Chapter 24
Innovation, Technology Transfer, and Endogenous Growth in the GCC Countries

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Abstract This chapter investigates the economic changes of the GCC countries within the framework of the nature of economic diversification by analyzing innovation performance indices, economic freedom indices, and doing business indicators. This paper shows that the GCC states' economic strategies are still limited in their ability to affect economic performance so that their economies are still heavily dependent on natural resources. Thus, this study stresses the need for GCC countries to develop technology- and innovation-based private sectors aside from hydrocarbons in accordance with the endogenous growth theory. This research recommends that each GCC state should support investments in the private sector, which can contribute to the development of innovation and technology.

24.1 Introduction

Gulf Cooperation Council (GCC) countries are rentier economies whose economic resources and wealth largely derive from extracting natural resources. Those countries seek to transform their economies through the creation of human capital, using and producing modern technology in private sectors. Therefore, these countries might manage to diversify their economies for the post-petroleum era through such policies and strategies in their national vision. As such, increasing the role of the private sector and reducing its dependence on hydrocarbon revenues by establishing technology- and innovation-based sectors are the most important factors that will help the economic change of the GCC countries (Ari et al., 2019). There are, however, difficulties in developing a sector that can serve as an alternative source of income for the GCC countries. Hydrocarbon exports still account for a large amount of total exports.

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In all but Bahreyn and UAE, the hydrocarbon sector contributes a significant share of the total GDP. This success of the UAE is largely due to the tourism and finance sectors. The developed countries, however, have a well-organized economy that is driven by technology and innovation (Archibugi & Michie, 1995). In a changing modern economy, technological development with innovation is seen as the main driver of economic growth. At this point, it has been suggested that endogenous growth models consider this issue and try to explain how some developed countries succeed in these areas and achieve rapid growth through the human and physical capital, while others suffer from a slower growth rate due to a lack of technological progress and innovation (Cypher & Dietz, 2008). Accordingly, the GCC countries aim to expand their private sectors, especially in the fields of technology and innovation, so their economies can transition smoothly from the oil-dependent period to the post-petroleum era. In spite of the question of whether these efforts by GCC countries to realize economic diversification will be successful or not, it is possible to conduct an economic analysis in the short run, although there will be a long-term answer.

This study examines the economic changes of the GCC countries within the frame of the nature of economic diversification through analyzing innovation performance indices, economic freedom indices, and doing business indicators by referencing secondary data. Accordingly, this paper argues that the effect of the GCC states' economic strategies of the last decades on economic performance is still limited so that the economies of these countries are still heavily reliant on natural resources. This study, therefore, emphasizes the importance for the GCC countries of developing technology- and innovation-based private sectors apart from hydrocarbons by referring to the endogenous growth theory.

As for the organization and content of the paper, following the introduction, Sect. 24.2 discusses the reasons for economic change by focusing on rentier economics as a political economy discussion and the hydrocarbon sector's role as a sectoral discussion. In Sect. 24.3, the role of innovation in determining economic transformation is examined by referring to the endogenous growth theory as a theoretical discussion, and by analyzing the innovation progress of the GCC countries. The final section concludes the study.

24.2 Why Do GCC Countries Need an Economic Transformation?

The GCC countries have around 30% of global proven reserves of oil and around 20% of global gas (EIA, 2021). Hence, oil and gas industries are the primary economic factors of GCC countries. Due to the fact that it also affects social and political dynamics, it produces a unique economic structure. In this context, "the rentier state" debate begins for the GCC countries (Anderson, 1987; Mahdavy, 1970). Natural gas and oil-rich countries depend heavily on their natural resources to generate income,

which is unrelated to the productivity of their private sectors. As a result, oil and gas companies are nationalized, and GCC economies are, therefore, determined by the public sector. The economic decisions (e.g., investment, banking) of resource-rich countries are governed by the public sector (Costantini, 2017). It does, however, result in wealth (rent) distribution problems in these societies. As in GCC countries, only a few are involved in the generation of wealth in corrupt and clientelistic environments (Beblawi, 1987). When the common people do not get benefits from the rent (Leber, 2019), it creates a resource curse issue, since unrest may increase and preventing policies may create an unbreakable problem circle. Furthermore, patronage networks lead to the integration of economic dynamics and social dynamics, leading to another political problem, which is a tendency for autocracy (Krane, 2019).

