed so much emphasis on education and knowledge to transform and sustain their society and economy. A review of all the literature and various publications narrates a success story in leveraging education, knowledge, and their research to develop the entire economy. Today, South Korea is among the ten advanced countries with the best scientific potential in the world and ranked 5th in terms of global competitiveness. That has been achieved in part by increasing R&D spending to 4-6% of GDP and allocating 75% of GDP for education in 2009. In the 1960s and 70s, sixty percent of government budget investment at that time was for education in which the same liberal development strategy increases public spending on R&D from $8.6 million in 1975 to $189 million in 1980. These increased numbers have transformed the country into societies that are heavy with knowledge and industrial capabilities.

For instance, their efficiency in patent registration is not only directed at technology and pharmaceuticals but finance and social innovation. To register a patent for business, it only takes three days and a cost of US$1,342 but to review the patent it only costs US$50. This efficiency shows that South Korea's innovation activities came specifically from Universities, Public research institutes,, and Businesses and institutions' ability to send their staff or researchers to high educational institutions.

A further indication of the state's investment in education and institutions of higher education is the establishment of a clear international policy on education. The "Brain Korea 21 Project" is established in South Korea specifically to attract the international scientific community to contribute to the country's rapid development while simultaneously improving its own population. On the other

hand, the diversification of scholarships for both linkages and full-time dedication of institutions of higher education and industry is the form of investment to balance the theoretical and practical needs of the South Korea national policy and industry.

Moreover, the investment towards institutions of higher education is also highlighted by the Kaist initiative with 27:1000 researchers-professors ratio. With this high educational institution's vast knowledge and close linkages with industrial sectors, South Korea continuously improves its competitive capacity overnight. For the FinTech industry, the government in South Korea has implemented specific policies to encourage research and development (R&D) for the financial sector, and the most unique factor that has created dramatic changes and boost in research and knowledge is the increasing investment in institutions of higher learning, especially in the field of technology and engineering. That road eventually encouraged interest from world-class researchers, including two Nobel prize winners, to join the centre.

5. Comparison with Resource-Rich Countries

The South Korean success story is even more remarkable when set against the backdrop of resource-rich countries and their comparative advantage. Strategy South Korea is a case study that tests a logical hypothesis of whether knowledge-based economic transformation is superior to resource-based economies. Despite high levels of aid and natural resources, Botswana remains heavily dependent on De Beers, a South African company which is one of the largest diamond and platinum producers. Norway, the world's second-largest per capita and biggest oil exporter, has decades of successful investment in education and training for adopting and adapting technology to create additional value for its economy.

In contrast, trailing Norway as the third-largest global oil producer, oil-rich Kuwait has a corrupt, bloated, and inefficient public sector, with virtually no incentives for private investment in developing its antiquated industrial structure. As a major international oil company, Shell had to leave Nigeria at the height of violence in the Niger Delta (the heart of Nigerian oil production) after decades of significant investment in corporate social responsibility programs. Over 80 per cent of Northern Sudan's topsoil is depleted. The Japanese-inspired Korean growth model benefited from strong development linkages between agriculture and industry through an export market. Former colonies of Japan and the Asia Tigers Hong Kong, Singapore, Taiwan, and South Korea with relatively high population densities all relied on strength in knowledge (or "human capital") and

policy credibility while wisely investing in education, health, and learning. Botswana, Kuwait, Nigeria, Venezuela, and Zaire offered their lesson on growth following indiscriminate presidential handouts from mineral and oil resources. Eastern economies show other diverse but low-cost development paths.

5.1. Case Studies of Resource-Rich Countries

Case studies of resource-rich countries Engvall et al. argued that the failure of natural resources to induce a change in the economy, typically many-fold, was documented in the resource curse literature. The present chapter showed the African countries of Botswana and Zambia, along with the Scandinavian country of Norway, which escaped that fate by building institutions relatively insulated from the short-termism of politics. However, in adopting national visions, these countries still rely on exploiting natural resources. In contrast to these resource-focused countries, the present chapter shows the transformations of economies in South Korea and Singapore, which have taken the export-led industrial policy of late development to the next level of the modern knowledge economy and society. From this angle, the share of natural resources in the GDP of Botswana and Zambia in 2015, at 17% and 21%, respectively, do not differ much from the share of mineral and petroleum rents in GDP in Norway (of around 15% in 2015 or 10% in 2019), an exception from the average of Resource-Rich Countries (RRCs) surveyed by Sachs and Warner.

