

Compendium to the Report ‘Breaking Out of the Innovation Trap? Towards Promoting Private R&D Investment in Kuwait’

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Appendix A - Indicators

Data sources, unless otherwise specified under the Figures:

Source Figures A1–A7 and A10, A11, A16: Authors’ own elaboration on The Global Competitiveness Index Historical Dataset © 2007–2017 World Economic Forum | Version 20171003.

Source Figures A12–A15: Authors’ own elaboration on World Bank Indicators. Note: data is for 2018 or the last available year for each country.

Source Figures A17–A18: Authors’ own elaboration on data from TIMSS and PIRLS, International Study Center, Boston College.

Figure A1 – GCC: Capacity for Innovation

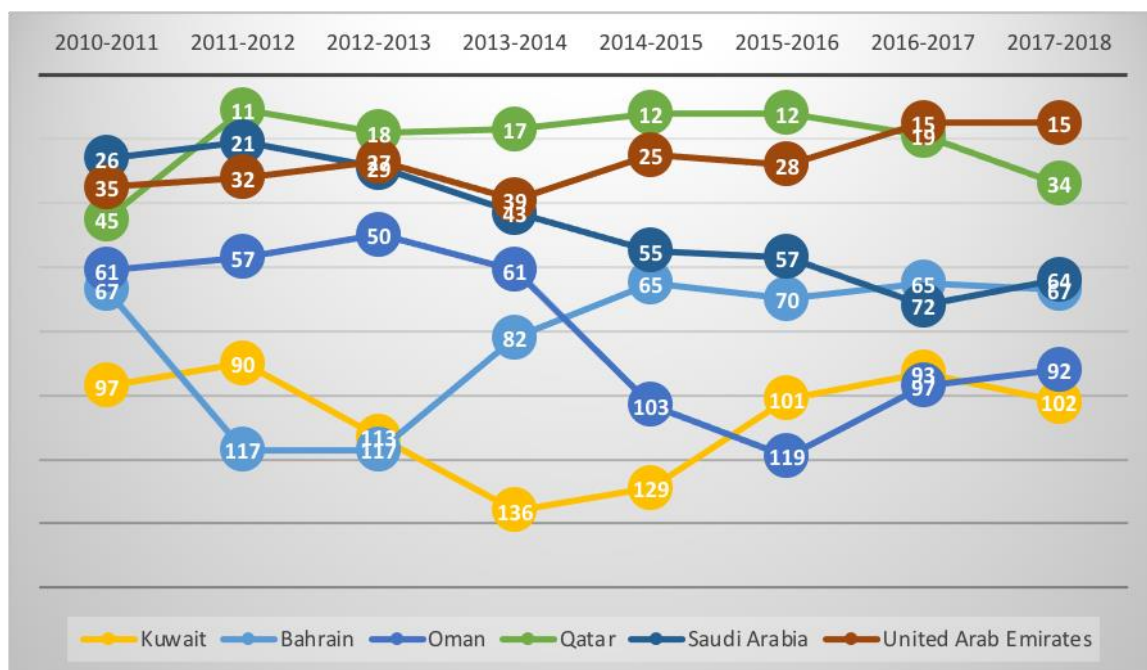


Figure A2 – GCC: Quality of Scientific and Research Institutions

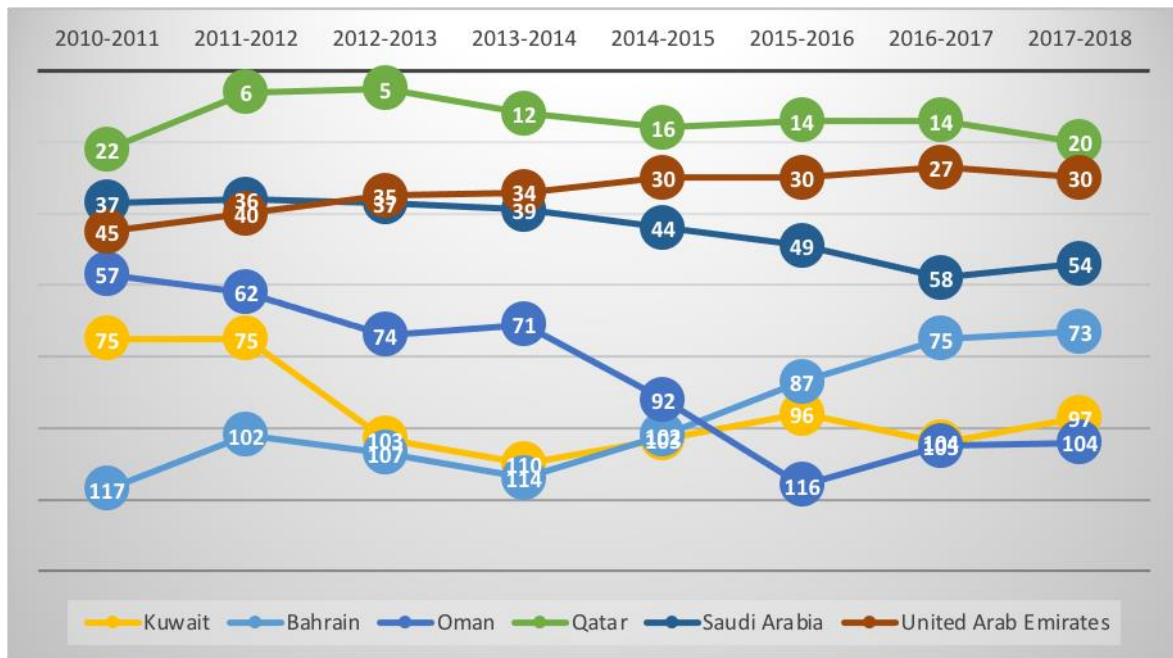


Figure A3 – GCC: Company Spending on R&D

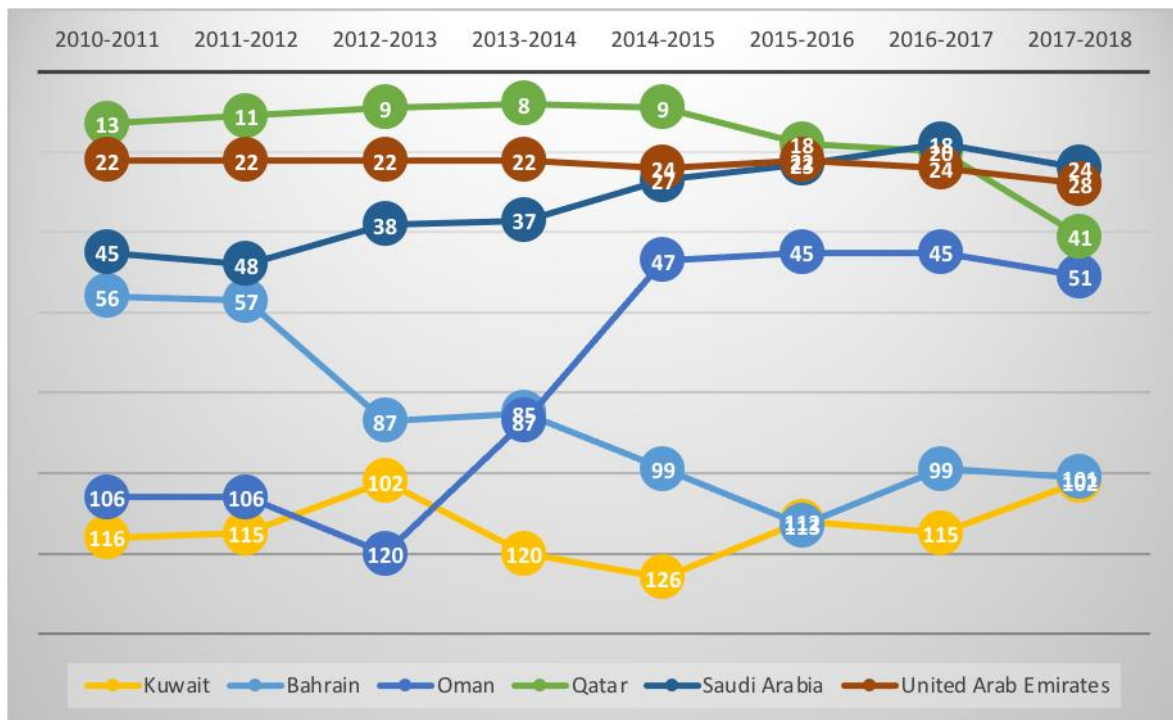


Figure A4 – GCC: University-Industry Collaboration in R&D

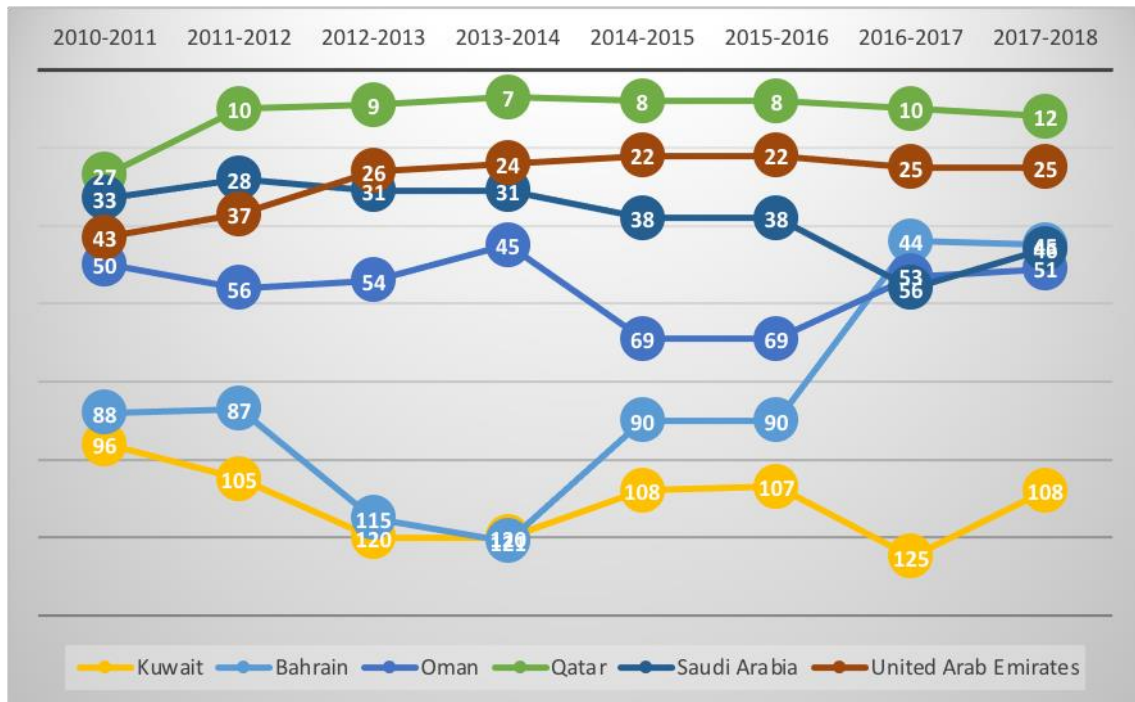


Figure A5 – GCC: Government Procurement of Advanced Technology Products

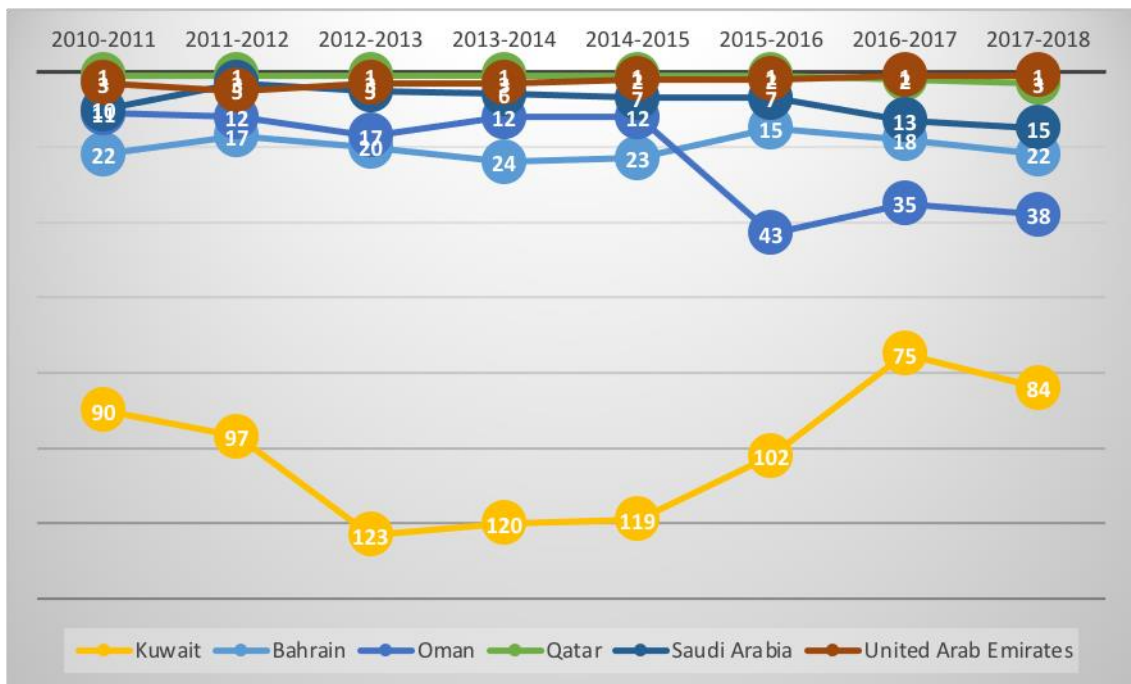


Figure A6 – GCC: Availability of Scientists and Engineers

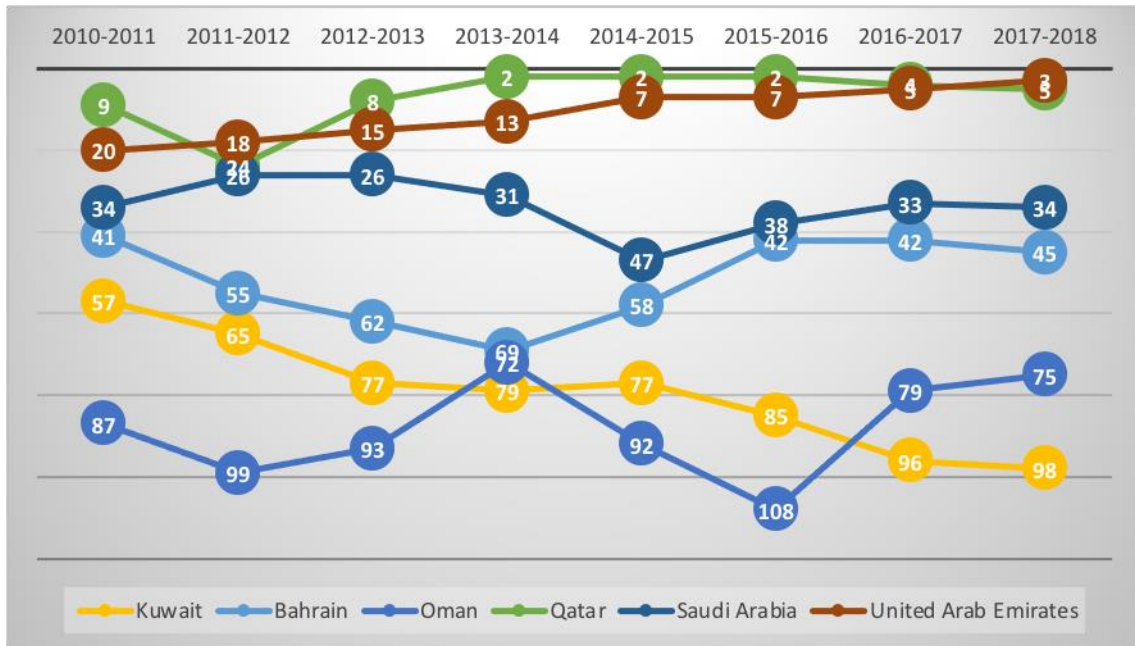


Figure A7 – GCC: PCT Patent Applications

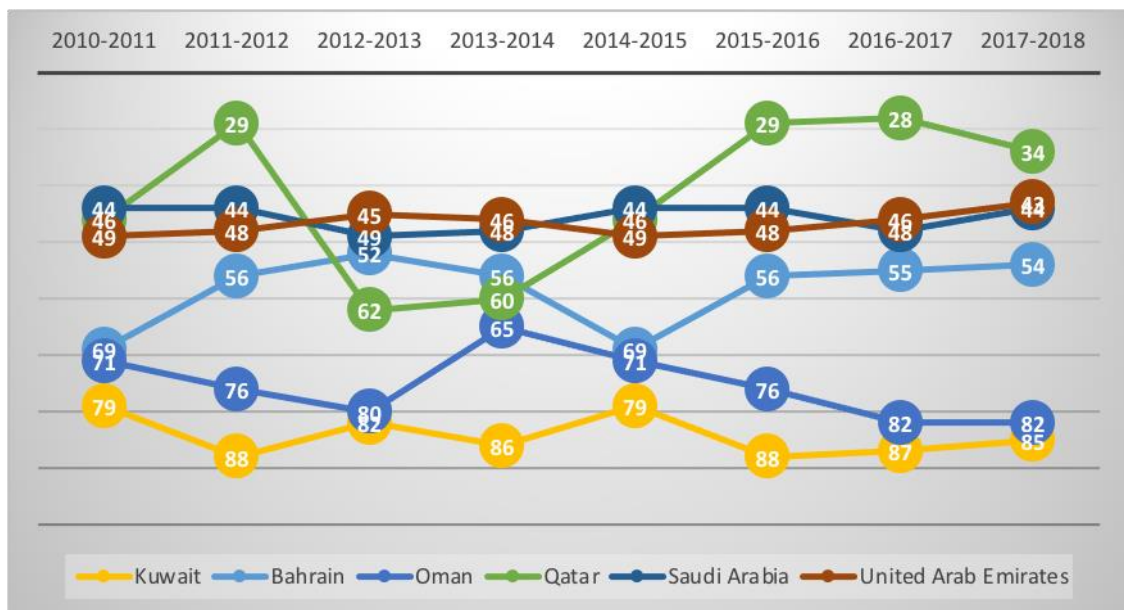
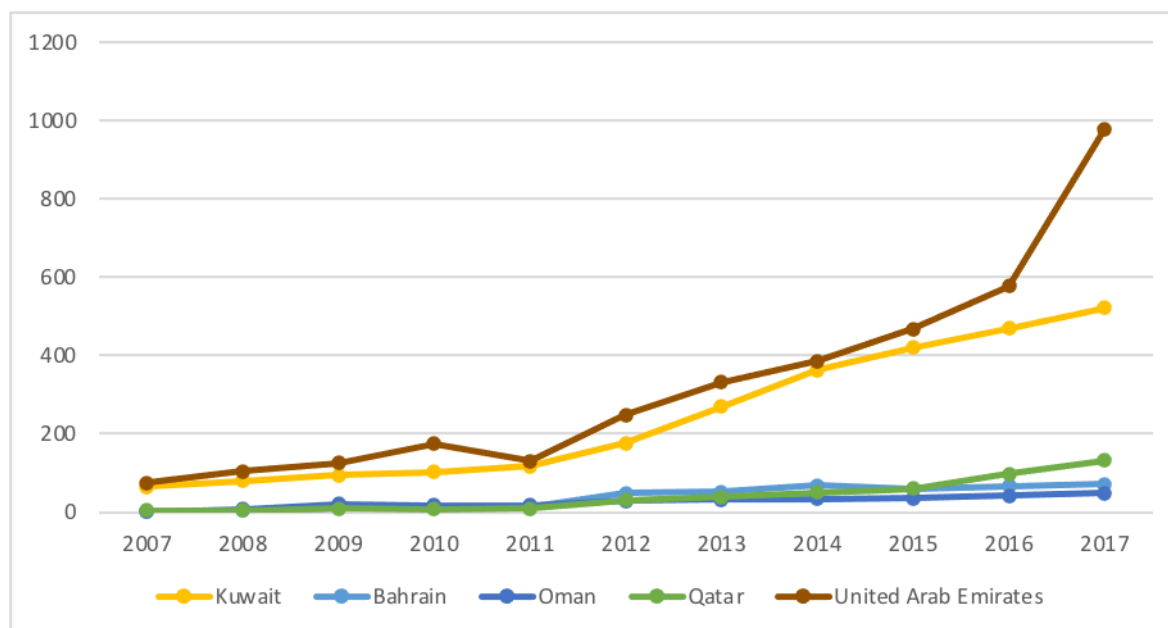
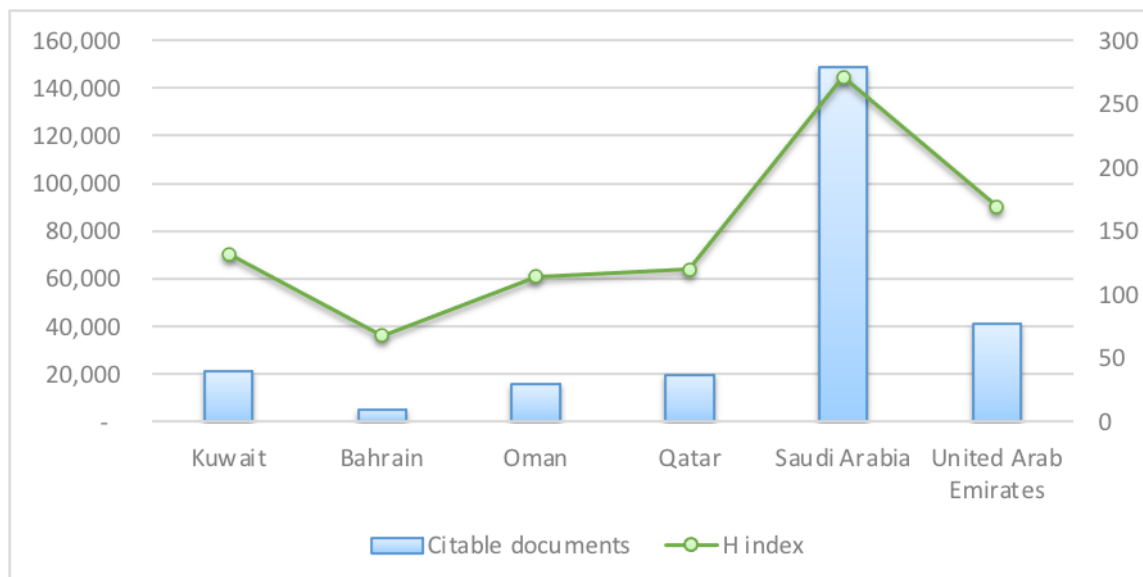