By sharing the wealth with a few, governments can prevent social unrest resulting from military expansion (Ross, 2001). However, this is not the only solution. To comply with the expectations of society, which are defined by the dominance of the public sector over the private sector (POMEPS, 2019), GCC countries need to maintain low taxes for their citizens. This fragile governance structure keeps the dominant political elite, who controls state resources, and the resources-rich elite, who is a merchant and a wealthy industrialist (Kamrava, 2011). An economic structure without competition and initiative results in the issue of a low labor workforce. There are two dynamics that solve this problem in GCC countries: foreign workers constitute the majority of the private sector, which also keeps wages low since they prevent Dutch Disease[1]; and citizens work for the public sector at higher wages (Herb, 2019). Additionally, the latter decreases expectations from the public sector to increase surpluses. Furthermore, what if the commodity price that determines the state's revenue plummets as it did between 2014 and 2016 from $96 to $50 and then to $42 per barrel? In the wake of the end of the era of oil, the economy becomes more vulnerable, thus making economic diversification necessary. However, due to the current dynamics, diversification can only be achieved through economic transformation.

The issue of economic transformation relates to both the social and the political spheres. Therefore, it requires the consideration of both private and public sectors. Due to GCC's current circumstances, the unearned oil and gas rent prevents competition at economic and political elite levels, so "capitalistic entrepreneurialism" and "hard work" are the only option. "The 'rentier state' came to be seen as a counterpoint to the 'production state'" (Rutledge, 2017, p. 136). A production state takes into account market dynamics, while rentier states are constrained by their resources (Adedoyin et al., 2017). Therefore, GCC countries face more challenges than other countries in their economic transformation. In attempting to stay away from such challenges, some countries have attempted economic change since the neoliberalism wave of the 1980s. It is fascinating how pre-socialist East Central European countries have embraced the European Union prospects and how authoritarian East Asian

[1] Following the discovery of the gas field in 1959, the export of gas led to an appreciation of the national currency and domestic inflation in the Netherlands. It also affects the nation's other exports, making them less competitive in the international trade market.

countries have succeeded (Ahrens, 2006). A strong enforcement of market economy regulations and a market economy regulatory framework can give agents a sense of comfort and make them more responsible (Ahrens, 2006). However, since GCC countries are already relied on natural resources-based income, manufacturing-based economy, which helps growing quicker (Al Awad, 2010), is difficult to be applied. In terms of the GCC countries, it is, therefore, possible to state that creating long-term value requires short-term sacrifices (Hertog, 2013).

In GCC countries, the business elite holds a significant share of GDP and capital formation rather than employment, "arguably the most important function of capitalism" (Hertog, 2013, p. 179). Their investments include schools, hospitals, telecoms, etc., with low-paid foreigners. This gives them a stronger connection with local regimes and economies, so involving local stakeholders in the consultation and planning stages is important in the GCC context (Ulrichsen, 2017). Using an economic diversification approach, Callen et al. (2014) suggest that three main points should be accomplished in order to solve above mentioned problems; limit government employment, improve social safety nets, and ensure that education and training systems provide workers with the skills they need for the private sector.

A difference in regional economic governance can also have an impact on the transformation of the region (Lawson, 2012). The view that autonomy of government would break patronage and bring competitive market dynamics with understanding of government leadership is very useful, as it was in the case of East Asia (Wade, 2015). For GCC, the cycle is more problematic since they are stuck with commodity exports that are not driven by market dynamics. However, collaboration between private and public sector is successful if there is commitment, coordination, and consultation between a government agency and one voice from the private sector (Ansu et al., 2016). A similar idea has been investigated on the GCC, however, where the oil and gas sectors determine economic growth, regulation is a challenging task for governments, operator, and regulator (Iwanami, 2018, p. 83).