Like South Korea, Nordic countries have also emphasised universal education, research, and development in using natural resources. It is a common feature of Nordic and South Korean national visions. However, there is a fundamental difference in these national visions: This Nordic strategy aims to harness natural resources by capturing more of the oil value chain, similar to the African continent, and the value of metals in the Rust Belt in Botswana resource nationalism. Instead of using natural resources for further socialist development, the export-led industrial capitalists in South Korea have worked on seizing more of the value of the labour of their people toward higher value-added manufacturing and services. Unlike in socialist economies, these new profits from above were generated based on the increasing global demand for South Korean-made vehicles, smartphones, and microchips.

5.2. Key Differences and Similarities

Let’s briefly summarise the differences: South Korea was sand-rich but knowledge-poor. At the same time, Qatar is knowledge-rich due to its foreign policies protecting the knowledge-based intangible national wealth but natural

resource-poor. South Korea can produce as much industrial and intellectual knowledge and organise; it has a better chance of developing a foundation industry for high technologies and products compared to Middle-East countries that do not have those natural resources, even though South Korea has started much later than some other countries. In essence, if a country has a stock of freight or even intangible assets, but until now, that country has not developed the knowledge to protect and utilise this base stock of confined natural wealth. It does not have an advantage like a resource-intensive and knowledge-poor state. Hence, the case of Qatar today is quite similar to that of a resource-poor, knowledge-rich economy, a completely different situation from South Korea's knowledge-poor and sand-rich economic case. Qatar's position is that there is no other freight stock besides the huge, newly discovered North gas reserves in 1971.

When looking at the Korean and Arabian peninsula, there are some logical similarities and disparities regarding the above exploration of the connection between Korea in 1961 and Qatar post-1971, between the development of capabilities for the production and commercialisation of goods, and for the investment in knowledge in both countries regarding the comparable time lapses from the South Korean (1960s–1970s) and Qatari (1970s–1980s) industries started on the same path, despite the gap. Both also quickly set up petrochemical industries based on their origin of petrochemicals. Both countries had the world's most praiseworthy large projects in their regions based on their regional origin, concurrently using the money they had gained from gas and oil.

6. Impact on Economic Indicators

The key indicators of a knowledge-based economy are based on knowledge and its transformation into education. It has some long-lasting impacts, including Gross Domestic Product (GDP) growth. South Korea has been a classic example of this transition. From 1953 until the 1960s, an agricultural economy accounted for 30% of GDP in the immediate aftermath of the Korean War. It contributed to 70% of the population's employment, as is usual in an undeveloped or low-income country. Subsequently, with some close attention from the government, the services economy began to assume prominence in the Korean economy. It accounted for more than 50% of GDP generation and contributed only 5-12% of employment by the end of the 1970s. The same developments were the Korean experience a century earlier, typical of all economic development cases. During the same period, in 1976, the share of the industrial segment in the generation of GDP increased from about 22 to 48%.

The transformation of Korea to an economy of knowledge is known as the "Miracle on the Han River" and is instructive in changing any country in more than one way. It was a staunch one-track economy with a heavy reliance on the United States of yet critical oil imports from the Persian Gulf but lacking any significant indigenous natural resources. The unfortunate breakup of the alliance with the United States would tax heavily, threatening the economic infrastructure. When scientists and technologists began spreading prophecies that physical resources are no longer the primary constraints of our economy, eyes soon turned to the field of resources that are entirely within the domain of sovereignty of a respected nation. At this point, South Korea was in a satisfactory position, with its greatest and most valuable treasure, an abundant supply of educated, skilled, and disciplined people, most willing and enthusiastic for social good. What had once been an economic liability had indeed become an economic asset. Korea chose to exploit this newfound wealth for the planet's services.