Figure A8 – Growth of the Number of Patents Granted



Source: Authors' own elaboration on WIPO statistics database

Figure A9 – GCC: Publications and H Index



Source: Authors' own elaboration on SCImago database, 1996-2017

Figure A10 – GCC: FDI and Technology Transfer

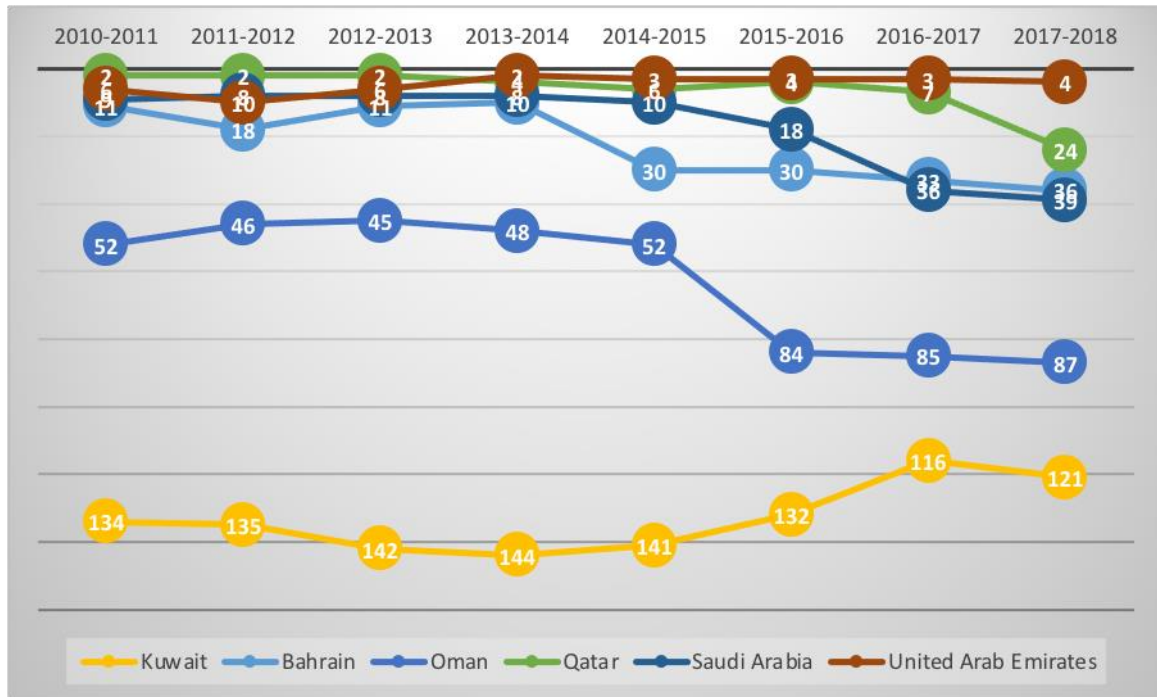


Figure A11 – GCC: Firm-Level Technology Absorption

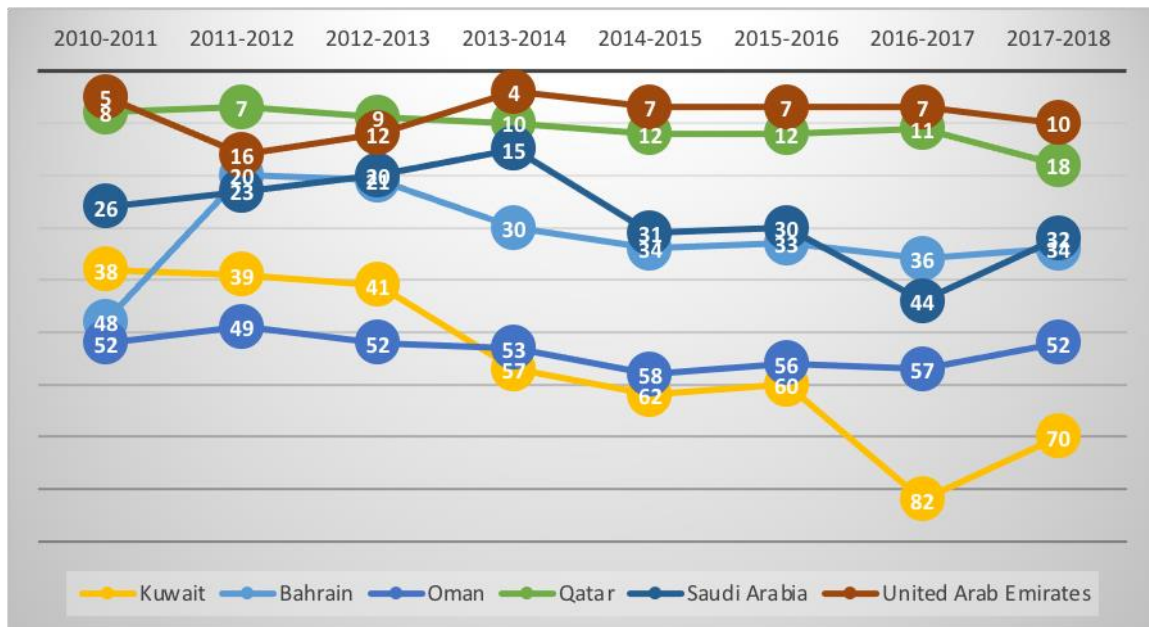


Figure A12 – GCC: Educational Attainment, Upper Secondary

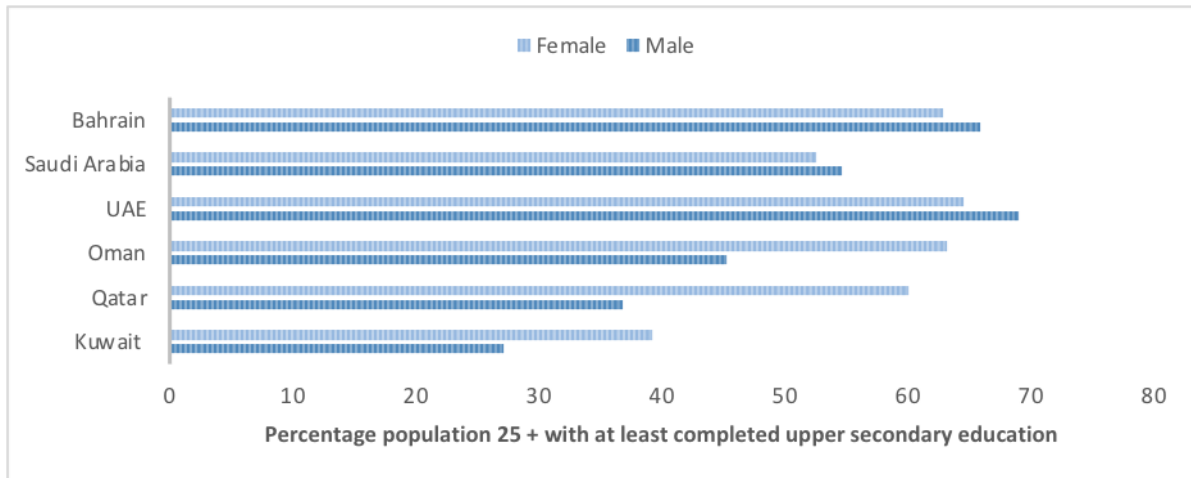


Figure A13 – GCC: Educational Attainment, Post-Secondary Non-Tertiary

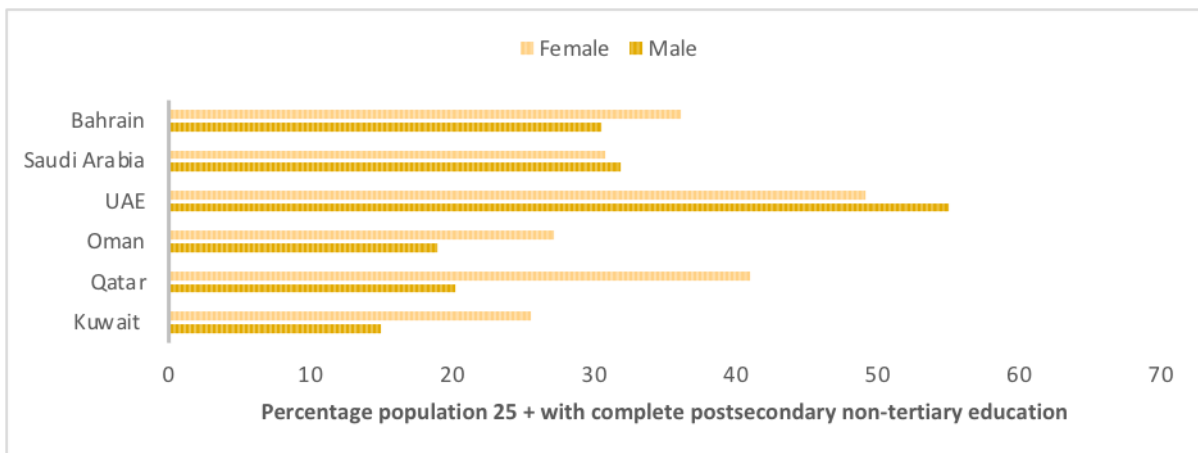


Figure A14 – GCC: Educational Attainment, Bachelor's Degree

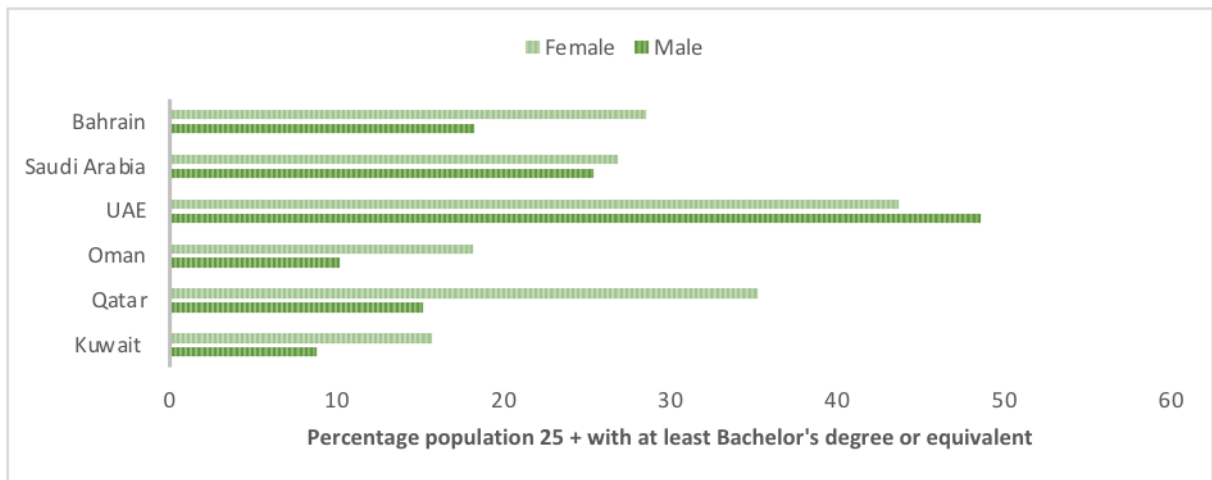


Figure A15 – GCC: Educational Attainment, Short-Cycle Tertiary

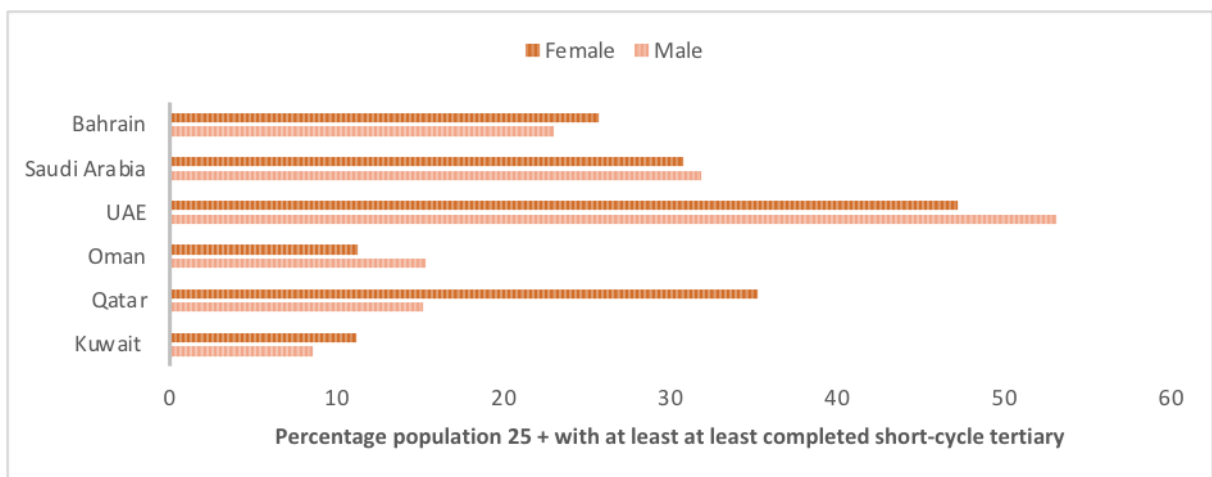


Figure A16 – GCC: Availability of Research and Training Services

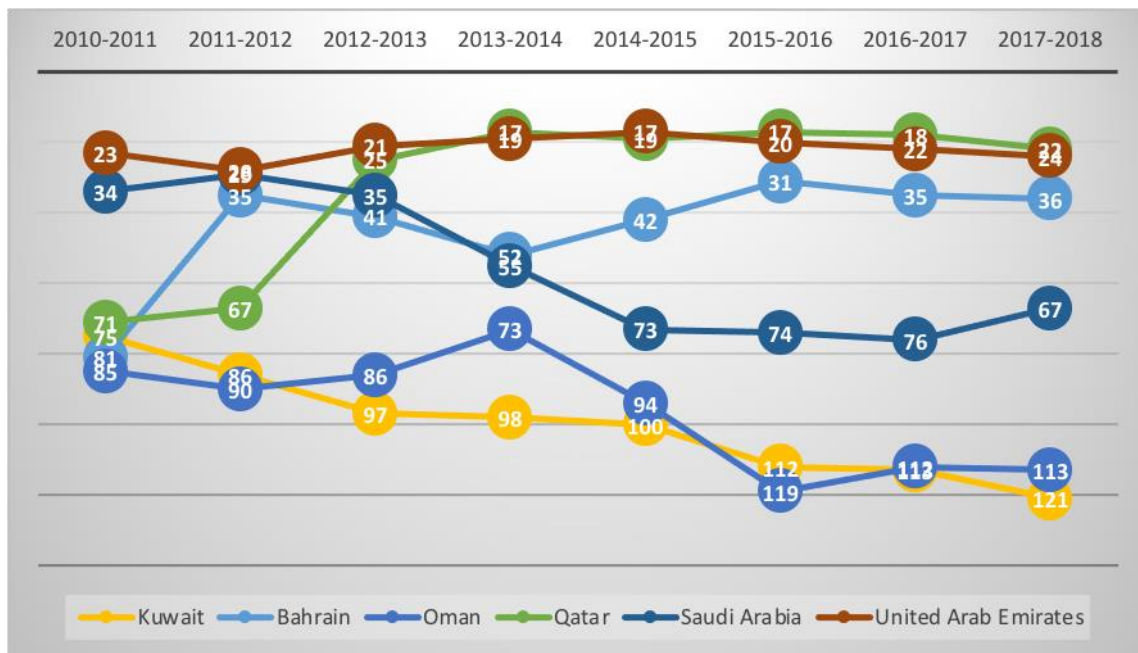
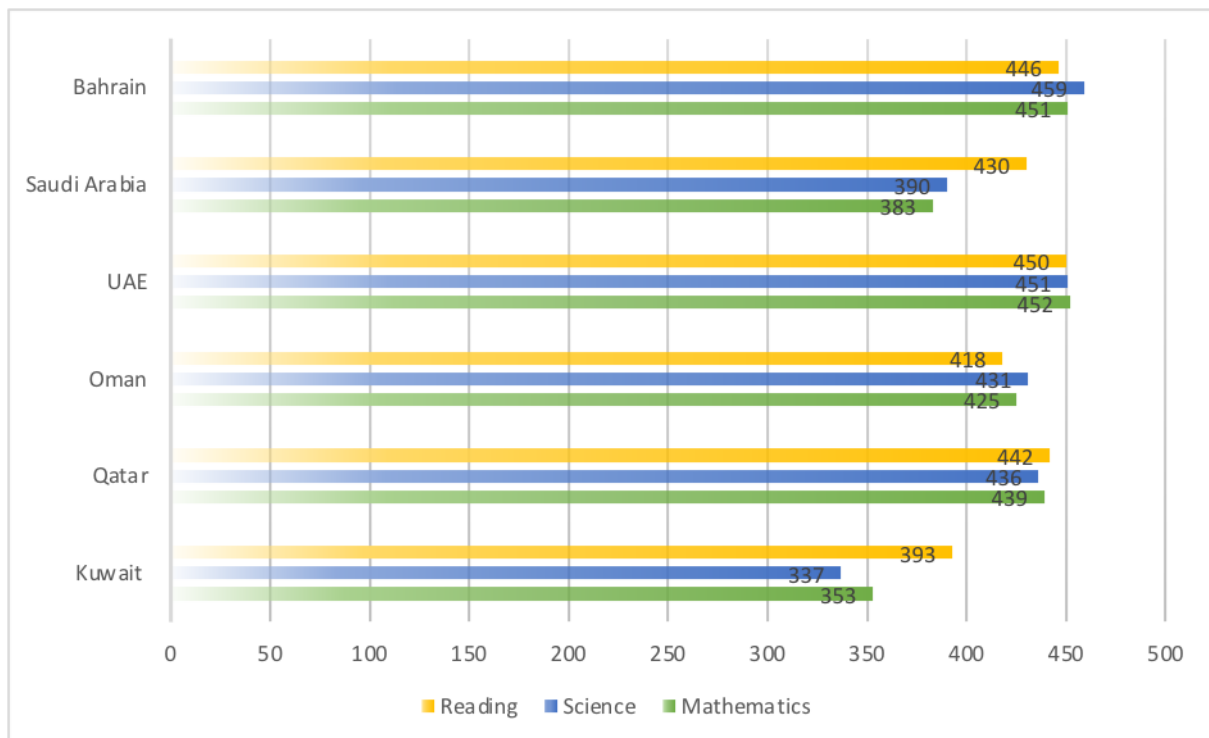
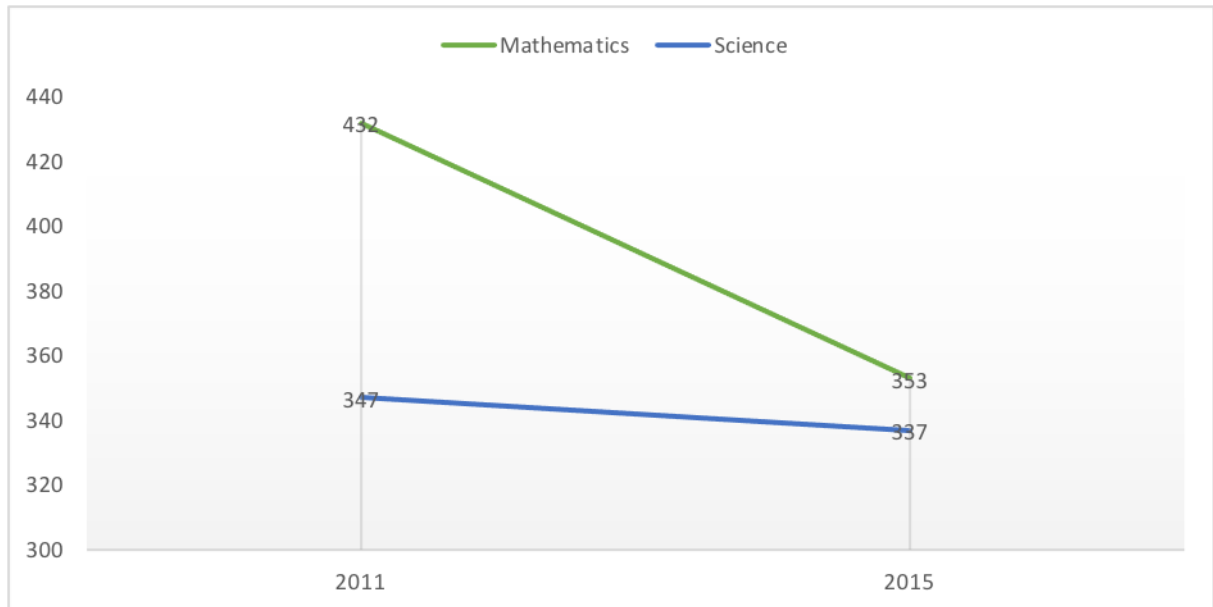