In addition, the patronage-based, less democratic GCC system has also been integrated with the global economic system. There is awareness of the importance of economic diversification and transformation (Mishrif, 2018; Tok, 2018). There are attempts to fund projects on renewable energy sources in order to break up the reliance on fossil fuels incomes and prepare for the post-oil era, but again, those investments are largely funded by oil revenues rather than private enterprise (Mishrif, 2018). The change of economy aims energy diversification, which would be less dependent on fossil fuels and knowledge economy; however, it is still ongoing process.

As the GCC countries undergo economic change, the balance between public and private sectors is crucial to their development. To increase the share of the private sector in the economies of the GCC countries, technology, and human capital need to be developed. Taking technology and qualified human capital into account in industrial policies will play a crucial role in the economic change in these countries. This study stands out from the literature by drawing attention to endogenous growth factors in the realization of economic changes in these countries.

24.2.1 The Hydrocarbon Sector Dominates the Gulf Economies

As a rentier economy, the GCC countries primarily rely on a well-developed public sector to drive its economy. A public sector-dominated economy is unsustainable in the post-oil era or during periods of falling oil prices. That is why the GCC has sought economic diversification. In this sense, increasing the share of the private sector in the economy is one of the most important policies to help transform the economies (Hvidt, 2013). Accordingly, the national visions of each GCC country include targets for the development of private sector. Specifically, they prioritize goals such as developing a highly qualified and productive workforce, providing the necessary infrastructure to realize economic growth, supporting economic development projects, and supporting innovation and technology-based production (Economic Development Board of Bahrain, 2008; General Secretariat For Development Planning, 2008; Kingdom of Saudi Arabia Vision 2030, 2018; Ministry of Foreign Affairs State of Kuwait, 2018; Supreme Council for Planning of Oman, 2016; The Government of Abu Dhabi, 2008). A discussion of the reasons for setting such goals and the steps that must be taken to reach them is essential in establishing the overall framework. Thus, it is imperative to examine the role played by hydrocarbon revenues in their economies in Fig. 24.1 to demonstrate the need to realize the economic transformation of GCC countries.

In Fig. 24.1, Bahrain has the least hydrocarbon revenues and exports as a percentage of total GDP and exports among the GCC countries. In spite of this, hydrocarbon revenues represent more than 80% of total revenue. This is because Bahrain's natural resource reserves are smaller than those of other GCC countries (Kabbani & Mimoune, 2021). As for Bahrain's non-oil exports, it may be argued that it has diversified away from the endogenous growth factors since the products exported by Bahrain generally consist of food, manufacturing, apparel, fiberglass, and furniture (Zawya, 2019). The fact that Bahrain has a developed financial sector will also play an important role in the transition to the knowledge economy in that it has the human resources that this sector requires (Santosdiaz, 2020).

As for Kuwait, its economy is the least diversified among the GCC countries as seen in Fig. 24.1. Despite the fact that the hydrocarbon sector's share of GDP has decreased from 64 to 43%, especially with the policies made in the last ten years, Kuwait has the highest share of hydrocarbon exports with approximately 94%. Furthermore, Kuwait is the most oil-dependent GCC country, with about 5% of its exports coming from non-oil products. Especially thanks to the policies created over the past decade, the hydrocarbon sector's share in GDP decreased from 64 to 43% from 2012 to 2018. However, even with Kuwait's impressive state investments overseas, it is important to encourage other economic sectors apart from oil.

Although the hydrocarbon sector makes up a relatively small percentage of Oman's GDP, it contributes a significant percentage of Oman's revenue and exports. As this figure illustrates, Oman has low natural resources, as does Bahrain, but is highly dependent on these low reserves. In this respect, it is inevitable that Oman is