6.1. GDP Growth

4. From Natural Resources to GDP Growth

Over the past half-century, South Korea has transformed from an agriculture- and raw-material-based "goods-and-commodities" economy to a nation with knowledge-based or knowledge-intensive output. This has resulted from decades of embracing and investing in the "knowledge-based infrastructure" at the social, financial, and commercial levels, creating a good structure for firms thriving on innovative products. The gross domestic product (GDP) has increased quite substantially, and the country has climbed from the rank of "low-income" to "development" to be among the industrialists with per capita incomes above US$30,000 in 2019.

However, in South Korea's 2019 economic transformation as a nation of a knowledge-based economy, another essential aspect of the GDP must be thoroughly examined: Gross Domestic Product, that is, the country's product. The GDP provides insight into the economic prosperity of residents, regions, census cities, and nations. In other words, GDP, a growth or decline in the supply of goods and services, provides information about the extent of socio-economic welfare achieved or unachieved. Mankiw (2003) estimates the portion of the work of "leading growth theorists" as focused on "determining the sources of long-run development (Y) as an economy with a boil-down of factors". It is run by institutions (I), natural resources (N), and knowledge (A): Y = A (N). With this realisation, the present article critically evaluates the GDP growth pattern of the

Republic of South Korea-Asia as a reflection of investments made to transform from the "natural resources dependent (material, goods-and-commodities-based)" to "knowledge-based/ing non-natural resources self-reliant," and possibly depending. The article also ascertains how sustainable this pattern could be.

6.2. Employment Rates

Employment rates reveal the dynamism of job creation in society and the matching of general training (primary, secondary, and tertiary education) with the basic requirements of the labour market. This is a main proxy for the adequacy of the job markets. Since the knowledge industry promotes the formation, expansion, and dynamic growth of the knowledge economy, it increases the number of jobs where knowledge is the most important productive force regarding job content and performance. Thus, an economy based on knowledge is likely to create a decrease in the minimum inexact and imprecise jobs, leading to a drop in the unemployment rate if the labour market is adaptable to the requirements of the new economy.

A well-functioning labour market promotes the popularization of the workforce and a reduced unemployment rate. As sensible people prefer to be employed rather than systematically earn an unemployment income, a reasonable trade-off between unemployment and employment appears, with the first item being significantly higher than the second, providing limited job turnover. Unemployment or unused labor resources are always damned, but unlimited "overemployment" or labor to excess is ephemeral. In fact, developing economies and countries seeking to emerge end up largely with daily exacerbating inflationary trends and over-employment rather than the reverse. During the South Korean Economic Crisis of 1997-1998, the employment rate dropped dramatically, becoming a severe social and financial peril to be achieved. On the other hand, examining the empirical pattern affords a hypothetical showcase emphasising job creation if resources follow knowledge over natural resources.

7. Financial Sector Development

This is an extract from the country case study on South Korea: The development of the country's financial sector had been achieved in line with the conversion from a resource-based economy to a knowledge-based economy. In the 20th century, the increase in investment and production relied on financial resources, having initially built on the logic of consumer goods, construction and real estate, and infrastructure. South Korea has established the power of its banking in basic manufacturing industries if we consider the focus of banking services. The banks

provided services, including mortgage loans to individuals for housing purposes and businesses for building commercial buildings and factories. Investment in land and the building of infrastructure was another way in which loans were dispersed across the country. Financial services were increasingly available with the introduction of a broader scope of venture capital and other forms of investment financing for the technology industry. The technology focus has further attracted direct foreigners to invest in Korea's technology and innovation.

Such innovation and technology-oriented investment were introduced, particularly by the banks, to the businesses involved in the development of the export-oriented technology industry that has been identified as the new growth engine. There were other forms of cooperation, as public ventures working on private infrastructures received funding from the central and regional banks in the form of start-up loans. The central government has also worked closely, through the allocation of grants, with the 16 private venture innovation centers that are mostly building best which provide start-up assistance and related services to private venture companies.