Figure A17 – GCC: Student Performance in Reading, Science and Mathematics



Notes: Average Scale Scores 2015 and 2016

Figure A18 – Kuwait: Trends in Mathematics and Science Achievement



Notes: Average Scale Scores 2011 and 2015

Table A1 - The Sectors of the Surveyed Firms (according to the International Standard Industrial Classification of All Economic Activities 2 [ISIC 2])

ISIC 2	Sector:	Total
26	Manufacture of other non-metallic mineral products	9
28	Manufacture of fabricated metal products, except machinery and equipment	8
15	Manufacture of food products and beverages	6
21	Manufacture of paper and paper products	5
29	Manufacture of machinery and equipment n.e.c.	3
36	Manufacture of furniture; manufacturing n.e.c.	3
25	Manufacture of rubber and plastics products	2
31	Manufacture of electrical machinery and apparatus n.e.c.	2
20	Manufacture of wood and of products of wood and cork, except furniture	1
24	Manufacture of chemicals and chemical products	1
33	Manufacture of medical, precision and optical instruments	1
34	Manufacture of motor vehicles, trailers and semi-trailers	1

Appendix B

SYSTEMS OF INNOVATION: FURTHER CONCEPTS

Beyond the notion of a national system of innovation (NSI), discussed in the main report, an additional dimension in the realm of innovation systems is that of sectoral systems of innovation. This perspective is useful for understanding the factors affecting the catch-up process of developing and emerging countries and regions in different economic sectors.¹ A sectoral system of innovation can be defined as:

a system (group) of firms active in developing and making a sector's products and in generating and utilizing a sector's technologies; such a system of firms is related in two different ways: through processes of interaction and cooperation in artefact-technology development and through processes of competition and selection in innovative and market activities.²

The nature of the technologies used differs significantly across economic sectors, as do the nature of customers and the kind of competition firms face, and hence the necessary skills and forms of firm organisation.³

One of the greatest challenges in analysing innovation and technological processes is dealing with the interdependences between geographical and sectoral structures, so characterising simultaneously place and industry specificity.⁴ In line with evolutionary approaches, economic dynamism and development can be seen as a function of three main factors:⁵

- firm-level capabilities, that is, the intra-organisational technological and organisational capabilities of local firms;
- technological regimes and sectoral specialisation, that is, the prevailing knowledge conditions in the specific industry structure of the country or region;
- systemic integration, that is, the evolving interactions and division of functions among the actors or components, driven by inter-organisational capabilities, networks, institutional learning and degree of openness.

¹ Franco Malerba, 'Sectoral Systems of Innovation and Production', *Research Policy* 31/2 (2002), pp. 247–64. Available at [https://doi.org/10.1016/S0048-7333\(01\)00139-1](https://doi.org/10.1016/S0048-7333(01)00139-1) (accessed 15 May 2020).

² Stefano Breschi and Franco Malerba, 'Sectoral Innovation Systems: Technological Regimes, Schumpeterian Dynamics, and Spatial Boundaries', in C. Edquist (ed.), *Systems of Innovation: Technologies, Institutions and Organizations* (London and Washington, DC: Pinter, 1997).

³ Franco Malerba and Richard Nelson, 'Learning and Catching Up in Different Sectoral Systems: Evidence from Six Industries', *Industrial and Corporate Change* 20/6 (2011), pp. 1645–75. Available at <https://doi.org/10.1093/icc/dtr062> (accessed 15 May 2020).

⁴ Koen Frenken and Ron A. Boschma, 'A Theoretical Framework for Evolutionary Economic Geography: Industrial Dynamics and Urban Growth as a Branching Process', *Journal of Economic Geography* 7/5 (2007), pp. 635–49. Available at <https://doi.org/10.1093/jeg/lbm018> (accessed 15 May 2020).

⁵ Simona Iammarino and Philip McCann, *Multinationals and Economic Geography: Location, Technology and Innovation* (Cheltenham: Edward Elgar, 2013).

These are important dimensions that can guide the assessment of a development model and the suggestions for its change. The emergence and evolution of innovation systems – national, sectoral and technological – rest on a co-evolutionary process in which the development of firms and industries on the one hand interacts with national public research infrastructure, policies and institutions on the other.⁶ Importantly, the diffusion of knowledge is not necessarily restricted to selected high-tech or knowledge-intensive sectors, but rather encompasses and engages all sectors of the economy with a multiplicity of channels which transfer both codified and tacit knowledge.⁷

Along these lines, it has been argued that economies with a higher degree of variety among related industries in a country or region will have more learning opportunities and consequently more localised knowledge spillovers.⁸ Economic systems may diversify by branching into industries that are related to their current industries; if new activities have at least some degree of technological complementarity with existing activities, stimulating knowledge-transfer mechanisms (e.g. entrepreneurship, labour mobility, networking) has higher chances of effectively embedding these new industries in the local production structure.⁹ Nonetheless, the concept of related (or unrelated) economic diversification must be considered in the particular spatial contexts, since some activities may be connected in advanced economies but not in developing or emerging contexts.¹⁰ The prime focus has been on the enabling conditions embodied in related capabilities yet too little attention has been devoted so far to the constraining factors embodied in vested interests.¹¹ Economic transitioning requires actors to adopt a bricolage mode of innovation, while having to cope with vested interests and technological and cognitive lock-ins within established socio-technical regimes and institutional settings.¹²

⁶ Jan Fagerberg, David Mowery and Bart Verspagen, 'Innovation-Systems, Path-Dependency and Policy: The Co-Evolution of Science, Technology and Innovation Policy and Industrial Structure in a Small, Resource-Based Economy', *TIK Working Papers* (Oslo, 2008).

⁷ For example, Morten Berg Jensen, Björn Johnson, Edward Lorenz and Bengt-Åke Lundvall, 'Forms of Knowledge and Modes of Innovation', *Research Policy* 36/5 (2007), pp. 680–93. Available at <https://doi.org/10.1016/j.respol.2007.01.006> (accessed 18 May 2020).

⁸ Koen Frenken, Frank Van Oort and Thijs Verburg, 'Related Variety, Unrelated Variety and Regional Economic Growth', *Regional Studies* 41/5 (2007), pp. 685–97. Available at <https://doi.org/10.1080/00343400601120296> (accessed 15 May 2020).

⁹ Frank Neffke, Martin Henning and Ron Boschma, 'How Do Regions Diversify over Time? Industry Relatedness and the Development of New Growth Paths in Regions', *Economic Geography* 87/3 (2011), pp. 237–65. Available at <https://doi.org/10.1111/j.1944-8287.2011.01121.x> (accessed 21 May 2020).

¹⁰ Ron Boschma, 'Relatedness as Driver of Regional Diversification: A Research Agenda', *Regional Studies* 51/3 (2017), pp. 351–64. Available at <https://doi.org/10.1080/00343404.2016.1254767> (accessed 15 May 2020).

¹¹ Ron Boschma, Lars Coenen, Koen Frenken and Bernhard Truffer, 'Towards a Theory of Regional Diversification: Combining Insights from Evolutionary Economic Geography and Transition Studies', *Regional Studies* 51/1 (2017), pp. 31–45. Available at <https://doi.org/10.1080/00343404.2016.1258460> (accessed 15 May 2020).

¹² Lars Coenen and Bernhard Truffer, 'Places and Spaces of Sustainability Transitions: Geographical Contributions to an Emerging Research and Policy Field', *European Planning Studies* 20/3 (2012), pp. 367–74. Available at <https://doi.org/10.1080/09654313.2012.651802> (accessed 21 May 2020).

INNOVATION AND DIVERSIFICATION IN THE GCC COUNTRIES

Kuwait, like the other Gulf Cooperation Council (GCC) countries, depends heavily on oil extraction, and oil and related industries are by far the prevailing sectoral innovation system, seriously hampering economic diversification. In 2017, whilst oil rents represented 37 percent of Kuwait's gross domestic product (GDP), oil exports amounted to 90 percent of total exports. This might be affected by challenges such as an increased global supply of oil from nonconventional resources such as shale.

Oil was the dominant industry of the twentieth century, but new technologies are likely to gradually substitute for it, particularly due to the speed at which wind and solar technologies as alternative sources of energy are developing. Environmentally, there are now widespread concerns about the catastrophe caused by climate change. While petroleum has many uses, searching for, extracting, transforming and transporting oil may lead to environmental damage. The backlash against the use of plastic in much of the West may also threaten the use of oil. Socially, many younger Kuwaitis, like young generations more generally across GCC countries, are showing an interest in science, creative industries and entrepreneurship as alternative labour market choices.

The oil sector is also unique in its nature and technological characteristics. Explorations of natural resources, such as oil and gas, can be considered as often mature industries where technologies and market conditions may change slowly and innovations are sluggishly developed and adopted.¹³ One of the chief deterrents of innovation in the energy sector is the vast amount of embodied capital investment which creates hurdles to transforming the current industry structure and organisation.¹⁴ On the other hand, these so-called 'low- and medium-tech' sectors do not lack technological opportunities, since they are permeated by high technologies to varying degrees.¹⁵ Notwithstanding this, current efforts in energy-technology research and development (R&D) are still inadequate in relation to the scale of the challenge and the size of the opportunities.¹⁶ It is important to note that the bulk of innovations in the oil and gas industry originated in upstream activities, such as service companies based in advanced economies.¹⁷ Innovation challenges at the intersection of energy, economy, environment and security have been primarily led by oil-dependence and climate change consequences; challenges are more daunting for developing and emerging resource-rich countries as they require reducing macroeconomic dependence on fossil fuels,

¹³ Virginia Lee Acha, 'Framing the Past and Future: The Development and Deployment of Technological Capabilities by the Oil Majors in the Upstream Petroleum Industry', Science Policy Research Unit (Brighton: University of Sussex, 2002). Available at <https://doi.org/http://dx.doi.org/10.2139/ssrn.1357624> (accessed 15 May 2020).

¹⁴ John P. Holdren, 'The Energy Innovation Imperative', *Innovations* 8/3 (2006), pp. 145–62. Available at <https://www.mitpressjournals.org/doi/pdf/10.1162/itgg.2006.1.2.3> (accessed 15 May 2020).

¹⁵ Nick von Tunzelmann and Virginia Acha, 'Innovation in 'Low-Tech' Industries', in J. Fagerberg and D. Mowery (eds), *The Oxford Handbook of Innovation* (Oxford: Oxford University Press, 2006). Available at <https://doi.org/10.1093/oxfordhb/9780199286805.003.0015> (accessed 15 May 2020).

¹⁶ Holdren, 'The Energy Innovation Imperative'.

¹⁷ Robert K. Perrons, 'How Innovation and R&D Happen in the Upstream Oil & Gas Industry: Insights from a Global Survey', *Journal of Petroleum Science and Engineering* 124 (2014), pp. 301–12. Available at <https://doi.org/10.1016/j.petrol.2014.09.027> (accessed 15 May 2020).

as well as providing affordable energy to create sustained prosperity without negatively affecting the global climate.¹⁸

While Arab Gulf countries share energy resource dependence, along with broadly similar political, cultural and economic structures,¹⁹ there is considerable variation across them in terms of different indicators, which makes generalisations about the region as a whole somewhat problematic. Moreover, these differences – including variance in wealth, population size and political systems – also affect the ways in which each country is able to pursue its economic targets.²⁰ Nonetheless, the GCC countries tend to share common problems regarding the weakness of several dimensions related to their NSI (or lack thereof) in terms of, for example, dedicated institutions, quality of education, science and technology networks and R&D, among others.²¹

GCC economies display a bifurcated economic model consisting of pre-industrial resource extraction and post-industrial service activity.²² They have recently started looking for ways to become more advanced knowledge-based economies by building a competitive innovation ecosystem, empowering the nation, transforming economic institutions and opening up to international networks.²³ Although technological and innovation capabilities of GCCs have incrementally improved over time, the region as a whole heavily relies on other advanced countries for the generation of technological innovation.²⁴ They have gradually, and to different extents, attempted to diversify their competencies away from oil and invested in education, research and innovation, generally putting more emphasis on intangible assets as the driving force in economic development and growth.²⁵

While oil and gas remain the main drivers of these economies, all of them have had economic diversification plans for some decades now.²⁶ However, much of the

¹⁸ Holdren, 'The Energy Innovation Imperative'.

¹⁹ Bassam A. Albassam, 'Economic Diversification in Saudi Arabia: Myth or Reality?', *Resources Policy* 44 (2015), pp. 112–17. Available at <https://doi.org/10.1016/j.resourpol.2015.02.005> (accessed 15 May 2020).

²⁰ Dwaah Osman, 'The State and Innovation: An Analytical Framework', *Muslim World* 105/1 (2015), pp. 2–23. Available at <https://doi.org/10.1111/muwo.12077> (accessed 18 May 2020).

²¹ Samia Satti Osman Mohamed Nour, 'Regional Systems of Innovation in the Arab Region', *UNU-MERIT Working Papers* 12 (Maastricht, 2013). Available at <https://ideas.repec.org/p/unm/unumer/2013012.html> (accessed 15 May 2020).

²² Edward J. Malecki and Michael C. Ewers, 'Labor Migration to World Cities: With a Research Agenda for the Arab Gulf', *Progress in Human Geography* 31/4 (2007), pp. 467–84. Available at <https://doi.org/10.1177/0309132507079501> (accessed 15 May 2020).

²³ Steffen Gackstatter, Maxim Kotzemir and Dirk Meissner, 'Building an Innovation-Driven Economy: The Case of BRIC and GCC Countries', *Foresight* 16/4 (2014), pp. 293–308, available at <https://doi.org/10.1108/FS-09-2012-0063> (accessed 18 May 2020); Susannah Tarbush, *Strength in Knowledge: MENA Acceleration Research, Development and Innovation* (London: Global Arab Network, 2010).

²⁴ Chun-Yao Tseng, 'Technological Innovation Capability, Knowledge Sourcing and Collaborative Innovation in Gulf Cooperation Council Countries', *Innovation: Management, Policy and Practice* 16/2 (2014), pp. 212–23. Available at <https://doi.org/10.1080/14479338.2014.11081983> (accessed 21 May 2020).

²⁵ Allam Ahmed and Ibrahim M. Abdalla Alfaki, 'Transforming the United Arab Emirates into a Knowledge-Based Economy', *World Journal of Science, Technology and Sustainable Development* 10/2 (2013), pp. 84–102, available at <https://doi.org/10.1108/20425941311323109> (accessed 15 May 2020); Klaus Schwab, 'The Global Competitiveness Report 2011–2012', *World Economic Forum* (Geneva, 2011).

²⁶ Pascal Devaux, 'Economic Diversification in the GCC: Dynamic Drive Needs to Be Confirmed', *Conjuncture* (July–August 2013), pp. 17–25.

diversification into new sectors has been driven by state-owned companies – which can rely on implicit sovereign backing to engage in longer-term risky strategies of research and product development – with very limited contribution from the private sector.²⁷

During the 1960s and 1970s, Kuwait had led regionally in economic and science, technology and innovation (STI) development and was the first GCC country to establish national research institutes, such as the Kuwait Institute for Scientific Research (KISR), founded in 1967. However, Kuwait slowed down the pace of transformation especially after the Iraq invasion in 1990 and the following brain drain, while most GCC countries have progressed faster since then. For instance, Qatar established the National Research Fund and the Qatar Science and Technology Park; Saudi Arabia the King Abdullah University of Science and Technology; and Oman the Knowledge Oasis Muscat. These institutions play different STI roles including funding and conducting research, providing incubation facilities and acting as platforms for collaboration between government, industry and academia.²⁸

For oil-dependent countries, diversification entails a broad societal process, which can eventually shift an economy from a single source of wealth to multiple sources of income generated across the primary, secondary and tertiary sectors, and where large sections of the population participate actively in economic activities.²⁹ This obviously also implies reducing and changing the leading role of the public sector by promoting the growth of the private sector,³⁰ as emphasised in *Kuwait Vision 2035*.³¹ Diversification by expanding the oil industry – for example, refineries, petrochemicals and energy-intensive industries – does not reduce dependence on natural resources; rather, diversification through the establishment of import substitution industries – for example, food processing, or construction materials – has more potential for divesting from oil.³²

Within the GCC area, the United Arab Emirates (UAE) has the highest level of economic diversification, while Saudi Arabia and Kuwait exhibit the lowest, showing the highest dependence on oil as measured by oil revenues as a percentage of total government revenues.³³ The collapse of the oil price in mid-2014 had adverse effects on oil exporters,

²⁷ Steffen Hertog, 'The Sociology of the Gulf Rentier Systems: Societies of Intermediaries', *Comparative Studies in Society and History* 52/2 (2010), pp. 282–318. Available at <https://doi.org/10.1017/S0010417510000058> (accessed 18 May 2020); Steffen Hertog, 'State and Private Sector in the GCC after the Arab Uprisings', *Journal of Arabian Studies* 3/2 (2013), pp. 174–95, available at <https://doi.org/10.1080/21534764.2013.863678> (accessed 18 May 2020).

²⁸ Ian Brinkley, Will Hutton, Philippe Schneider and Kristian Ulrichsen, *Kuwait and the Knowledge Economy* (London: Work Foundation, 2012); Osman, 'The State and Innovation'.