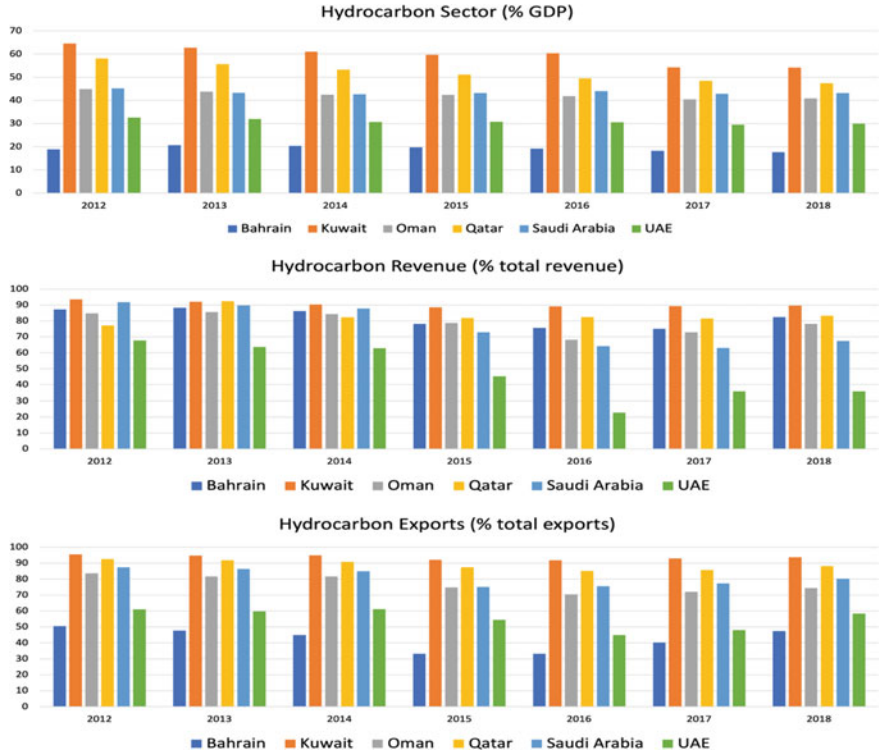

Fig. 24.1 Hydrocarbon shares in the GCC COUNTRIES (*Source* World Bank Group [2019])

one of the countries that attract the most attention to the nationalization policy of the country's economy (Fromson & Simon, 2019). The fact is that in 2021, local citizens within the country expressed their displeasure due to the high unemployment rate (Barbuscia & Barrington, 2021).

Qatar, which has the third largest gas reserves with approximately 20% of the world's gas reserves (MOFA, 2021), has a more stable economy than other GCC countries. Qatar, as illustrated in Fig. 24.1, comes in second place after Kuwait in terms of hydrocarbon sector share of GDP. Qatar's hydrocarbon sector contributed 58.1% of its GDP in 2012, but this share decreased to 47.4% in 2018. Nevertheless, the share of hydrocarbon revenues in total income and hydrocarbon exports in total exports is over 80%. In order to reduce Qatar's dependence on hydrocarbons, the country needs to diversify its economy.

In Saudi Arabia, which has the largest population and economy in the GCC region, the hydrocarbon sector represented 45.2% of the total GDP in 2012 and 43.2% in 2018. However, hydrocarbon exports in total exports decreased from 87.4% in 2012 to 80.2% in 2018. It is possible to see a partial reflection of Saudi Arabia's diversification policies in the indicators, but the dependence persists.

UAE has minimized its dependence on hydrocarbons, as shown in Fig. 24.1. The hydrocarbon sector's share of the total GDP decreased to 30% in 2018. Additionally, around 58.4% of the UAE's total exports are hydrocarbons. By consistently implementing its national visions, UAE aims to further reduce its dependence on natural resources in the coming years (UAE Vision, 2021).

The assessment of the GCC countries, in general, reveals that they are still dependent on natural resource revenues. All countries in GCC are diversifying their dependency by focusing on specific sectors. To achieve this goal, Saudi Arabia aims to increase production in order to meet the daily consumption needs of the region, to expand foreign investments, increase the number of small and medium-sized enterprises, develop tourism, expand trade routes, and build an industrial sector focused on technology and innovation (Kingdom of Saudi Arabia Vision 2030, 2018). UAE aims to diversify its economy by focusing on sectors such as media, tourism, manufacturing, telecom, technology, aviation, finance, and port management (The Government of Abu Dhabi, 2008). Qatar, on the other hand, aims to be a regional hub for education, research, and development (General Secretariat for Development Planning, 2008). Bahrain, in addition to its success in finance and banking, also aims to develop the industry and food sectors (Economic Development Board of Bahrain, 2008). On the other hand, Oman seeks to diversify its economy by developing its knowledge-based economy, as well as its agriculture and tourism sectors (Supreme Council for Planning of Oman, 2016). Finally, Kuwait plans to diversify its economy beyond natural resource revenues by increasing the productivity of non-oil sectors such as tourism, ICT, renewable energy, and health care (Ministry of Foreign Affairs State of Kuwait, 2018).