7.1. Banking and Financial Services

In order for knowledge-driven economies to establish themselves, a highly dynamic banking sector and highly efficient financial services are required. The banking sector is crucial because it is the most important component in the financial system and provides funds for government, corporate, and individual financing. These funds are used for developmental projects, research, production, consumption, employment, and other socioeconomic activities. As we have stated in our study's background and context, Korea was devastated and the infrastructure destroyed during the 1950s Korean War. This was overcome in sixty years, from the 1950s protracted war and economic development era to the economic crisis of the late 1990s and early 2000s. In general, this natural resource sinkhole region should have difficulties today, but it had one of the world's highest per capita GDPs of US$320 in terms of knowledge.

Additionally, human resource development and economic transformation have been accelerated, as evidenced by President Park Chung Hee's leadership of the nation. At the same time, he created development funds, and banks acted as the driving force, as it was in the advanced countries at that time, and now they are emulating it. Particularly noteworthy is the powerful role of the banking sector through government mobilization in overcoming external pressure crises such as the recent 2008 financial crisis. South Korea continues to grow and develop into a

knowledge-based innovative economy because human resources have been trained to harness knowledge. As a result, a reorientation from natural resource to knowledge necessarily promotes countries' economy, finance, and society.

7.2. Investment in Technology and Innovation

One of the distinct features and strategic orientations of South Korea's economic, financial, social, and educational policies, as they eventually turned out, was the investment in technology and innovation, with a view to create a knowledge-based economy. This orientation proved to be a predominant factor in its process of rapid deagrarainization and subsequent industrial and technological transformation. However, industrialization and transformation of exports based on technology and innovation did not stop Korea from remaining predominantly agricultural and delivering human capital. A clear indication of this is the most productive and equitable system tourer school rainbow at a time and caused 12 years now. The ultimate result of the education system, which produces highly skilled human capital, was the creation of technology-and-knowledge-based products. This tendency in the Korean economy has proved to be successful, creating that the accumulation of economic and financial capital is not everything for development. It is the delta of knowledge between the rich countries and the poor one, which explains their economic transformation. As South Korea did, we suggest that technology transfer may have some value for the economic, social, and cultural transformation of a country.

Economic growth and financial capital are very necessary for the construction of a country, but we cannot say that these are completely sufficient. This paper tries to explain the determinant importance of something invisible, such as knowledge and understanding, for social and economic transformation. The successful experience of Korea is greatly useful to explain the paper title. This title may give us the feeling of the absence of the mentioned factors in a human being’s satisfaction area. Finance is the bloodstream of any business, as it is the lifeline. We tried to explain in the title section the truth of this wisdom to the national level as well. In the financial capital element, while in all countries, both the rich ones and the rest ones, the bank fin scent in care element tries to general dis passus as less as possible; in Korea, their capital markets had allocated to the firms’ CEOs treating technology far 1980s. In the title sections, we tried to use the data, estimates, and technology innovation. In the following sub-sections (subsections 2 to 4) of this section called "knowledge," this paper tried to go through the

educational system, which produced highly skilled human capital and the resulting superiority of this human capital in creating entrepreneurial knowledge.

8. Social Transformation

From the post-war period till the end of the second millennium, Korea has been transformed as a result of its investment in the production of knowledge, taking in all its diversity and specificity. Also known as a venture-based economy, in the 20th century, Korea has achieved great prominence as a knowledge-based economy for the studies and production of knowledge (including basic science, applied engineering, innovative products) as well as a teacher. Korea has invested in mature sciences as well as in their combinations. Currently, Korea moves with emerging scientific-cultural ideas. This advantage is the result of highly fostering investment in science, culture, arts, and R&D. One thing that is obvious is that Korea does not export its traditional textiles but it has been exporting artistic and cultural goods based on traditional dramas, dance, and sculptures.

This social change is characterized by the replacement of low-powered jobs and industries with high-powered knowledge-based economies. Since 1968, Korea's educational investment has been based on the dignity of children as mentioned in the Korean nationally recommended character education. Korea has largely invested in its education and resources. Korea has one of the most expensive education and healthcare systems. Korea focuses on the development of resources as quickly as possible. Both human and natural resources development is linked with the social dimension of economic development. In the earlier period, many luxurious programs were not designed for the development of pumping stations, electricity, road construction, factories, harbors, etc., and it focused only on high-end education, high schools, etc. Korea, during the post-war, National Collegiate Scholarships, were given to only 53,193 students out of about 27 million people, thus forming a distinguished character who fosters scientists, professionals, doctors, engineers, and professional skillful human resources.