²⁹ Martin Hvidt, 'Economic Diversification in GCC Countries: Past Record and Future Trends', *LSE Kuwait Programme on Development, Governance and Globalisation in the Gulf States* (London, 2013).

³⁰ ESCWA, *Economic Diversification in the Oil-Producing Countries: The Case of the Gulf Cooperation Council Economies* (New York: United Nations, 2001).

³¹ SCPD, 'Kuwait Vision 2035' (Kuwait City: SCPD, 2009).

³² Hazem El Beblawi, 'Gulf Industrialization in Perspective', in J.F. Seznec and M. Kirk (eds), *Industrialization in the Gulf: A Socioeconomic Revolution* (London: Routledge in association with Center for Contemporary Arab Studies, Georgetown University, 2011).

³³ Albassam, 'Economic Diversification in Saudi Arabia'.

making economic and fiscal reform an urgent priority for these governments; the main goals are reducing energy subsidies and accelerating diversification.³⁴

Economic diversification has thus become a pressing inevitability for GCC countries. Yet this process requires substantial training, capabilities and skill acquisition for the current labour force, and different education trajectories for future workers. Despite the strides in developing higher education systems, increasing demand for skills in the private sector and supply of capabilities for creativity and innovation are still very serious issues.³⁵

Kuwait sectoral composition in both manufacturing and services has so far contributed little to export or fiscal sustainability and diversification due to structural factors and economic constraints such as excessive concentration of capital in sovereign wealth funds and public energy sectors; the dominance of oligopolies in non-tradable services sectors; minimal taxation; the predominant employment of Kuwaiti labour in the public sector; and the dominance and rigidity of the public sector itself.³⁶

Various reports on the importance of diversifying the Kuwaiti economy have been produced in recent years,³⁷ and rolling national development plans have emphasised the importance of diversification but failed to streamline the STI governance structure and the implementation mechanisms to direct public and private R&D and innovation activities to serve the national development strategy.

In terms of 'role models', among the examples of countries that managed to build up strong NSI, diversifying into knowledge-intensive activities and relying on first-class local and foreign human capital achieving fast and sustainable growth, the most recent and perhaps relevant to Kuwait are South Korea, Taiwan and Singapore. These countries managed to transform from technological catch-up to innovation-led economies using rather different strategies.³⁸ This process required active learning strategies to master and improve the absorbed technologies of production, with a high level of participation from the state.³⁹

South Korea adopted a central government-backed national policy in which it established and supported large companies and helped them to stand on their own, while a less centralised model was adopted by Taiwan, with a greater liberalisation of the private sector

³⁴ Manal Shehabi, 'Diversification in Gulf Hydrocarbon Economies and Interactions with Energy Subsidy Reform: Lessons from Kuwait' (Oxford: Oxford Institute for Energy Studies, 2019). Available at <https://doi.org/10.26889/9781784671365> (accessed 15 May 2020).

³⁵ Alan Weber, 'The Role of Education in Knowledge Economies in Developing Countries', *Procedia: Social and Behavioral Sciences* 15 (2011), pp. 2589–94. Available at <https://doi.org/10.1016/j.sbspro.2011.04.151> (accessed 18 May 2020).

³⁶ Shehabi, 'Diversification in Gulf Hydrocarbon Economies'.

³⁷ Key country reports include 'Developing Kuwait into a Financial and Trade Centre', *McKinsey and Company* (2007); 'Kuwait's Strategic Response to its Developmental Challenges: Recasting its Strategic Options and Implementation Strategy from a Korean Perspective', *Korea Development Institute* (2008); and Tony Blair, 'Vision Kuwait 2035 Final Report' (2009).

³⁸ Jinjoo Lee, Zong-tae Bae and Dong-kyu Choi, 'Technology Development Processes: A Model for a Developing Country with a Global Perspective', *R&D Management* 18/3 (1988), pp. 235–50.

³⁹ Eduardo B. Viotti, 'National Learning Systems: A New Approach on Technological Change in Late Industrializing Economies and Evidences from the Cases of Brazil and South Korea', *Technological Forecasting and Social Change* 69/7 (2002), pp. 653–80.

led by small and medium-sized enterprises (SMEs) supported by national research labs such as the Industrial Technology Research Institute (ITRI), and an overall strong role for public universities and research organisations. The state focused on creating a conducive business environment as well as trade agreements supporting industries and vital sectors to lead economic development.⁴⁰ Singapore may also prove to be a good example for Kuwait considering its strategic location, small size and small population, as well as its proximity to large countries. Strong institutions and visionary leadership helped Singapore to quickly shift its development model from import substitution to export promotion; also, uninterrupted investment in knowledge-intensive sectors and advanced technology has been based on the formation of first-class human capital, resulting from the quality of its education system.⁴¹

These cases demonstrate that effective NSI can indeed be built, particularly in times of technological paradigm shifts. Kuwait has some advantage in terms of available resources and assets that can be utilised in speeding up the development process without borrowing externally or relying on foreign aid, as was the case in some Asian countries. The global digital transformation can be leveraged in speeding up the transformation that Kuwait aspires to achieve in its *Vision 2035*. However, this requires not only huge investments in digital technologies, automation and data exchange in manufacturing and services, but the provision of skills and capabilities to operate and upgrade them in the broader socio-economic system, by nurturing and attracting human and social capital.

THE KUWAITI INNOVATION SYSTEM: A DESCRIPTION FROM SECONDARY DATA SOURCES (FURTHER INDICATORS)

For the sake of space, the main report presented only the features strictly connected with innovation indicators. Here we include a richer set of variables and their evolution over time in order to describe the Kuwaiti NSI in its broader position. All additional indicators are reported in Appendix B: Further Indicators.

MACROECONOMIC ENVIRONMENT

As argued in the report, while oil provides wealth in the short and medium term for oil-rich countries, it may also hinder the economy's transition to the economic activities which are essential for long-term growth. As an oil-dependent country, Kuwait's business cycles are closely related to the trends in world oil prices. During the steady increase in the price of crude oil from 1997 to 2007, Kuwait's GDP per capita grew significantly. Income per capita since then has fallen and remained relatively stable through a decade of oil price volatility (Figure B1 in Appendix B). Not surprisingly, Kuwait's business cycles are inversely correlated with the exchange rate (Figure B2). In 2007, the country removed its currency peg to the US dollar to prevent the sliding dollar increasing the cost of imports.⁴² In the aftermath of the financial crisis, the Kuwaiti dinar experienced steadfast appreciation, on average, while the economy slowed down: the Kuwaiti dinar was the strongest currency in the world in 2019,

⁴⁰ Jenn-Hwan Wang, 'From Technological Catch-Up to Innovation-Based Economic Growth: South Korea and Taiwan Compared', *The Journal of Development Studies* 43/6 (2007), pp. 1084–1104.

⁴¹ Tan Yin Ting, Alvin Eng and Edward Robinson, 'Perspectives on Growth: A Political-Economy Framework – Lessons from the Singapore Experience', *World Bank* (Washington, DC, 2010).

⁴² Simeon Kerr, 'Kuwait Abandons US Dollar Currency Peg', *Financial Times*, 20 May 2007.

followed by the Bahraini dinar and the Omani rial. Kuwait's dependence on oil revenues is undeniable: the proportion of oil rents to GDP has averaged 46 percent during the last two decades, reaching a maximum of 62 percent in 2011. As is evident from Figure B3, the ratio is closely related to changes in fuel prices.

SECTORAL COMPOSITION AND GROWTH

To describe the sectoral composition of Kuwait we use data from the Annual Survey of Establishments (2012 and 2016) conducted by the Kuwait Central Statistical Bureau. Here we discuss the industry structure in terms of both firms and gross value added (GVA), and the growth dynamics of the fastest-growing industries.

The country's economic activity is largely dominated by the crude oil and gas sector (Figure B4). However, in the five-year period observed, its share of total GVA shrank from roughly 75 percent to 50 percent. Consequently, other industries increased their contribution to the Kuwaiti economy. The most notable increases were in services; the non-financial services share rose by 10 percentage points, whilst financial services almost doubled in size to 13.5 percent.

In terms of firm distribution (Figure B5), the overwhelming majority (around 90 percent) of establishments in Kuwait are micro enterprises (fewer than 10 employees). Small and medium enterprises (11–249 employees) represent around 8 percent of the population, whilst only 1 percent is accounted for by large enterprises with more than 250 employees. The relative structure of firm distribution did not change significantly between 2012 and 2016.

However, the relative contribution to the national GVA of different firm size groups is in stark contrast to their relative numbers (Figure B6). In 2012, a handful of large enterprises were responsible for more than 90 percent of the total GVA, while the bulk of firms produced the remaining value added with roughly similar shares. In 2016, the GVA composition in terms of firm size recorded some notable changes: medium-sized firms expanded their contribution to almost 5 percent of GVA, whilst micro firms reached approximately 4.5 percent.

When looking at economic diversification, it is worthwhile zooming in on subsectors and industries. Table B1 presents a more detailed breakdown by sector in terms of number of firms and GVA, within sector ranks, as well as the growth dynamics for the period.

Within the manufacturing sector, refined oil and chemicals are the industries with the largest shares; whilst the former decreased from roughly 50 percent to 37% of total manufacturing GVA, the latter remained around 25%. The next four industries maintained their rank with relatively small shares that slightly increased in 2016: food products (6.9%), non-metallic minerals (4.9%), fabricated metals (3.3%) and apparel (3.2%). Overall, manufacturing appears to be particularly concentrated in a few industries (fourteen out of twenty have shares below 2%). While the whole GVA in manufacturing contracted at an

average annual rate of 5%,⁴³ this decline was mainly driven by refined oil, publishing and leather. Albeit with small relative contributions to GVA, industries with positive growth rates above 10% are electrical machinery (11.2%), transport equipment (13.9%), basic metals (19.6%), machinery and equipment (10.1%) and recycling (12.2%).

The construction sector is the smallest but rather dynamic, showing an average GVA annual growth rate of 9.3 percent in the period. Trade is the second smallest in terms of GVA; nonetheless, it accounts for half of the firm population; retail trade represents around 60 percent of the sector GVA, while wholesale and motor vehicle sales split the remaining value added into equal shares. The trade sector and subsectors all recorded positive growth rates.

In 2016, the five largest industries within the non-financial services sector were telecommunications with a GVA share of 28.1 percent, travel agencies (14.7%), real estate (11.6%), restaurants and hotels (9.2%) and other business activities (6.4%). Non-financial services as a whole grew at an average annual rate of 12%, becoming the largest in the economy after crude oil and gas. At the same time, significant changes took place in the relative position of service industries. The most dynamic were travel agencies with an average annual growth rate of 56%, telecommunications (29%), sewage and sanitation (29%), air transport (14%), and recreational activities (10%). A few others declined in terms of value added; notably, computers and ICT and other business activities both decreased their GVA at an average annual rate of 5%.

Finally, the GVA in the financial services sector as a whole grew at an average annual growth rate of 2.65 percent, becoming the second largest in the economy excluding crude oil and gas. The finance industry represents roughly 95 percent of the sector's GVA, the remaining 5 percent accounted for by insurance and financial intermediates.

PUBLIC VS. PRIVATE FIRMS

Kuwait is a heavily state-led economy. We now turn to explore how different types of firm ownership (public, private and mixed) contribute to the economy, to sectors and industries. Latest data refers to 2012.

The share of public firms is not even close to 0.1 percent of the total number of firms; private firms account for 99.9 percent of the establishments in Kuwait (Table B2). However, publicly owned firms are responsible for 80.2 percent of the country's GVA. Firms with mixed ownership are few, and they only account for 1.6 percent of the GVA.

Looking at the ownership structure by sector in terms of firms and GVA (Table B3), not surprisingly in the crude oil and gas sector publicly owned firms account for 99.7 percent of the GVA; however, they are only one third of the total number of firms, the rest of the establishments being private (50 percent) and of mixed ownership (16.7 percent). Although private firms dominate the manufacturing sector, two publicly owned firms account for 52.9 percent of manufacturing GVA; these operate in the refined oil and chemicals industries. At

⁴³ The average annual growth rate (AAGR) assumes that values grow at a constant rate every year.

the other extreme there is the construction sector, entirely driven by private firms. In a very similar way, trade and services – both financial and non-financial – sectors are dominated by private firms with modest participation by state-owned firms.

Considering ownership structure by industry (Table B4), as mentioned before within the manufacturing sector most of the industries are entirely dominated by private firms. Nonetheless, some industries show different ownership structures. For instance, in food products, there are five public firms and two mixed firms that represent 10 percent of the industry's GVA. In the refined oil industry, there are two firms, one private and one public; the latter produces 99 percent of GVA. In the chemicals industry, despite private firms being considerably more in number, the GVA is concentrated in four firms with mixed ownership. Rubber products and non-metallic minerals both have a similar ownership structure of mainly private firms with some participation of mixed firms. The rest of the industries are composed of private firms only.

The trade sector is also dominated by private firms, in terms of both establishments and GVA. Nonetheless, there is some participation of publicly owned firms in sales of motor vehicles and retail trade. In the non-financial services sector, there is far more participation by public firms. Industries with significant participation of publicly owned firms are air transport, water transport, land and pipe transport, restaurants and hotels, recreational activities and other business activities. Education is mostly a private-driven industry, with very small state participation through mixed ownership firms. Furthermore, health and sewage and sanitation are both wholly private. As far as the financial services sector is concerned, there is still significant participation by public firms: 15 percent of the finance industry's GVA is accounted for by these firms, while this figure is almost 30 percent in the financial intermediates industry.

TRADE

Kuwait is a net exporter to the world. The trade surplus began widening in the early 2000s, and more sharply after 2005. Not coincidentally, since 2015 the surplus has been shrinking as the Kuwaiti dinar has appreciated. The level of imports from the world has increased at a relatively constant pace during the last fifteen years (Figure B7).

Imports

Kuwait's product import profile is relatively diversified (Figure B8). In 2018, the top three product categories in imports were machinery and mechanical appliances (13.3 percent); electrical machinery and equipment (11.8%); and other vehicles (11.5%). Together they represented 36% of total imports. The next 16.6% was composed of products of iron or steel (6%), pearls and precious stones (3.8%), pharmaceutical products (3.6%) and optical and precision instruments (3%).

Kuwait's imports come from far and wide (Figure B9). Sixteen percent of imports come from China, an additional 8.6% from the UAE, and an identical share from the US. The next four countries, with average shares of 5.6%, are Japan, Germany, Saudi Arabia and India. Italian imports account for an additional 4.4%, while South Korean add up to 3.9%. The next 10% is

split among five countries with similar shares (average of 2.1%): the UK, Bahrain, France, the Netherlands and Turkey. The remaining 25% comes from 85 countries. As a group, imports from the other GCC countries sum up to 17% of Kuwait's total imports from the world.

Exports

Currently, most of Kuwait's exports are low-technology and mainly based on natural resources. This shows the acute need to diversify the economy into non-oil activities. The percentage of fuel exports relative to merchandise exports has remained around 92 percent in the last two decades (Figure B10). In 2008, this percentage was 96 percent; ten years later, in 2018, the proportion had only decreased to 90 percent.

Figure B11 represents the remaining 8.7 percent of total exports – there is still a residual 1.3% spread across 65 product categories (not shown). Of these non-oil exports, organic chemicals represent 32.1%. Vehicles and their parts account for 12.4%, while plastics represent a similar share. The next category is machinery and mechanical appliances with 4.8%, followed by ships and floating structures (3.4%) and electrical machinery and equipment (3%). Miscellaneous chemical products and fertilisers each contribute with an average share of 2%.

Regarding the destination of Kuwaiti non-oil exports (Figure B12), almost one third is sent to India (17.3 percent) and China (14.5%). The next largest buyers of Kuwaiti exports are the UAE (12.1%), Iraq (9.5%), Saudi Arabia (8.3%), Qatar (6.5%), Pakistan (4.4%) and Oman (3%). These eight countries add up to 75% of non-oil exports. The remaining 25% is exported to 63 countries. Finally, Kuwait exports 31% of its total non-oil exports to its neighbouring GCC countries.

Foreign Direct Investment

To describe the foreign direct investment (FDI) profile of Kuwait we use data on greenfield FDI from the FT fDi Market database for the years 2003–17. The country is a net investor abroad (Figure B13). Greenfield outward FDI (OFDI) stock⁴⁴ rose sharply from less than USD 1.5 billion to 60 billion between 2003 and 2008. Ever since, the accumulated stock of new Kuwaiti investment abroad has been steadily increasing, reaching almost USD 100 billion in 2017. Kuwait's inward FDI (IFDI) stock is not substantial relative to OFDI. It has been rising steadily at a much slower pace than OFDI, hitting almost USD 20 billion in 2017.

Inward FDI

Figures B14 and B15 show the country (or macro-region) of origin of Kuwaiti IFDI. The largest foreign investor in Kuwait is the UAE with slightly more than a third of the accumulated stock of inward (greenfield) FDI from 2003 to 2017. The US alone owns 15.7 percent of the stock, followed by France with 13.7%. The participation of the latter in the Kuwaiti economy saw a significant increase in 2013. The rest of Europe (including the UK)

⁴⁴ Stocks are calculated by accumulating the reported yearly investment flows from the fDi Markets database. These numbers do not take depreciation into account.

participates at 11.3%. Asian countries own 14.6% of the foreign-owned assets, while other countries of the Middle East and North Africa plus Pakistan (MENAP) contribute to half of that figure. The rest of the world represents the remaining 2%. Among the European countries (excluding France), the top three investors are the UK, Denmark and Switzerland. In the Asian group, China notably leads, followed by Singapore, South Korea and India. From the MENA group, fellow GCC members Qatar and Bahrain are the most important investors.

Figure B16 shows that almost a third of IFDI in Kuwait is concentrated in real estate; hotels and tourism receive 15.6 percent, followed closely by business services (14.7%), chemicals (11.1%) and financial services (8.3%). These five industries account for 77% of IFDI stock. The next 10% is almost evenly split among three industries – consumer products, leisure and entertainment, and communications – whilst the remaining 12.6% is divided between 19 industries.

Outward FDI

In relative terms, despite its increasing OFDI, Kuwait is a small investor on the world investment landscape. As shown in Figure B17, the amount of OFDI to the rest of the world displays a clear upward trend. A third of the Kuwaiti accumulated OFDI stock is in two GCC countries: 17.7 percent in the UAE and 16.1% in Bahrain. In addition, 9.5% goes to China and an additional 9.4% to Vietnam. The next four countries with roughly 5.5% each are Egypt, Saudi Arabia, Malaysia and Syria. An additional 3.3% is located in Oman. With around 2% each, next are the US and Lebanon. The remaining 17.5% is distributed among 61 countries. The map presented in Figure B18 shows that the geographical destination of Kuwaiti OFDI is rather widespread, although China, some countries in Southeast Asia and neighbouring GCC and MENA countries attract most of Kuwait OFDI.

ADDITIONAL INDICATORS FOR KUWAIT AND THE GCC COUNTRIES

Economic Diversification and Local Competition

As already mentioned, economic diversification is a pressing issue for Kuwait and GCC countries inasmuch as it is intrinsically related to innovation potential. Two proxies for economic diversification are shown in Figure B19. When measured by the oil sector as a percentage of GDP, Bahrain and the UAE have the lowest shares, while Kuwait and Saudi Arabia remain the least diversified; when the percentage of oil exports relative to merchandise exports is considered, Qatar and Kuwait are the most dependent, whereas the UAE remains the least. When taking both measures simultaneously, Kuwait remains the least diversified GCC country, whilst the UAE and Bahrain are the most diversified.

Moreover, countries with efficient internal markets are better positioned to produce the right mix of products and services given their supply-and-demand conditions (Global Competitiveness Index (GCI) for 2018). The perceived 'intensity of local competition'⁴⁵ captures the dynamism of local markets (Figure B20). The most competitive markets are found in the UAE, Qatar and Saudi Arabia, although the three of them have worsened in

⁴⁵ This subcomponent corresponds to the GCI's sixth pillar, which is concerned with goods markets efficiency.

global ranks over time. The least competitive domestic markets are those in Oman, Kuwait and Bahrain. Although Kuwait improved during the period observed, its relative position in 2018 was lower than in 2010.