24.3 How Does Endogenous Growth Theory Affect the Economics Transformation?

> The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumers' goods, the new methods of production or transportation, the new markets, (…) [This process] incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. (Schumpeter, 1942, pp. 26–27)

Schumpeter's Creative Destruction and Neo-Schumpeterian interpretation of growth have a primary distinction from neoclassical models: endogenous processes rather than exogenous processes (Romer, 1994). Unlike the exogenous dynamics of technological change and investment rate as the major determinants of economic growth (Bayraktar-Sağlam & Yetkiner, 2014), Aghion and Festré (2017) argue that the competition of entrepreneurs and firms creates growth. The destruction of the system would be caused by such competition, which can only be sustained by innovation. Thus, there exists an evolutionary historical perspective. As opposed to Karl Marx's class struggle, the Darwinian evolution view of Schumpeter is led

by the entrepreneur who is willing to take risks and try new ideas in the hope of profit (Alcouffe & Kuhn, 2004). However, even the Schumpeterian interpretation has evolved over time. Trade and economic openness played an important role in his theory during the early era, but that has changed (Dinopoulos, 2009). As a result of the dynamics of the 1970s and 1980s, skilled labor was required, which would conflict with the concept of economic openness. Despite this, direct reciprocal relationships between economy and technology never change (Lucas, 1988; Romer, 1986).

Due to the growing and deepening power of capitalism, it would be necessary to recognize the key role of two spheres. These are skilled labor (i.e., human capital) and technological development (i.e., physical capital) (Howitt, 2007). The accumulation of human and physical capital pushes a system into a new state. Such action can only be achieved via "knowledge". In turn, intellectual capital and technological capital (e.g., Research and Development) work when they have intergenerational transfers (L'Angevin & Lab, 2005), so they can lead to endogenous economic growth. However, neither the technological growth of Romer (1990) (which is a function of human capital) nor the economic growth of Lucas (1988), which is a function of human capital accumulation (Growth in human capital determines the growth of the economy) (van Leeuwen, 2007, Chapter 6), are considered superior. Due to country-specific context, what matters most depends on that. However, it is important to clarify how knowledge is viewed and spread.

The knowledge of each person stimulates others. It sometimes creates connections even with other countries as a result of spillover effects (Tseng, 2014). New and successful ideas accumulated through this reciprocal process are referred to as innovation. If new knowledge creates a competitive advantage, this can result in a knowledge economy based on the production, distribution, and use of information. However, knowledge no longer creates its economic aspect alone but also contributes to societal development. Knowledge societies would affect both the social and cultural aspects of society in addition to the economic effects of the knowledge economy (Alfantookh & Bakry, 2015, p. 626). As knowledge spreads through social dynamics, it changes the era's spirit. The accelerating evolution of knowledge has formed the societies in the knowledge age, which has taken place after the agricultural revolution, the industrial revolution, and the information age.

For those countries in a competition of technology, human capital, and innovation, Industry 4.0, which combines mechanization, electricity, automation, and the internet, will be the leading factor. Accumulation of knowledge on industry types would not just lead to economic diversification, but also to the improvement of current production systems under economic transformation. Petrochemical sectors in GCC countries may be positively impacted by the knowledge accumulation for innovation while taking into account the post-oil era (Wyman, 2018). Furthermore, GCC countries have already been in the midst of a developing knowledge economy (Alfantookh & Bakry, 2015; Modara et al., 2020). Innovation-based economic structures, which are based on government policies to encourage innovation and support innovation producers (e.g., industry, university, finance), reflect the new endogenous growth theory. Therefore, it is important that GCC countries are evaluated based on their innovation rankings to determine their progress.