8.1. Education and Human Capital Development

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Education and Human Capital Development

The Korean government has been following the knowledge-based strategy to upgrade the Korean economy. As an important feature of the knowledge-based strategy, education and human capital initiatives have been an important part of

knowledge-focused investments by the Korean government. These initiatives aim to select excellent students, provide them with quality higher education, and support individuals throughout their lives from early childhood through lifelong education. The focus of this section is the outcome of knowledge-focused investments related to education and human capital. First, we examine the outcomes of selecting excellent students and providing quality tertiary education for them. We conclude that such a focus can generate significant profit for those individuals who receive quality education and are highly educated. For society, knowledge-focused investments significantly reduce the problem of environmental constraints related to the geometric progression of both food production and population growth.

Consequently, reserving government funds using the export surplus policies that lead to increasing national assets as the basis of civic policy, focusing on large, heavy chemical industries, and offering a sequence is sufficiently dominant in backward countries. Second, this section reviews the generation effects of knowledge-focused investment over people's lifetimes, contributing to the social transformations represented by the quadruple transitions. Korea was supposed to be a backward country—the national pioneer—to the followers in backward countries, focusing on constructing a defense line in a semiperipheral area by purging pseudo-national development regions of backward countries and hiring people with military careers. The economy developed rapidly and escaped the traps with the wisdom and activities of general workers.

8.2. Healthcare and Social Services

The landscape for healthcare and social services in South Korea is experiencing marked change. The disease pattern follows the demographic shift. Whereas chronic diseases gain in importance, infectious diseases recede into the background. The healthcare area indirectly reflects the state of other systems and South Korea’s level of modernization. Access to and the quality of the medical services available to the public indicate the social situation. The well-being of the population is an important indicator of a country’s prosperity and modernity. Older people with complex health problems are receiving care at an increasing personal and financial cost as they consume the majority of health care and social services.

South Korea is becoming a knowledge society. The country has invested heavily in higher education and throughout society in order to sharpen the competitive advantage. By doing so, it is following a long-term strategic concept. It anticipates

that generating knowledge in relation to utilizing natural resources will maximize national income and societal development. Education and training and a high level of R&D expenditure (especially private R&D) are counted among the prerequisites for goals to be reached. As knowledge is transferable, a nation with adequate knowledge and knowledge networks is an assured investor in social development. Korea is to become the business and R&D hub of East Asia. This, it is expected, will encourage companies to work extensively in Korea. Not only national income but also income from FDI, that is establishing a direct investor to foreign affiliate relationship, is anticipated. This social transformation encourages more people to go to school and to retire. The transformation will mean a shift in emphasis in the Korean NEET anomaly. The anomaly will shrink as education and research and development expand. Employment is considerably greater after the age of 29 than before – approximately 20 percentage points. After the age of 55, the overeducation rate again gradually grows. The reason for this change is that there is a close correlation between having higher education and pursuing more involved careers. DooS tracking individuals more over time would generate more data and the ability to match data, yielding a more robust interpretation.

9. Challenges and Limitations

The limitations of South Korea's ambition for the goal of converting towards a knowledge-based economy may be summarized in the short and long term. Early move to knowledge intensity (mostly R&D) expanded returns and is the primary force behind the rapid increase in high modern standards of living in South Korea. However, South Korea has yet to find substitutes for a variety of natural and organic resource assets and services and energy-saving materials, particularly those tied to probably poorly or nonrenewable environment/carbons (utilities of life) and capital goods. Additionally, the resulting overall increase in investment returns has increased negative externalities, further dividing the already fraught strains of environmental services, social capital, and the creation of the knowledge culture mentioned so far. These shortcomings were dealt with earlier.

As proposed above, the ideals of the creation of a knowledge-based economy with "alternative global development in the form of the ISA-determining performance or, more broadly, weaknesses of the good life and humane goals inform assumptions about how knowledge is somewhat more substitutable than resources and physical capital; that equal access to knowledge implies little, if any, social and economic disparities; and that there is "a strong association between

investment in knowledge assets and other assets deemed good in themselves, including the generation of knowledge".