Labour Force

As mentioned in the main report, labour markets show very peculiar characteristics in Kuwait, and in the GCC countries more generally. However, as emerges from the World Bank Indicators (Figures B21–B23), in recent years the proportion of females in the Kuwaiti total labour force has increased, hitting around 30 percent – the average of lower middle-income countries. Kuwait leads among GCC countries, followed by Bahrain; the proportion is slightly above 15 percent for Saudi Arabia and the UAE, whilst it is below that for Oman and Qatar. An indicator of the active workforce in a country is the labour force participation; that is, the workforce, including employed and unemployed, divided by the working age population. Kuwait and Qatar have the highest female labour participation rate in the region, approaching 60 percent, with the lowest figure recorded by Saudi Arabia followed by Oman. In middle positions are the UAE and Bahrain, with significant increases over time recorded by the whole area. Regarding male labour force participation, the spread across the GCC is much lower when compared to the female figures, ranging between 80 and 95 percent.

Governance and Society

As elaborated in the main report, the general quality of institutions and of government is of vital importance for any economic and innovation system to develop and upgrade. Here we use the database World Governance Indicators (WGI) from the World Bank, covering the period 2003–17.⁴⁶ In terms of ‘control of corruption’ (Figure B24) – which captures the perception of the extent to which power is exercised for private gain – Kuwait experienced a downward trend between 2003 and 2018, going from second place in control of corruption to last among the GCC. The highest scores in this indicator are recorded for Qatar and the UAE, while Bahrain and Kuwait have the lowest. Whilst Saudi Arabia improves over time, Oman remains relatively stable with mid-range scores.

Similarly, with respect to the perception of ‘government effectiveness’ (Figure B25) – that is, views of the quality of public services and civil service – Kuwait stays at the bottom of the group, with Bahrain and Oman in the second worst place, whilst the first positions are occupied by the UAE and Qatar. Relative improvements take place in Saudi Arabia and the UAE, while deterioration occurs in Qatar, Bahrain and Kuwait. Again, Oman remains in the middle with relatively stable scores.

When it comes to perceptions of ‘political stability and absence of violence/terrorism’ (Figure B26), the most stable (highest scores) for GCC countries are recorded by Qatar, Oman and the UAE. Kuwait is in the mid-range with relatively stable scores over the period.

⁴⁶ This dataset captures views on the quality of governance provided by a large number of enterprises, citizens and expert survey respondents in advanced and developing countries.

The least stable countries are Bahrain and Saudi Arabia, showing some regression in this indicator.

Considering 'regulatory quality' (Figure B27) – perceptions of the government's ability to implement policy and regulation that promote private sector development – in recent years, the UAE shows the highest score by far, with significant improvements over the period. Bunched in the middle are Qatar, Bahrain and Oman with very similar mid-range scores in the last five years. In the last positions are Kuwait and Saudi Arabia, with the former experiencing significant relative declines in this governance indicator, although with some signs of improvement in the last three years observed.

'Rule of law' (Figure B28) captures the perceptions of the extent to which agents have confidence in and abide by the rules of society. The highest scores are those of the UAE and Qatar, both with significant improvements during the period. Oman and Bahrain are in the middle with relatively stable scores, whilst Kuwait and Saudi Arabia are at the bottom of the distribution, with the former again experiencing some recovery only since 2015.

Finally, when considering 'voice and accountability' (Figure B29) – that is, perceptions of the extent to which citizens are able to select their government, have freedom of expression, association and media – all GCC countries are in the lower end of the world distribution. However, for this indicator, Kuwait ranks at the top of the GCC group with the highest and relatively stable scores. The next four countries, Oman, Qatar, the UAE and Bahrain, all have fairly similar scores and have experienced some deterioration since the mid-2000s. Saudi Arabia is at the bottom of the group with the lowest scores of voice and accountability.

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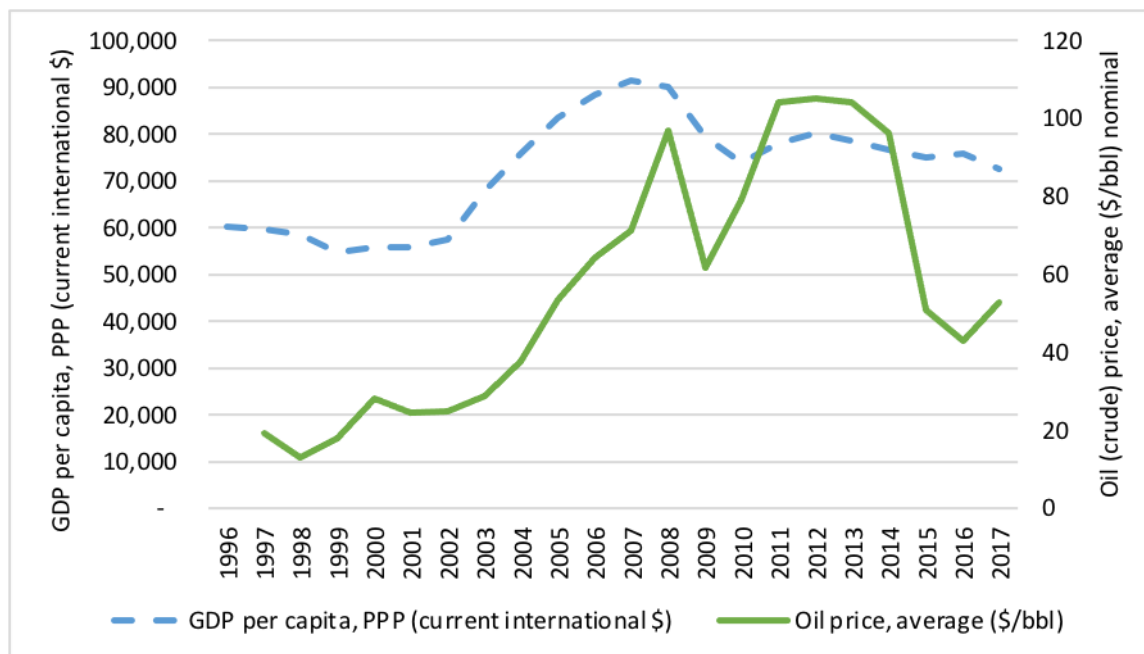
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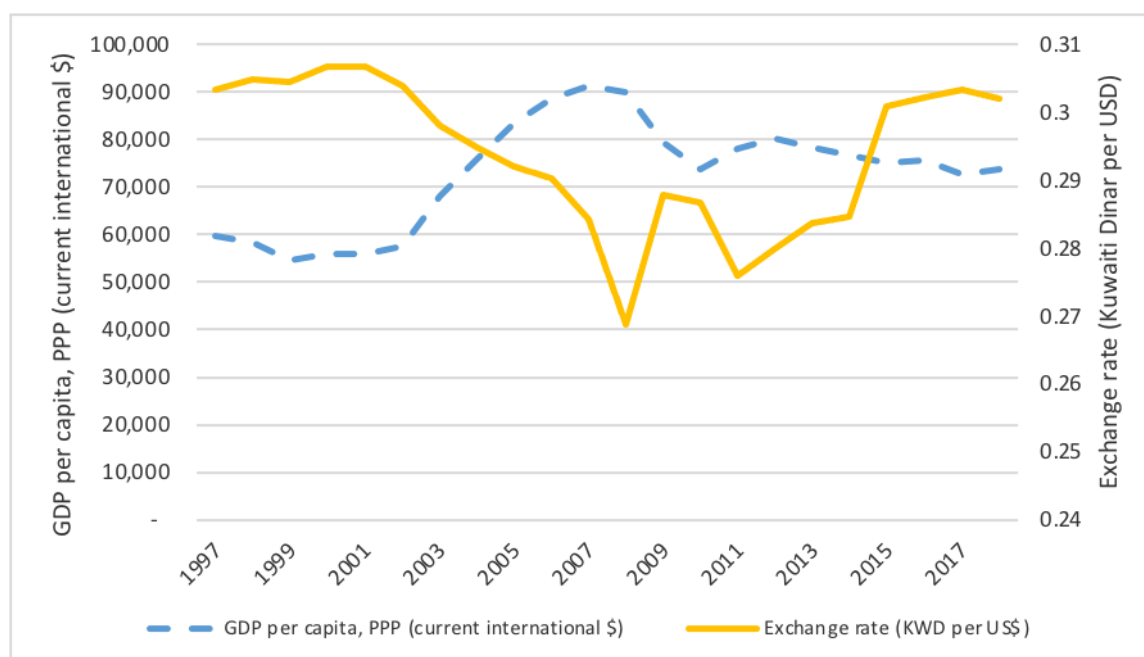
Appendix B: Further Indicators

Figure B1: Kuwait: GDP Per Capita and Oil Prices, 1996–2017



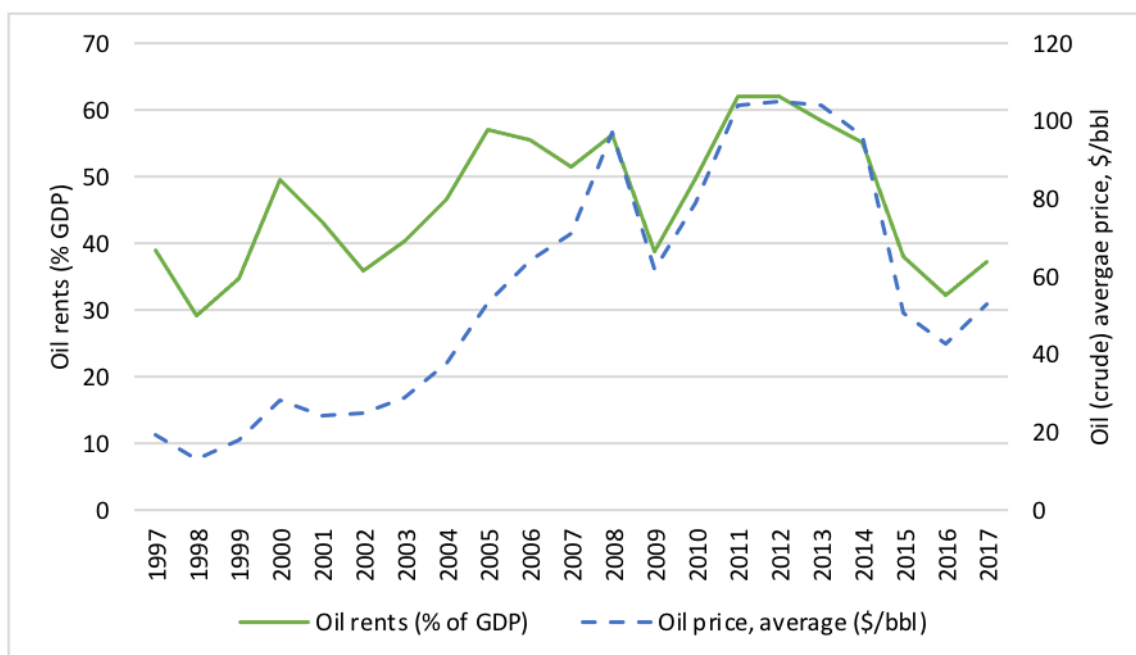
Source: Authors' own elaboration on World Bank Indicators and Bloomberg

Figure B2: Kuwait: GDP Per Capita and Exchange Rate, 1997–2017



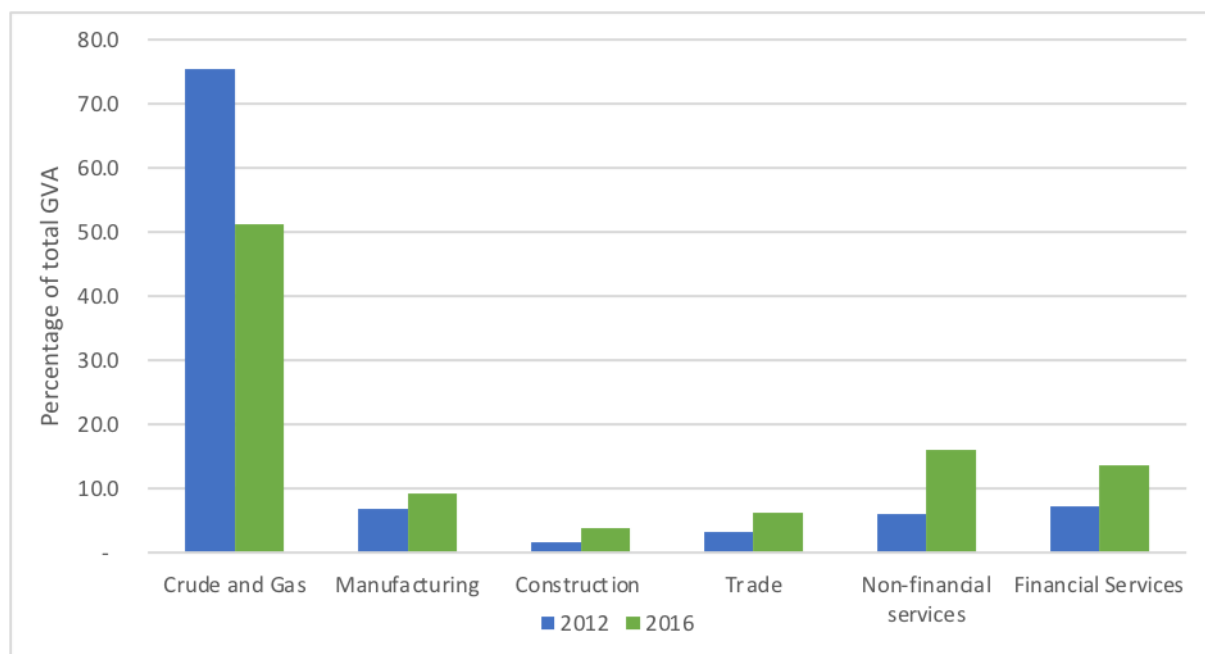
Source: Authors' own elaboration on World Bank Indicators

Figure B3: Kuwait: Oil Dependence and Oil Prices, 1997–2017



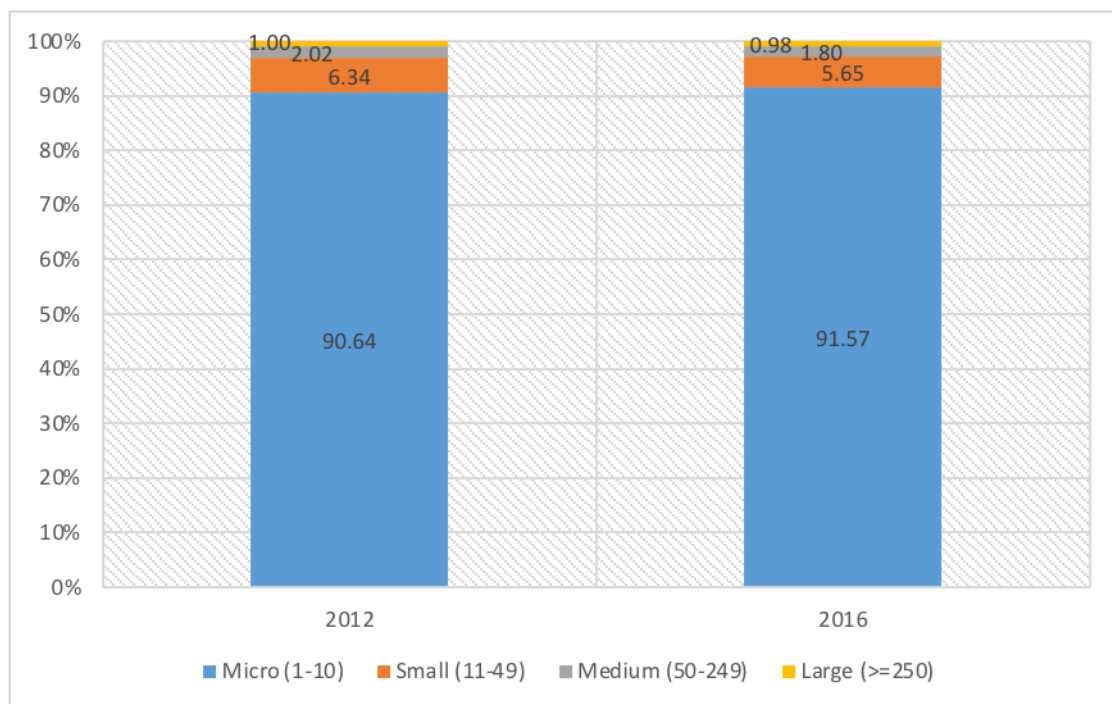
Source: Authors' own elaboration on World Bank Indicators and Bloomberg

Figure B4: Kuwait, Industry Structure: GVA, 2012 and 2016



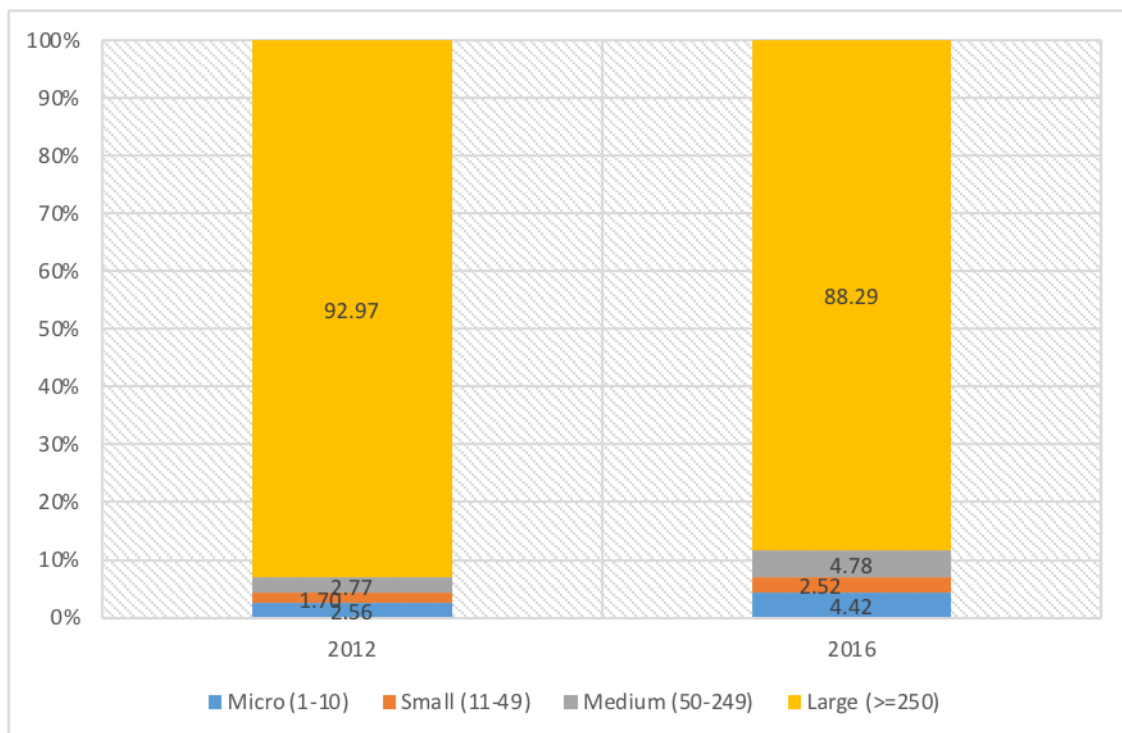
Source: Authors' own elaboration on data from the Annual Survey of Establishments, Kuwait Central Statistical Bureau

Figure B5: Kuwait, Industry Structure: Firm Size Distribution, 2012 and 2016



Source: Authors' own elaboration on data from the Annual Survey of Establishments, Kuwait Central Statistical Bureau

Figure B6: Kuwait, Industry Structure: GVA by Firm Size, 2012 and 2016



Source: Authors' own elaboration on data from the Annual Survey of Establishments, Kuwait Central Statistical Bureau

Table B1: Kuwait: GVA and Number of Firms by Sector and Industry Breakdown, 2012 and 2016