24.3.1 An Assessment of Innovation for Economics transformation in the GCC Countries

A country's economic performance and competitiveness are greatly affected by the adoption of innovation and technology. Furthermore, investments in these areas also contribute to the diversification of the country's economy. For this to happen, institutions need to provide the necessary infrastructure in areas such as human capital, research, market and business sophistication, and knowledge dissemination to positively affect innovation and technology (Heng et al., 2012). However, innovation and technological development are difficult to measure directly, especially in rentier countries, where these areas are crucial to a country's economic change. Therefore, it would make sense to use the global innovation index created by the World International Property Organization in order to evaluate the innovation of GCC countries by looking at factors such as institutions, human capital, research, infrastructure, market sophistication, business sophistication, knowledge and technology outputs, and creative outputs (GII, 2021).

According to Fig. 24.2, the UAE is the country with the best innovation capabilities among the GCC countries between 2013 and 2021, ranking 33rd out of 132 economies in 2021. This figure proves Fig. 24.1, which illustrates how successful the UAE has been with diversifying its economy. The UAE's closest follower is Saudi Arabia, which ranks 66th in 2021. The widening of the gap between the UAE and Saudi Arabia in 2021, which was only four places in 2013, shows how the UAE has grown in its innovation capabilities. A similar performance is seen by Qatar and Kuwait, placing 68th and 72nd, respectively. However, Kuwait, which is the GCC country most dependent on natural resource revenues, had the lowest innovation ranking in 2015 among GCC countries when oil prices crashed. Accordingly, it shows that these figures are linked to oil dependence and diversification policies in the GCC countries' economies. Lastly, Oman and Bahrain ranked 76th and 78th, respectively, and their innovation abilities were the lowest of the GCC countries.

Figure 24.1 shows that in the period between 2014 and 2015 when oil prices declined sharply, the innovation capabilities of GCC countries with large reserves decreased, while Bahrain and Oman, which had relatively low reserves, increased. While it is true that Bahrain and Oman perform poorly on innovation levels compared to other GCC countries, their development in the opposite direction during a period when oil prices fell has made economic diversification policies more important than those of other GCC countries.

Table 24.1 displays the components of the global innovation index. In this table, institutions, human capital and research, infrastructure, market sophistication, and business sophistication appear as innovation inputs, while knowledge and technology outputs and creative outputs appear as innovation outputs.

On a component-by-component basis, UAE ranks 30th for the institution pillar, which evaluates political environment, regulatory environment, and business environment, while Saudi Arabia ranks 101st. In terms of the human capital and research component, which evaluates factors such as education, tertiary education,

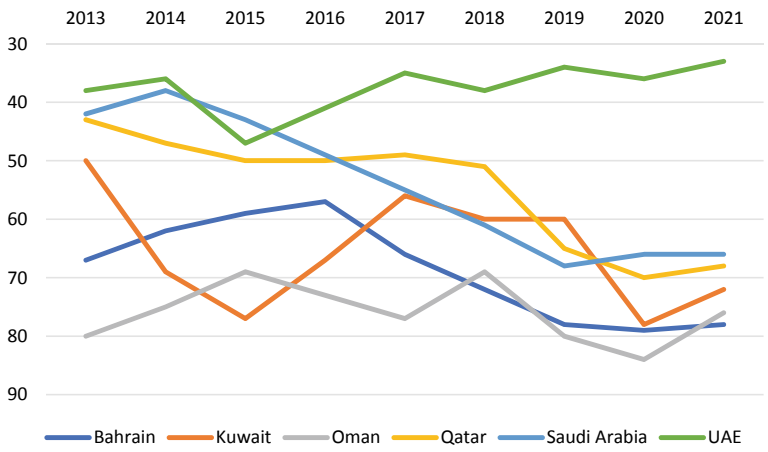

Fig. 24.2 Global innovation ranking of the GCC countries (*Source* https://www.globalinnovationindex.org/analysis-indicator)

Table 24.1 Global innovation ranking by indicators in the GCC countries (2021)

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
Institutions	49	86	71	57	101	30
Human capital and research	83	69	45	75	32	22
Infrastructure	38	43	56	34	54	14
Market sophistication	78	94	84	83	39	26
Business sophistication	90	100	94	96	89	22
Knowledge and technology outputs	82	60	107	79	69	59
Creative outputs	106	89	71	63	78	40