9.1. Sustainability of Knowledge-Based Economy

This issue discusses the long-term viability of the knowledge-driven growth model in South Korea. It is true that Korea achieved impressive success in overcoming the financial crisis in the late 1990s and the global financial crisis in 2008 by tapping its pool of knowledge in various economic sectors. This issue examines the sustainability of the knowledge-based economy in a systematic way rather than celebrating the surface outcomes.

Recently, South Korea was cited as the example par excellence of "knowledge misuse", pioneered by Park Se-il. The Hanbon Cooperation Institute published figures to suggest that record numbers of students in South Korea are unable to attend university and the number who are high school graduates under the age of thirty-seven. Many of these individuals are continuing their education by studying for language qualifications which would enable them to leave South Korea. It was also warned that many South Koreans have also left the country to take part in the so-called "study-abroad sale boom" in the United States, many of whom are aged between thirty-six and forty. This, you see, suggests that the "education fever" is now targeting the middle-aged. In addition to the problems of social division, inequality, etc., South Korea faces the enormous difficulty of redeeming these numerous young people from the tragedy of continuing to spend time in this long and self-effacing tunnel. This issue will attempt to provide a solution.

However, Korea has entered a dilemma. It is no longer in a position to utilize only what is internally produced in the short term and, in the long term, it cannot secure, through technology internalization, market security conditions for the non-technological resources necessary for technology processing such as electricity, communications systems, transportation, and urban utilities. That is to say, the non-technological resources that can create a decent and comfortable living condition, such as the natural environment as well as natural disasters, have become the most important factor determining our livelihood. In other words, this is the change from 'natural resource competition' to 'environmental competition.' It is this point that is the foundation of the policy shift that purports the superiority of investment for the non-material sources of technology value, such as knowledge and information, over that for physical and natural resources.

9.2. Income Inequality and Social Disparities

The income parity is like the nutrition to the human body, and the redundant income disparity is like the excessive sugar spreads in the blood. It does not mature in a short time like an industrial revolution or the so-called transformation, and it is difficult to achieve in one generation or more than 20 years. Currently, South Korea is well known as a country that has transformed from a war-devastated poor country to the world's 12th and Asia's 4th economic power by making a knowledge-focused transformation. However, it does not mean that South Korea has already become the most developed country or a knowledge or IT society. Along with the new economy and categories that represent the era, new problems and conflicts have arisen from the knowledge-focused and economic-transformed function.

Several social and labor movements have begun to cope with this phenomenon and problems in labor and employment conditions. The heightening social and its division of knowledge that began because of the 1998 economic meltdown, however, has been restrained with government policies, subsidies, and measures to reduce the disparity lest they evoke more social conflicts, and a sense of solidarity has been renewed in terms of communication and knowledge. Although it is very different from the absolute poverty, the people belonging to lower social classes who hardly satisfy the minimum requirements are under the effects of 'relative poverty.' In particular, due to rapid industrialization and knowledge-focused transformation, regional disparity has been broadened to include urban and rural disparities as well as imbalance in the development level within the region. In addition, although South Korea's developmental experiences cannot be considered universal, the country and makings are well known worldwide.

10. Conclusion

This paper establishes in great detail the superiority of knowledge over natural resources in terms of relevance for economic, financial, and social transformations. The case of South Korea has shown us that the use of knowledge can lead to the progression of a country's niche to strategic industries. We have shown that the future of societal impact, economies, financial industries, and companies is to invest in knowledge and human development. For researchers, the crucial lesson is that they must align their research with this fundamental score offered by nations, companies, and societal structures. It took South Korea 45 years to make this quantum leap. We should not waste time and start researching these interdisciplinary topics to provide applicable insights for people and companies

to make their activities more sustainable. Knowledge leverage is a win-win choice for countries and companies as it maximizes resources and prevents wars and harm to people, flora, fauna, and the planet; and this material is above all of those borders and mafias that are thriving from recent decision mechanisms.