ISIC	Description	2012			2016			Within-sector GVA rank			Average annual growth rate	
		No. firms	GVA	GVA % of sector	No. firms	GVA	GVA % of sector	2012	2016	Change	Firms	GVA
11	Extraction of Crude and Gas	6	31,852,941.73	100	7	12,835,055.45	100				3.93	-20.33
	Manufacturing	5,266	2,834,388	100	5,270	2,305,551	100				0.02	-5.03
23	Refined oil	2	1,406,614.19	49.63	2	853,742.15	37.03	1	1	0	0.00	-11.74
24	Chemicals	36	717,170.25	25.30	31	612,997.51	26.59	2	2	0	-3.67	-3.85
15	Food products	509	139,396.85	4.92	540	160,852.13	6.98	3	3	0	1.52	3.64
26	Non-metallic minerals	163	128,440.01	4.53	145	114,617.40	4.97	4	4	0	-2.86	-2.81
28	Fabricated metals	823	65,512.23	2.31	828	77,193.71	3.35	5	5	0	0.17	4.19
18	Apparel	2,542	59,190.87	2.09	2,547	75,347.64	3.27	6	6	0	0.04	6.22
22	Publishing	137	55,004.10	1.94	127	35,658.64	1.55	7	13	-6	-1.97	-10.27
31	Electrical machinery	13	44,311.00	1.56	13	67,808.45	2.94	8	7	1	0.00	11.22
25	Rubber products	40	35,491.41	1.25	40	51,693.45	2.24	9	9	0	0.00	9.86
33	Precision instruments	6	35,440.19	1.25	8	40,389.70	1.75	10	11	-1	7.46	3.32
36	Furniture	452	31,654.90	1.12	485	36,841.23	1.60	11	12	-1	1.75	3.87
35	Transport equipment	9	27,831.95	0.98	8	46,955.59	2.04	12	10	2	-2.90	13.97
27	Basic metals	8	27,178.95	0.96	7	55,661.37	2.41	13	8	5	-3.28	19.63
21	Paper	30	22,613.69	0.80	26	27,100.24	1.18	14	14	0	-3.51	4.63
29	Machinery and equipment	37	12,096.55	0.43	34	17,813.36	0.77	15	15	0	-2.12	10.16
17	Textiles manufacture	301	10,278.78	0.36	291	12,496.78	0.54	16	16	0	-0.92	5.01
20	Wood	140	6,928.50	0.24	125	6,629.84	0.29	17	18	-1	-2.84	-1.10
37	Recycling	3	4,984.24	0.18	3	7,925.37	0.34	18	17	1	0.00	12.29
34	Motor vehicles	10	2,846.04	0.10	8	2,982.38	0.13	19	19	0	-5.43	1.18
19	Leather	5	1,403.53	0.05	4	844.15	0.04	20	20	0	-5.43	-11.94
45	Construction	1,224	664,890.92	100	1,145	950,693.76	100				-1.65	9.35

Table B1 continued

	Trade	24,938	1,355,942.15	100	25,529	1,563,280.90	100				0.59	3.62
52	Retail trade	19,692	786,025.26	57.97	20,246	930,747.95	59.54	1	1	0	0.70	4.32
51	Wholesale trade	1,030	285,073.90	21.02	986	309,721.86	19.81	2	3	-1	-1.08	2.09
50	Sales of motor vehicles	4,216	284,843.00	21.01	4,297	322,811.10	20.65	3	2	1	0.48	3.18
	Non-Financial Services	9,591	2,555,439.34	100	9,836	4,024,421.25	100				0.63	12.02
70	Real estate	986	484,374.67	18.95	976	466,830.81	11.60	1	3	-2	-0.24	-0.92
64	Telecommunications post	32	402,685.37	15.76	26	1,131,753.93	28.12	2	1	1	-5.48	29.48
55	Restaurants and hotels	2,437	324,694.83	12.71	2,605	373,846.26	9.29	3	4	-1	1.68	3.59
74	Other business activities	1,727	323,894.28	12.67	1,707	258,431.80	6.42	4	5	-1	-0.28	-5.49
80	Education	154	166,526.88	6.52	142	217,968.76	5.42	5	6	-1	-1.97	6.96
61	Water transport	14	125,459.44	4.91	11	145,315.83	3.61	6	8	-2	-5.85	3.74
85	Health	148	123,953.37	4.85	146	178,400.91	4.43	7	7	0	-0.24	9.53
71	Leasing	228	113,666.86	4.45	215	125,865.72	3.13	8	10	-2	-1.50	2.58
60	Land and pipe transport	245	108,941.85	4.26	224	136,946.53	3.40	9	9	0	-2.22	5.89
63	Travel agencies	288	100,262.23	3.92	285	594,965.59	14.78	10	2	8	-0.29	56.08
93	Activities other	3,135	82,612.53	3.23	3,319	88,077.05	2.19	11	12	-1	1.43	1.61
72	Computers and ICT	55	63,034.08	2.47	46	51,307.56	1.27	12	15	-3	-4.15	-5.02
62	Air transport	8	61,342.83	2.40	11	106,452.36	2.65	13	11	2	8.29	14.78
92	Recreational activities	123	38,876.08	1.52	111	57,727.32	1.43	14	14	0	-2.51	10.39
90	Sewage & sanitation	9	30,800.09	1.21	11	86,348.54	2.15	15	13	2	5.14	29.40
91	Membership NES organisations	4	4,313.95	0.17	2	4,182.27	0.10	16	16	0	-15.91	-0.77
	Financial Services	243	3,048,561.38	100	208	3,384,812.90	100				-3.81	2.65
65	Finance	160	2,902,209.56	95.20	126	3,239,534.85	95.71	1	1	0	-5.80	2.79
66	Insurance	21	102,905.69	3.38	20	109,155.90	3.22	2	2	0	-1.21	1.49
67	Financial intermediates	62	43,446.13	1.43	62	36,122.15	1.07	3	3	0	0.00	-4.51
	Grand total	41,268	42,312,163.74		41,996	25,063,815.33					0.44	-12.27

Source: Authors' own elaboration on data from the Annual Survey of Establishments, Kuwait Central Statistical Bureau

Table B2: Kuwait: GVA and Number of Firms by Ownership, 2012

Ownership type	Firms		GVA	
	Sum	Share	Sum	Share
100% public	24	0.06	33,946,494.9	80.2
100% private	41,228	99.90	7,672,608.2	18.1
Mixed	16	0.04	693,060.7	1.6
Total	41,268	100	42,312,163.7	100

Source: Authors' own elaboration on data from the Annual Survey of Establishments, Kuwait Central Statistical Bureau

Table B3: Kuwait: GVA and Number of Firms by Sector and Ownership, 2012

Sector	Ownership	Firms	Value added
Crude and Gas		6	31,852,941.7
	100% public	33.3%	99.7%
	100% private	50.0%	0.2%
	Mixed	16.7%	0.1%
Manufacturing		5,266	2,834,388.2
	100% public	0.1%	52.9%
	100% private	99.7%	26.0%
	Mixed	0.2%	21.1%
Construction		1,224	664,890.9
	100% public	0%	0%
	100% private	100%	100%
	Mixed	0%	0%
Trade		24,938	1,355,942.2
	100% public	0.01%	1.7%
	100% private	99.98%	96.9%
	Mixed	0.01%	1.43%
Non-Financial Services		9,591	2,555,439.3
	100% public	0.08%	8.35%
	100% private	99.9%	91.63%
	Mixed	0.01%	0.02%
Financial Services		243	3,048,561.4
	100% public	2.1%	14.5%
	100% private	97.1%	83.9%
	Mixed	0.8%	1.6%
Grand total		41,268	42,312,163.7

Source: Authors' own elaboration on data from the Annual Survey of Establishments, Kuwait Central Statistical Bureau

Table B4: Kuwait: GVA and Number of Firms by Industry and Ownership, 2012

<i>ISIC</i>	<i>Description</i>	<i>Ownership</i>	<i>Firms</i>	<i>Value added</i>
	Crude and Gas		6	31,852,941.7
11	Extraction of crude and gas	100% public	2	31,768,862.0
		100% private	3	58,093.6
		Mixed	1	25,986.1
	Manufacturing		5,266	2,834,388.2
15	Food products	100% public	5	12,843.8
		100% private	502	123,827.7
		Mixed	2	2,725.4
17	Textiles manufacture	100% private	301	10,278.8
18	Apparel	100% private	2,542	59,190.9
19	Leather	100% private	5	1,403.5
20	Wood	100% private	140	6,928.5
21	Paper	100% private	30	22,613.7
22	Publishing	100% private	137	55,004.1
23	Refined oil	100% public	1	1,394,027.0
		100% private	1	12,587.2
24	Chemicals	100% public	1	93,479.8
		100% private	31	49,846.6
		Mixed	4	573,843.9
25	Rubber products	100% private	39	34,698.8
		Mixed	1	792.6
26	Non-metallic minerals	100% private	161	108,252.9
		Mixed	2	20,187.1
27	Basic metals	100% private	8	27,179.0
28	Fabricated metals	100% private	823	65,512.2
29	Machinery and equipment	100% private	37	12,096.6
31	Electrical machinery	100% private	13	44,311.0
33	Precision instruments	100% private	6	35,440.2
34	Motor vehicles	100% private	10	2,846.0
35	Transport equipment	100% private	9	27,831.9
36	Furniture	100% private	452	31,654.9
37	Recycling	100% private	3	4,984.2
	Construction		1,224	664,890.9
45	Construction	100% private	1,224	664,890.9
	Trade		24,938	1,355,942.2
50	Sales of motor vehicles	100% public	1	16,754.9
		100% private	4,213	249,918.7
		Mixed	2	18,169.4
51	Wholesale trade	100% private	1,029	283,810.7
		Mixed	1	1,263.2
52	Retail trade	100% public	1	6,426.3

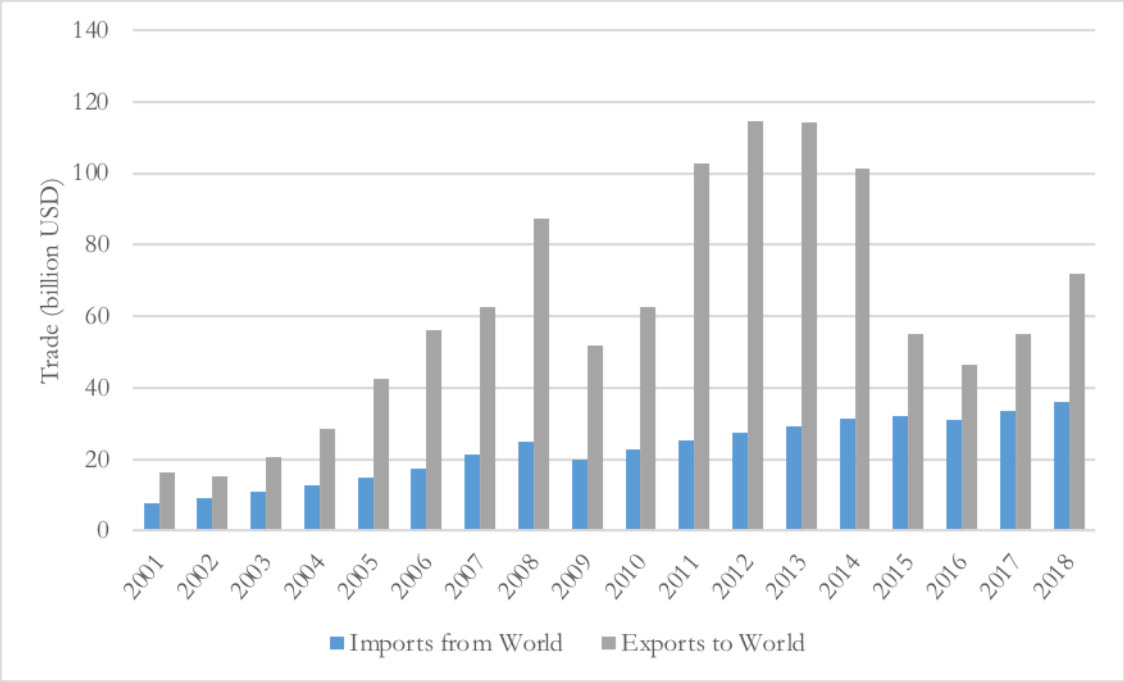
100% private	19,691	779,598.9
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Table B4 continued

Non-Financial Services		9,591	2,555,439.3
55	Restaurants and hotels	100% public	1 26,649.1
		100% private	2,436 298,045.7
60	Land and pipe transport	100% public	1 15,061.1
		100% private	244 93,880.8
61	Water transport	100% public	1 33,097.0
		100% private	13 92,362.4
62	Air transport	100% public	1 27,417.0
		100% private	7 33,925.8
63	Travel agencies	100% private	288 100,262.2
64	Telecommunication post	100% private	32 402,685.4
70	Real estate	100% public	1 4,410.4
		100% private	985 479,964.3
71	Leasing	100% private	228 113,666.9
72	Computer and ICT	100% private	55 63,034.1
74	Other business activities	100% public	1 97,112.9
		100% private	1,726 226,781.4
80	Education	100% private	153 166,108.7
		Mixed	1 418.1
85	Health	100% private	148 123,953.4
90	Sewage and sanitation	100% private	9 30,800.1
91	Membership NES organisations	100% private	4 4,314.0
92	Recreational activities	100% public	2 9,622.1
		100% private	121 29,254.0
93	Activities other	100% private	3,135 82,612.5
Financial Services		243	3,048,561.4
65	Finance	100% public	4 428,490.9
		100% private	154 2,424,043.8
		Mixed	2 49,674.9
66	Insurance	100% private	21 102,905.7
67	Financial intermediates	100% public	1 12,240.6
		100% private	61 31,205.5
Grand total		41,268	42,312,163.7

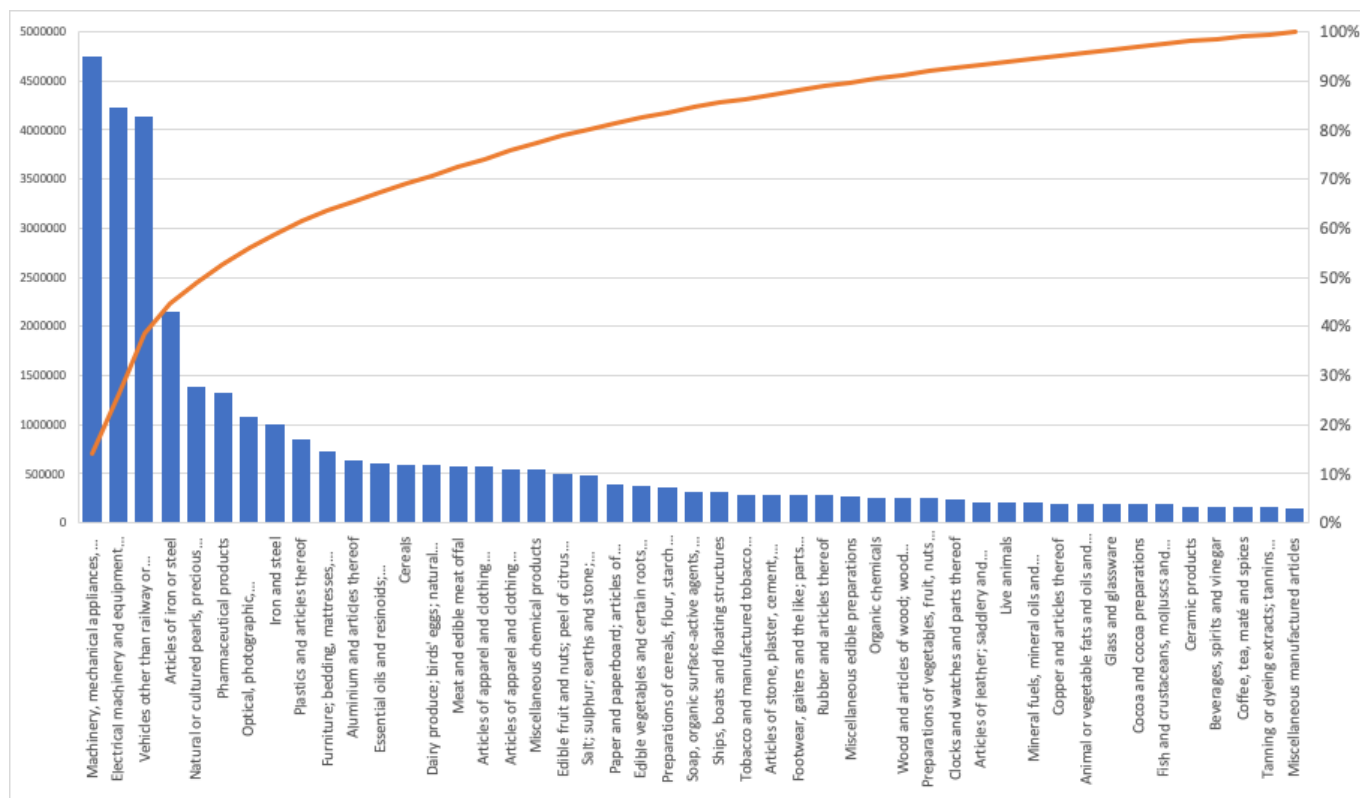
Source: Authors' own elaboration on data from the Annual Survey of Establishments, Kuwait Central Statistical Bureau

Figure B7: Kuwait, Balance of Trade: Total Imports and Exports, 2001–18



Source: Authors' own elaboration on ITC Trade Map

Figure B8: Kuwait: Import Composition, 2018



Source: Authors' own elaboration on ITC Trade Map

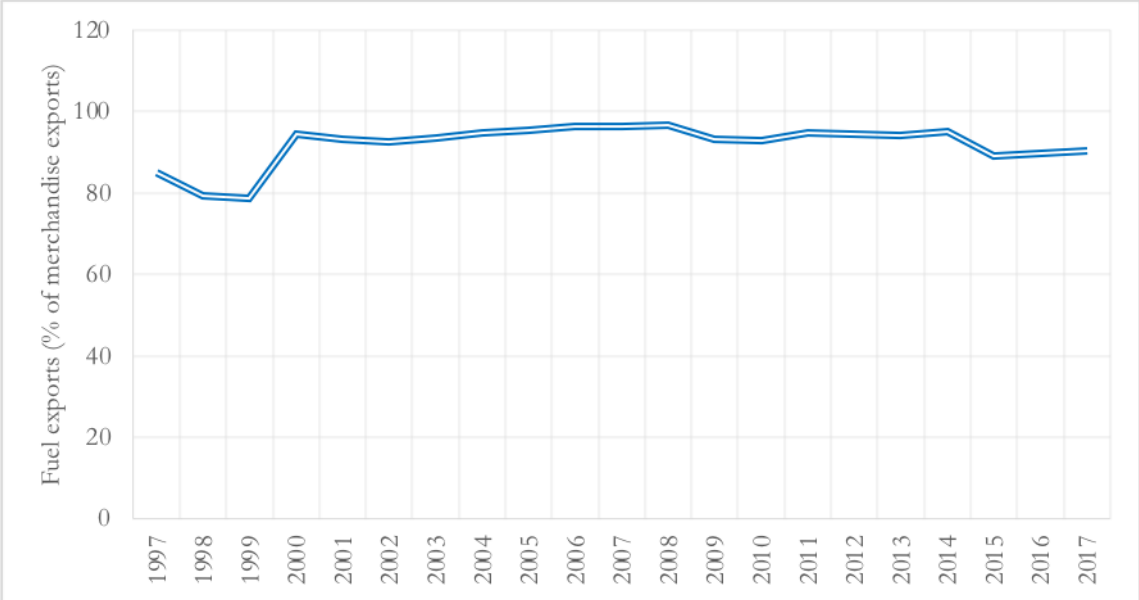
Notes: Product categories represented here comprise 95 percent of total imports. The Pareto curve represents 100 percent of the latter percentage.