Source https://www.globalinnovationindex.org/analysis-indicator

and research and development, UAE ranks 22nd out of 145, while Bahrain ranks 83rd. According to the infrastructure component, which evaluates factors such as ICT, general infrastructure, and ecological sustainability, the UAE performed best, while Oman performed poorly. On the basis of the market sophistication component, which takes factors such as credit, investment, trade competition, and market scale into account, UAE was the highest performing GCC country, while Kuwait had the lowest performance. According to the business sophistication component, which evaluates factors such as knowledge workers, innovation, and knowledge absorption, UAE is rated highest, while Kuwait is ranked lowest. For the knowledge and technology output component, which measures factors such as the creation of knowledge, impact, and diffusion of knowledge and is considered an output of innovation, the UAE had the best performance, whereas Bahrain had the lowest performance. Lastly, the UAE was the most successful country, while Bahrain had the lowest

performance rate based on the creative outputs component, which evaluates factors such as intangible assets, creative goods and services, and online creativity.

Table 24.1 shows that UAE was the most successful country depending on each indicator of the global innovation index. Particularly, it demonstrated outstanding performance by ranking 14th in terms of infrastructure, and the country is, therefore, seen to offer the infrastructure needed for innovation and technological advancement, thus promoting economic diversification. The fact that it ranks lower in the components related to outputs, however, illustrates that it is not yet contributing substantially to the economy. GCC countries have in general underperformed on components designated as innovation outputs. This demonstrates that these countries are still in the process of achieving their economic transformation. Results can be seen for a longer period of time due to the nature of this process.

To evaluate the innovation performance of the GCC countries, it is essential to examine the innovation inputs and outputs. In Fig. 24.3, the UAE is ranked 23rd in innovation output and 47th in innovation input among the GCC countries. By contrast, Bahrain has the lowest performance with a ranking of 63rd in innovation inputs and 99th in innovation outputs. This figure illustrates the difference between innovation input and output. From this perspective, while innovation input and output in Kuwait are at the same level, Bahrain has the largest difference. The UAE and Oman have a significant difference between innovation input and output, but Qatar and Saudi Arabia have a much smaller difference. The output performance of innovation is higher than the input performance of innovation among the countries with high global innovation indices, such as Sweden and the UK. Consequently, the innovation outputs of the GCC countries need to be at a higher level than their innovation inputs in order to reduce their dependence on oil and to ensure economic diversification. Accordingly, prioritizing foreign investments and developing the private sector are the most important steps.

For GCC countries, developing the private sector is the most important step toward reducing dependence on natural resources for a transition to a knowledge-based economy (Hvidt, 2013). To this end, foreign investments are needed in these sectors. In order to do so, GCC countries will need to develop indicators of ease of doing business. According to the World Bank's ease of doing business rankings in 2019, the UAE ranked 16th out of 190 countries, making it the most successful country in the region. The lowest performance in the region was in Kuwait, ranked 83rd (World Bank Doing Business, 2019). In addition, the "freedom index", which is generated by evaluating the "rule of law" in the country, the "government size", the "regulatory efficiency", and the "open markets", is important in order to gain foreign investors' trust. Figure 24.4 shows that the UAE, Qatar, and Bahrain perform above average, while Saudi Arabia, Kuwait, and Oman were close to the global average. The freedom indexes related to the business, investment, and financial sectors should be raised at a high level, especially for these countries that are looking to develop the private sector and attract foreign investment.

As a final remark, developments in innovation and technology contribute to economic growth in accordance with the endogenous growth theory. In recent technological developments, countries have tended to focus on technology-intensive