The lessons learned from South Korea for policy and practice are the following. Single entry or niche industries are prone to ex-ante structural breaks. A country, a company, or a society should not just act on the symptoms stated by others. Still, it should invest in human capital and increase the know-how and skill-set based on the available resources within those borders. Second, this tool can be used to analyze also a company. By engaging in a particular industry with, for example, two contrasting entry methods (subcontracting, establishing foreign subsidiaries), companies reveal their preferences for short-term or long-term business activities. Therefore, the framework proposed here can be used by companies in order to act as early as possible whenever a major industry breakthrough is to be anticipated in a host country, where the industry with which that company is operating may become niche or abandon-worthy.

10.1. Summary of Findings

The main findings, implications, and recommendations of the case study are summarized here.

The major aim of this project was to determine the extent to which natural resources are the major and the only determinant of economic, financial, and social transformations in the contemporary world and beyond. The principal approach employed in achieving the major aim of this study was to undertake an in-depth and critical analysis of the circumstances, institutions, and behavior of an economy that has been massively transformed – historically, contemporarily, and recently. The development of South Korea was historically investigated because the country has been repeatedly mentioned by the participants as an economic success case of a resource-poor economy that has been completely and virtually transformed through the accumulative featuring of a very potent economic, financial (intellectual capital- and entrepreneurial-based), and social architecture. Local participants were largely engaged in the case study of South Korea, providing, amongst other resources, testimonies acquired from interviews with the first- and contemporary-generation KIA and Samsung managers, ordinary employees, government officials, and institutions in charge, informal and formal questionnaires, documents, and memories reflecting the evolution, appropriation,

and transfer of KIA's and Samsung's knowledge to and by the locals on the ground; amongst other things.

Consequent upon the in-depth and critical investigation and analysis conducted, this study concludes as verified beyond reasonable doubt that natural resources still play a major role in economic, financial, and social evolution, appropriation, and transformation in the most contemporary world. However, knowledge, as defined in the study and raised in several professional developments, also determines the success, competitiveness and lasting results of the manner in which any natural impact is capitalized to generate and regenerate any kind of a social capital and related social transformation outcome. In summary, this study concludes that knowledge is crucial to the competitiveness of any nation, and institutional choice and design to appropriate, evolve, store, transfer, use, produce, and reprioritise knowledge is vital for its international relevance to that country.

10.2. Implications for Policy and Practice

This case study holds great significance for shaping policies at both national and global levels. It compellingly demonstrates, using concrete and diverse examples, that every single nation, without exception, possesses the tremendous potential to substantially enhance their capacity for economic and social progress through the active accumulation of knowledge. Such knowledge is vast in scope, encompassing a wide range of fundamental and profound information, including that which is derived from rigorous scientific inquiry and rigorous academic study. Additionally, it encompasses practical local knowledge that is derived from the invaluable wisdom gained through real-life experience. The amalgamation of these various types of knowledge leads to a holistic and comprehensive understanding that empowers nations to navigate and overcome challenges, effectively fueling development and growth. By recognizing and harnessing the power of knowledge, nations can establish a solid foundation for sustainable progress, fostering prosperity and social well-being for generations to come.

By steadily augmenting the body of knowledge, countries are presented with a plethora of opportunities to diversify and strengthen their economies. Moreover, this growth allows nations to readily adapt to fluctuating environmental circumstances and successfully penetrate emerging industries. This is primarily achieved through the development of cutting-edge technologies and utilization of innovative practices, which in turn captivate significant investments that are conducive to productivity. To an increasing degree, foreign enterprises are gravitating towards countries not solely due to the availability of inexpensive

labor and abundant natural resources. Instead, they are enticed by the fact that the nation's workforce is highly skilled and equipped with a wealth of knowledge. Over the course of the past three decades, numerous multinational corporations have been magnetized to the Republic of Korea for this very reason. Remarkably, in approximately 40% to 50% of these instances, the main product produced and/or sold in Korea differs substantially from the original product manufactured and/or traded by these corporations. This transformation and diversification necessitate substantial investments in research and development within the Republic of Korea. The areas of knowledge that prove particularly alluring to investors encompass fundamental and foundational aspects such as education, training, scientific research, technological advancements, and various engineering endeavors.