Figure B9: Kuwait: Origin of Imports, 2018



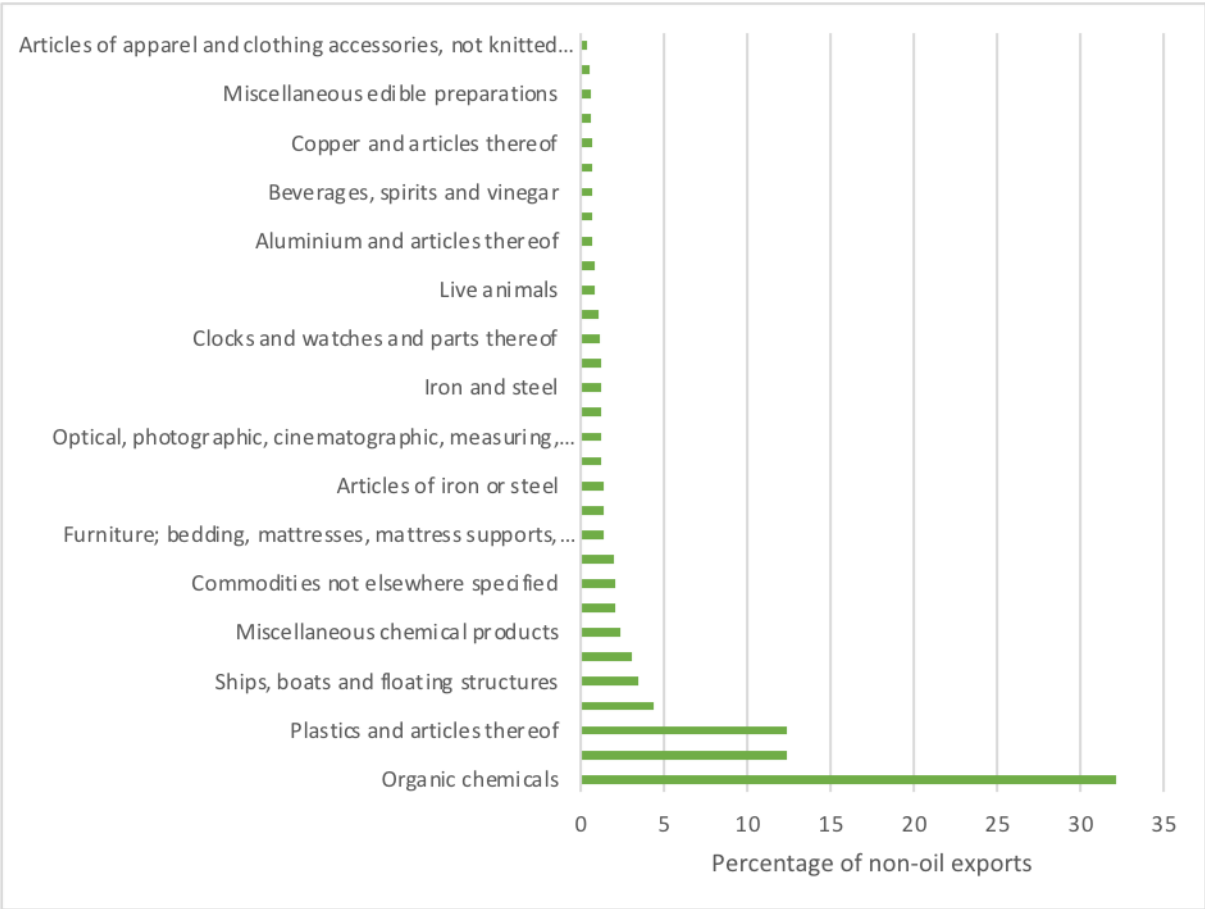
Source: Authors' own elaboration on ITC Trade Map

Figure B10: Kuwait: Fuel Exports Relative to Merchandise Exports, 1997–2017



Source: Authors' own elaboration on World Bank Indicators

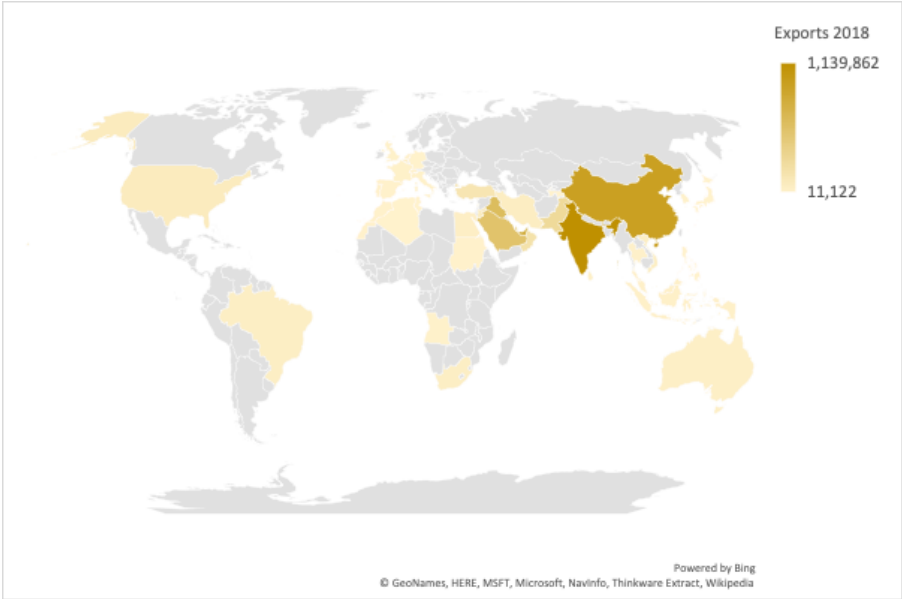
Figure B11: Kuwait: Non-Oil Export Composition, 2018



Source: Authors' own elaboration on ITC Trade Map

Notes: Shares of product categories are relative to total exports (excluding oil). Categories represented here comprise 8.7 percent of Kuwait's total exports.

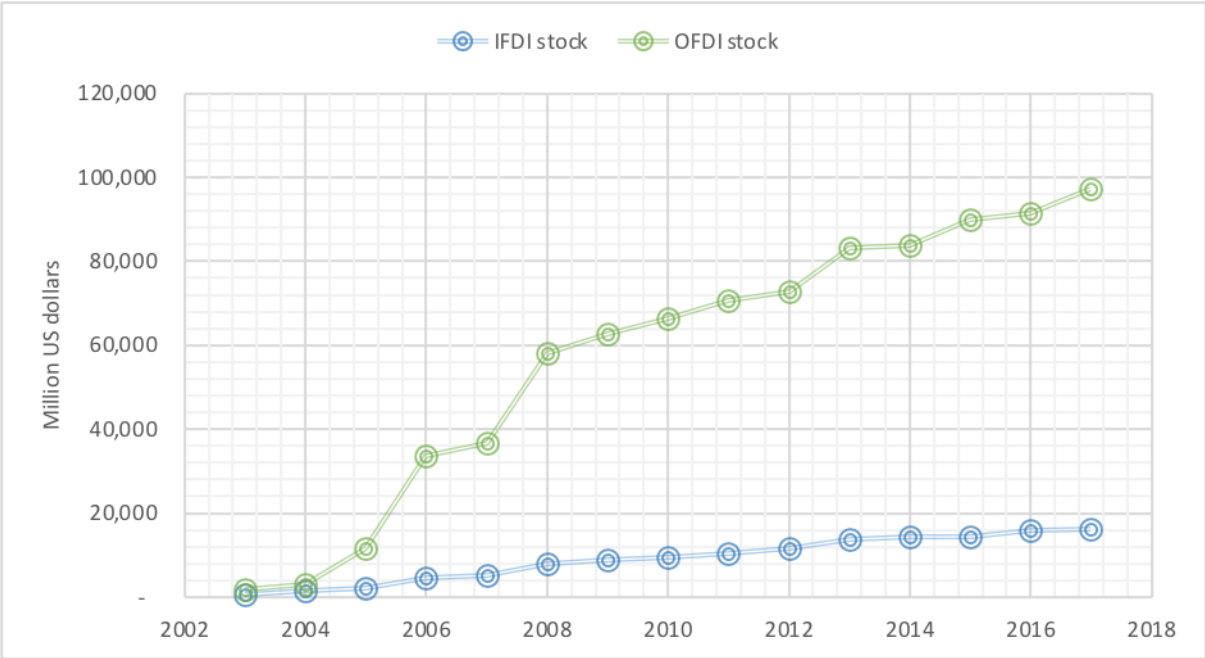
Figure B12: Kuwait: Destination of Non-Oil Exports, 2018



Source: Authors' own elaboration on ITC Trade Map

Notes: Countries depicted here add up to 98 percent of total non-oil exports.

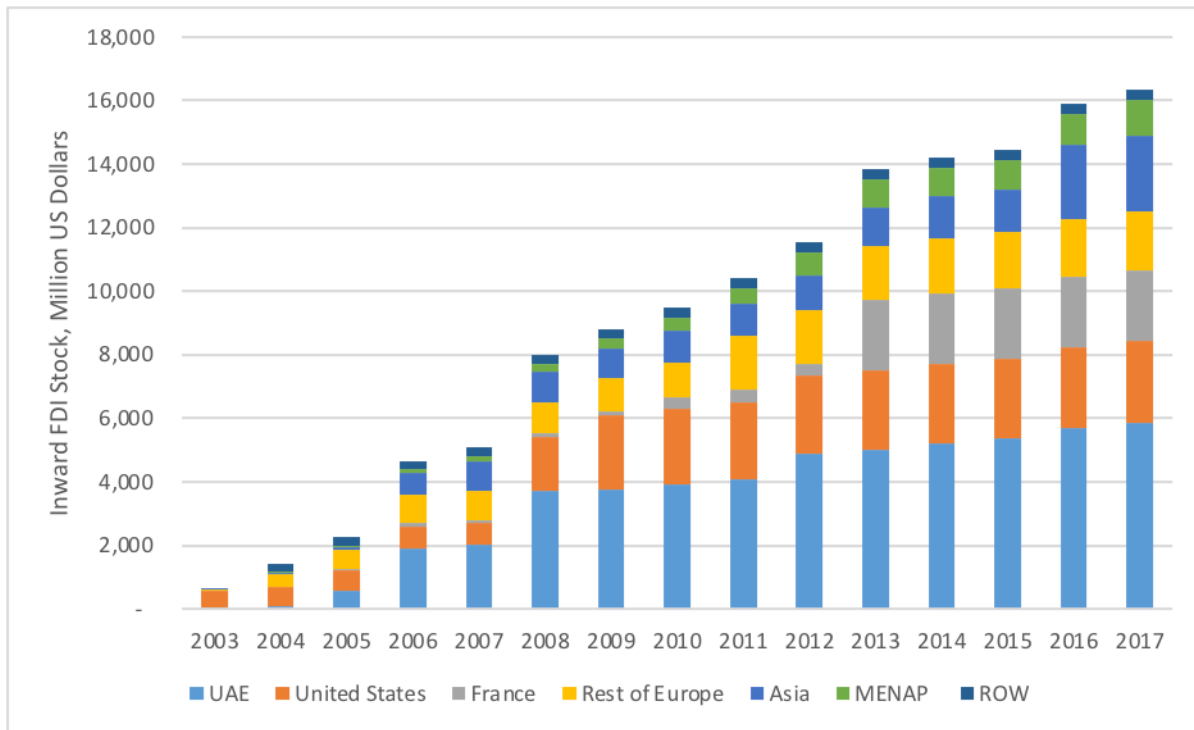
Figure B13: Kuwait: Total FDI Stocks (Greenfield), 2003–17



Source: Authors' own elaboration on FT fDi Markets.

Notes: Total accumulated flows of IFDI and OFDI in million US dollars.

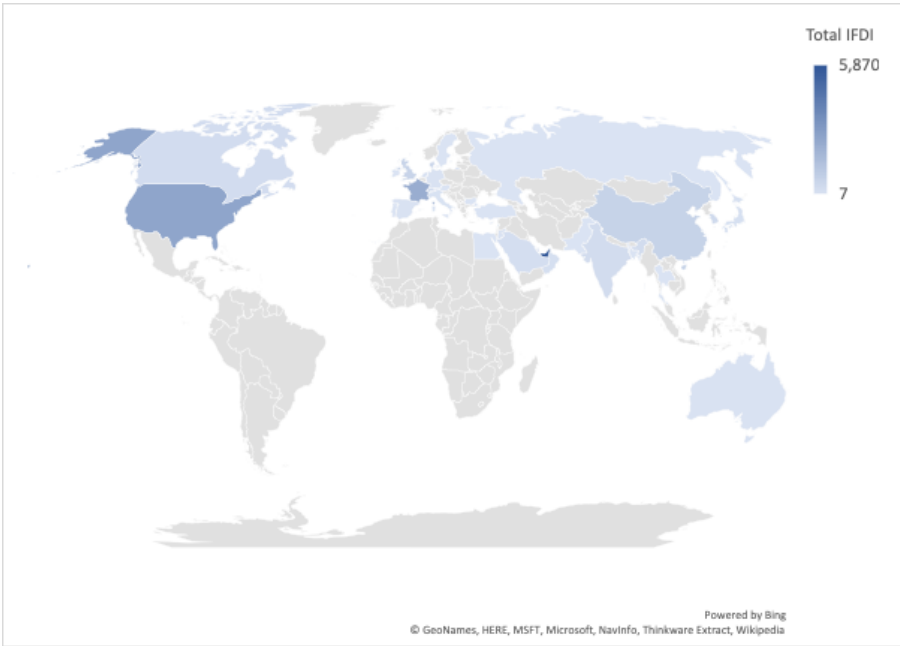
Figure B14: – Kuwait: IFDI Stock (Greenfield) by Year and Country of Origin, 2003–17



Source: Authors' own elaboration on FT fDi Markets.

Notes: By main sending countries and macro-regions, cumulative stock of greenfield investment in million US dollars. Own aggregation of countries into groups: Rest of Europe (14): UK, Denmark, Switzerland, Netherlands, Italy, Spain, Germany, Luxembourg, Ireland, Austria, Bulgaria, Portugal, Sweden, Cyprus. Asia (8): China, Singapore, South Korea, India, Hong Kong, Japan, Bangladesh, Thailand. MENAP (Middle East and North Africa plus Pakistan) (9): Qatar, Bahrain, Saudi Arabia, Oman, Jordan, Lebanon, Turkey, Pakistan, Egypt. ROW (rest of world) (3): Canada, Russia, Australia.

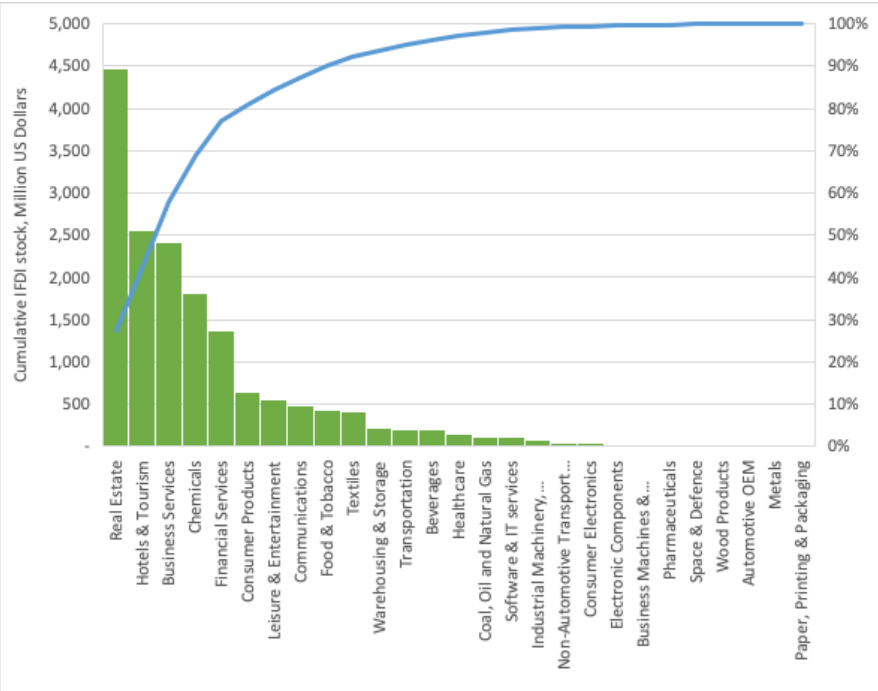
Figure B15: Kuwait: Map of IFDI Stock (Greenfield) by Country of Origin, 2003–17



Source: Authors' own elaboration on FT fDi Markets

Notes: Countries of origin, cumulative stock of greenfield investment, in million US dollars (100 percent of total IFDI).

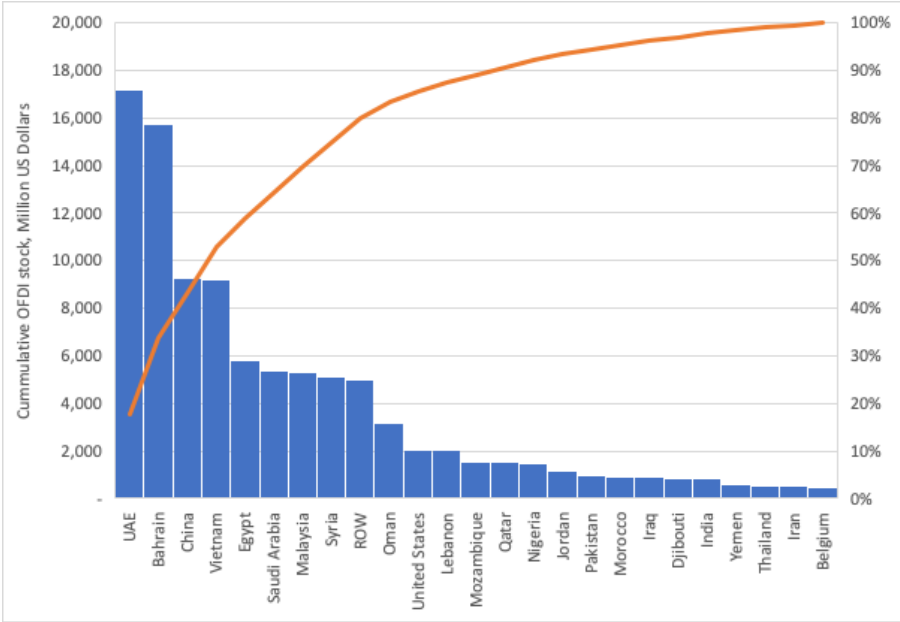
Figure B16: Kuwait: IFDI Stock (Greenfield) by Recipient Sector, 2003–17



Source: Authors' own elaboration on FT fDi Markets

Notes: By receiving sector, cumulative stock of greenfield investment 2003-17, in million US dollars. Includes a Pareto curve.

Figure B17: Kuwait: OFDI Stock (Greenfield) by Destination Country, 2003–17

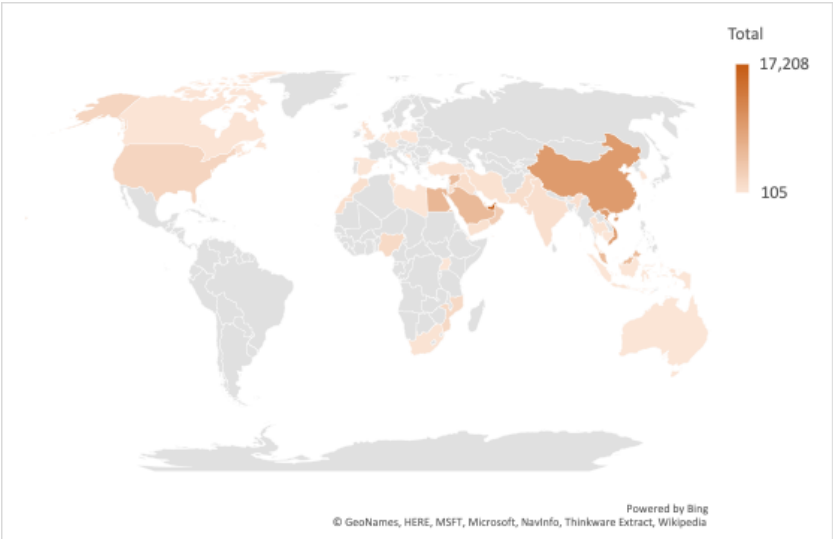


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rice: Authors' own elaboration on FT fDi Markets

Notes: Countries of destination, cumulative stock of greenfield investment abroad 2003-17, in million US dollars. Includes a Pareto curve.