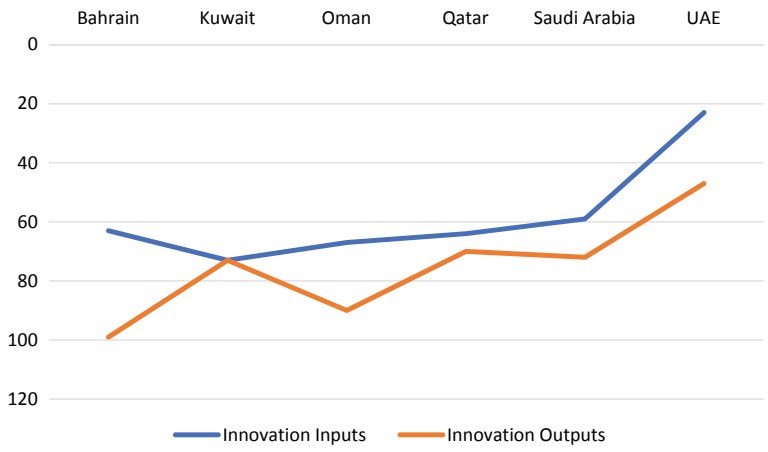

Fig. 24.3 Innovation inputs and outputs in the GCC countries (2021) (*Source* https://www.globalinnovationindex.org/analysis-indicator)

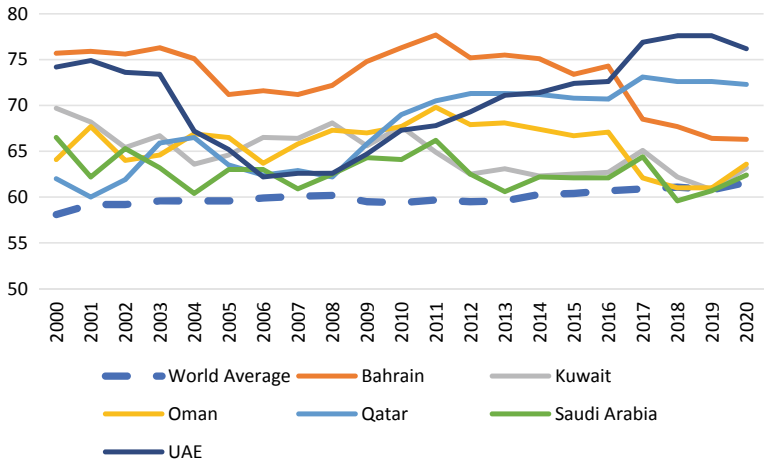

Fig. 24.4 Freedom Index in the GCC countries (*Source* Heritage Foundation)

production. Economic diversification is also an important strategy adopted by GCC countries to reduce dependency on natural resources. To achieve this, incentives should be given to develop the private sector, and foreign investors should be enticed to invest in production based on innovation and technology. In order to do this, the country needs to become a safe place to do business. By looking at the figures above, it can be concluded that the UAE has shown serious success in this area. Bahrain and Oman, however, should take more action in this regard to achieve economic diversification.

24.4 Conclusion

For the GCC countries, which are dependent on oil revenues, economic diversification policies, often included in their national visions, are critical for preparing their economies for the post-oil era. Therefore, the GCC adheres to policies that encourage the development of sectors such as finance, education, tourism, manufacturing, research and development, and technology. Moreover, GCC countries seek to transform their economies into knowledge-based economies, as technological development is regarded as a driving force for economic growth in modern economies. It has been concluded from this study that GCC countries are still dependent on hydrocarbon revenues despite their economic diversification policies and that endogenous economic growth is crucial to reducing economic dependency. To this end, it has been pointed out that each GCC state should support investments made in the private sector, which can contribute to the development of technology and innovation. Therefore, there is a need of innovation ecosystem that would provide the accumulation of human and physical capital.

Based on global innovation indices examined to assess the GCC countries' progress in this transformation process, it has been determined that there is a general difference between innovation inputs and outputs. It appears that innovation inputs have exceeded innovation outputs in GCC countries, but in order to present an innovation success, it needs to be the opposite. The UAE, however, is the most innovative country in the GCC, both in terms of non-oil revenues and innovation rankings. For the GCC countries to realize the economic change, it is very important for them to show that they are a safe haven for foreign investors in order to attract investments in technology and innovation. Despite UAE's relatively successful graph, all GCC countries, including the UAE, need to attract foreign investment to develop the private sector by providing a safe environment for business in order to achieve their long-term goals because of the fact that they still depend heavily on natural resources revenues and there is still no remarkable improvement in their economic transformation.

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