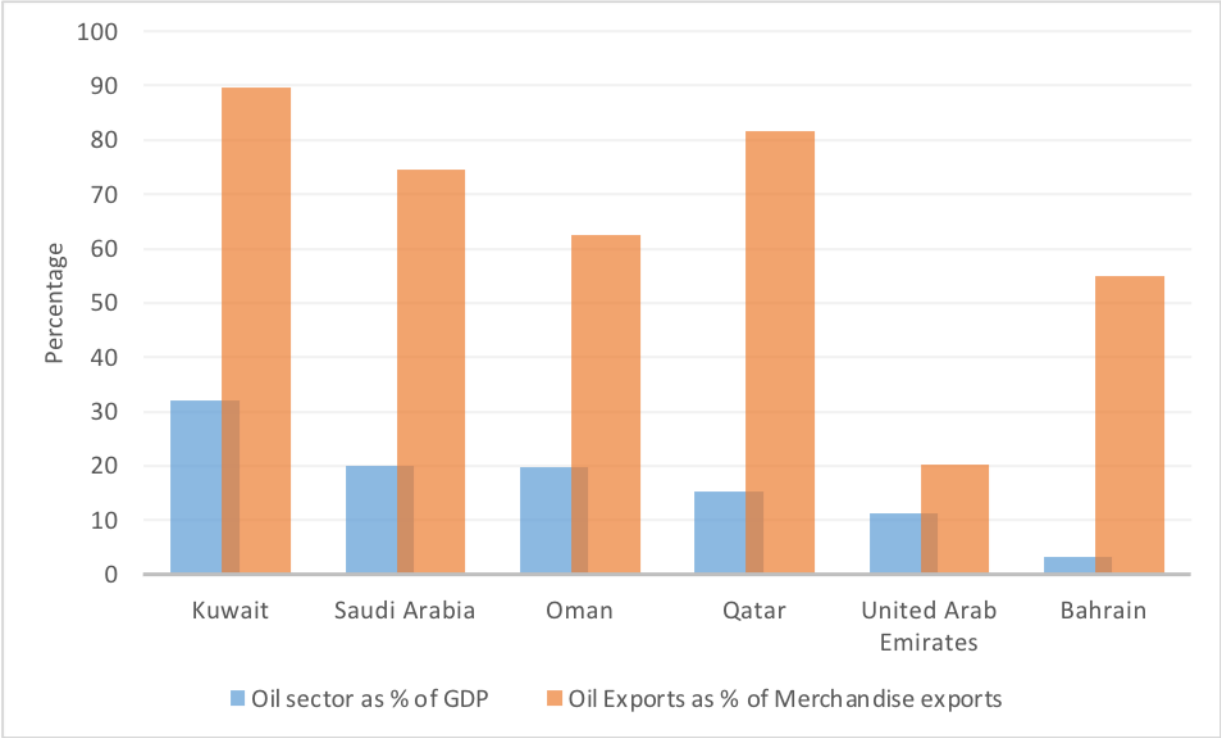
Figure B18: Kuwait: OFDI Stock (Greenfield) by Destination Country, 2003–17



Source: Authors' own elaboration on FT fDi Markets

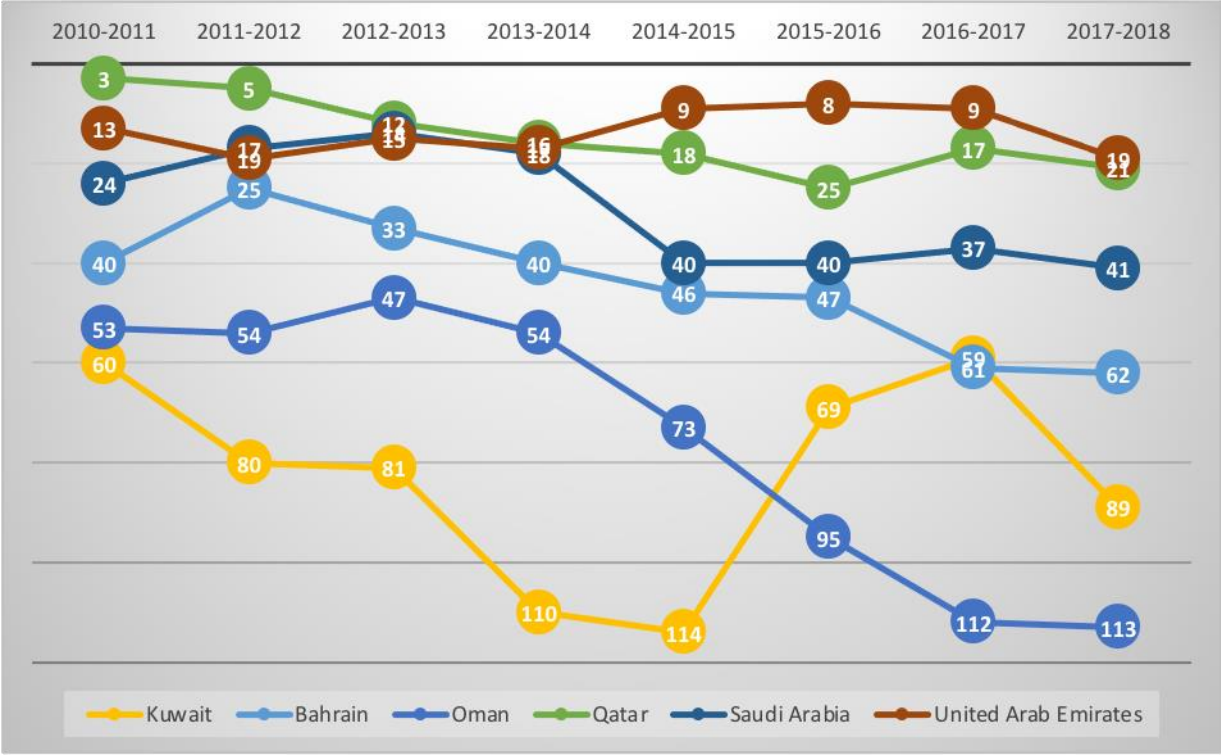
Notes: Countries of destination, cumulative stock of greenfield investment abroad 2003-17, in million US dollars. Values shown represent 98 percent of total OFDI.

Figure B19: GCC: Measures of Economic Diversification



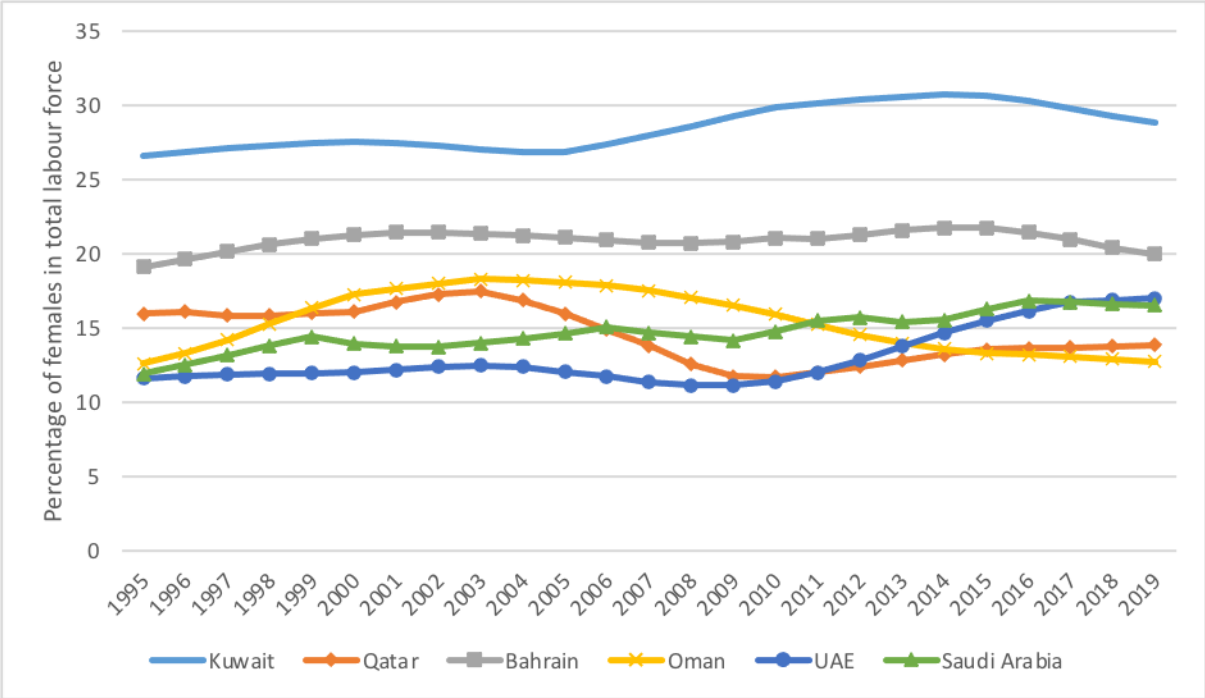
Source: Authors' own elaboration on World Bank Indicators

Figure B20: GCC: Intensity of Local Competition, 2010–18



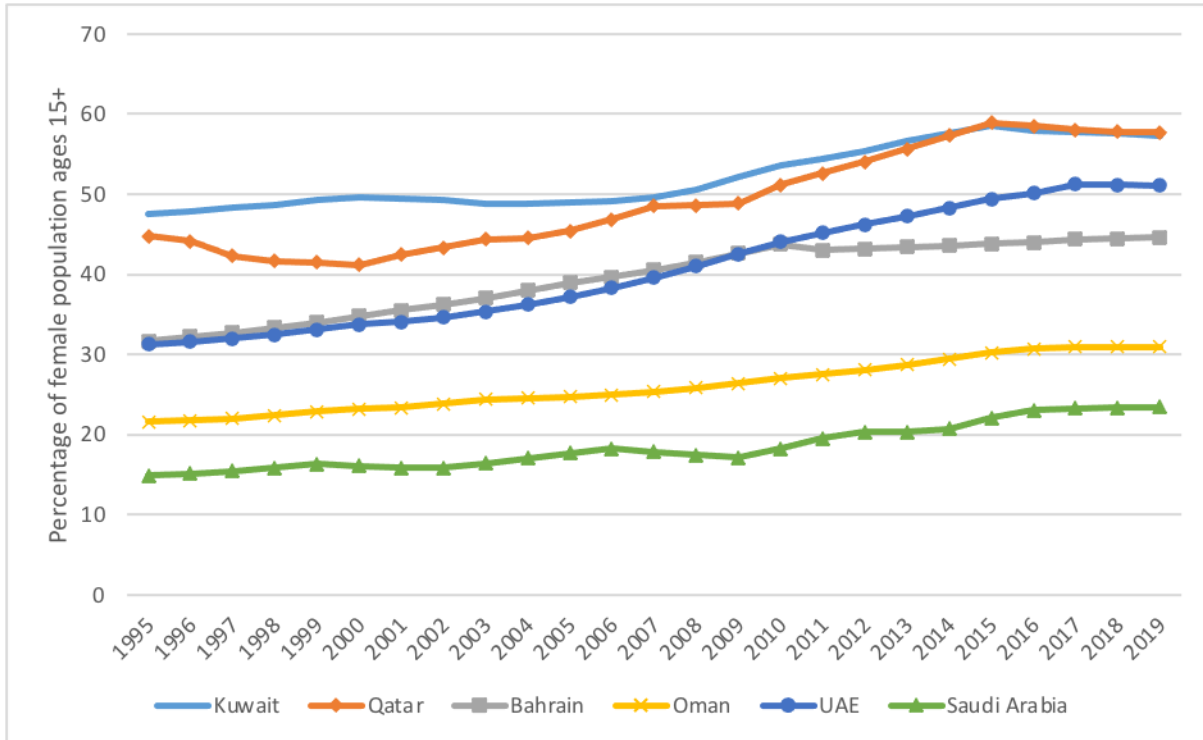
Source: Authors' own elaboration on the Global Competitiveness Index Historical Dataset © 2007–2017 World Economic Forum | Version 20171003.

Figure B21: GCC: Females in Labour Force, 1995–2019



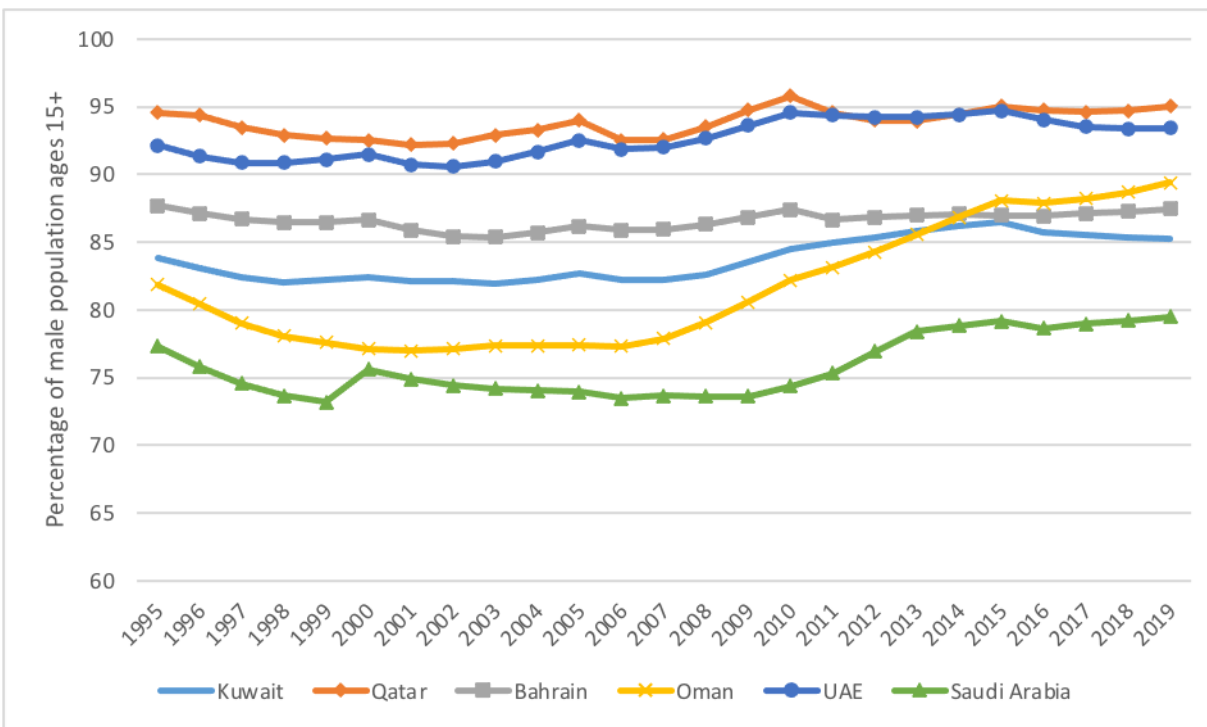
Source: Authors' own elaboration on World Bank Indicators

Figure B22: GCC: Female Labour Force Participation Rate, 1995–2019



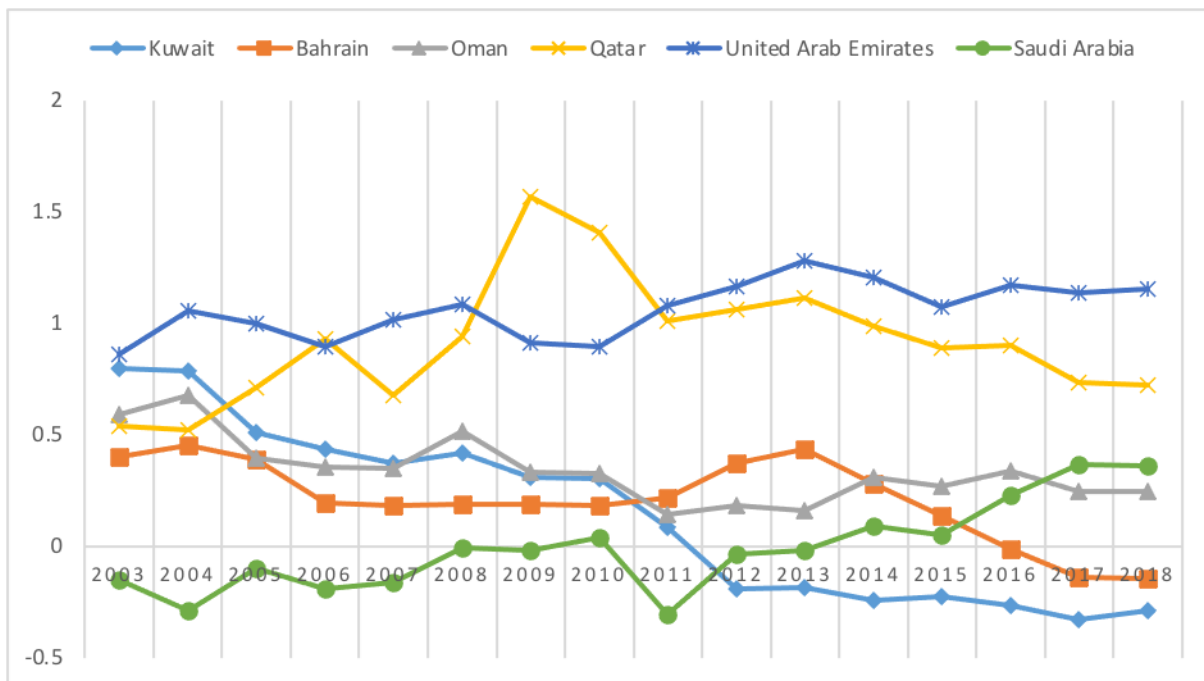
Source: Authors' own elaboration on World Bank Indicators

Figure B23: GCC: Male Labour Force Participation Rate, 1995–2019



Source: Authors' own elaboration on World Bank Indicators

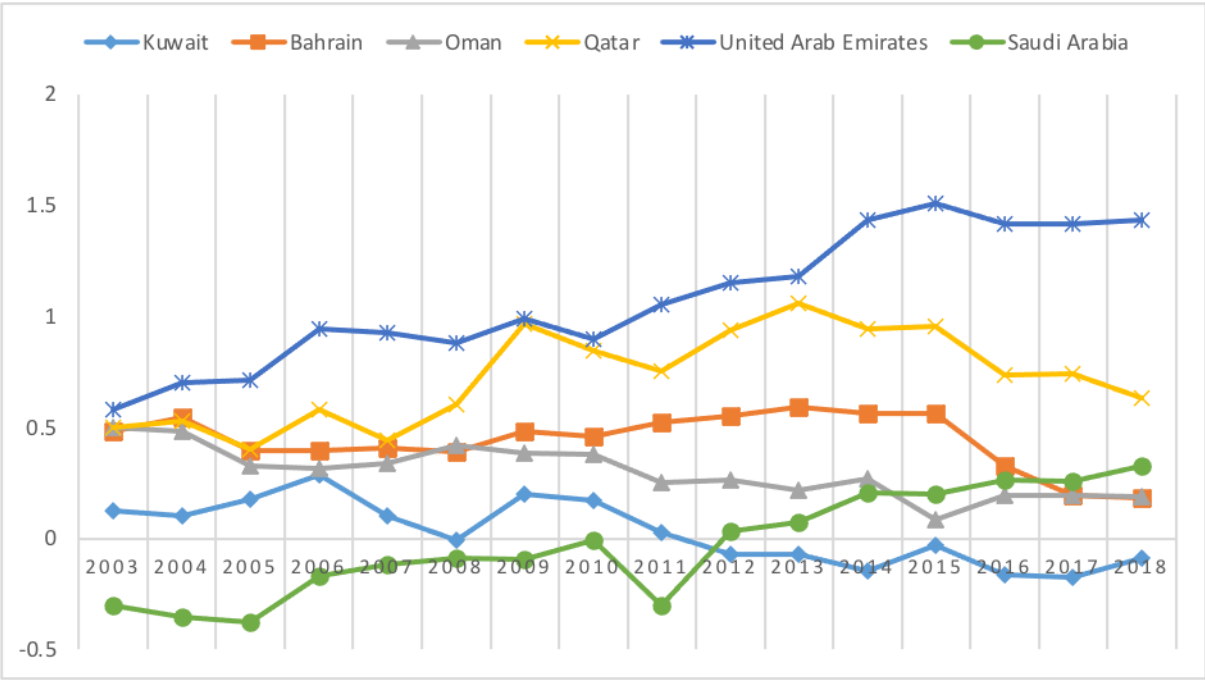
Figure B24: GCC: Control of Corruption, 2003–17



Source: Authors' own elaboration on World Governance Indicators, World Bank

Notes: 'Control of corruption' captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, that is, ranging from approximately -2.5 to 2.5.

Figure B25: GCC: Government Effectiveness, 2003–17



Source: Authors’ own elaboration on World Governance Indicators, World Bank

Notes: ‘Government effectiveness’ captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies. The estimate gives the country’s score on the aggregate indicator, in units of a standard normal distribution, that is, ranging from

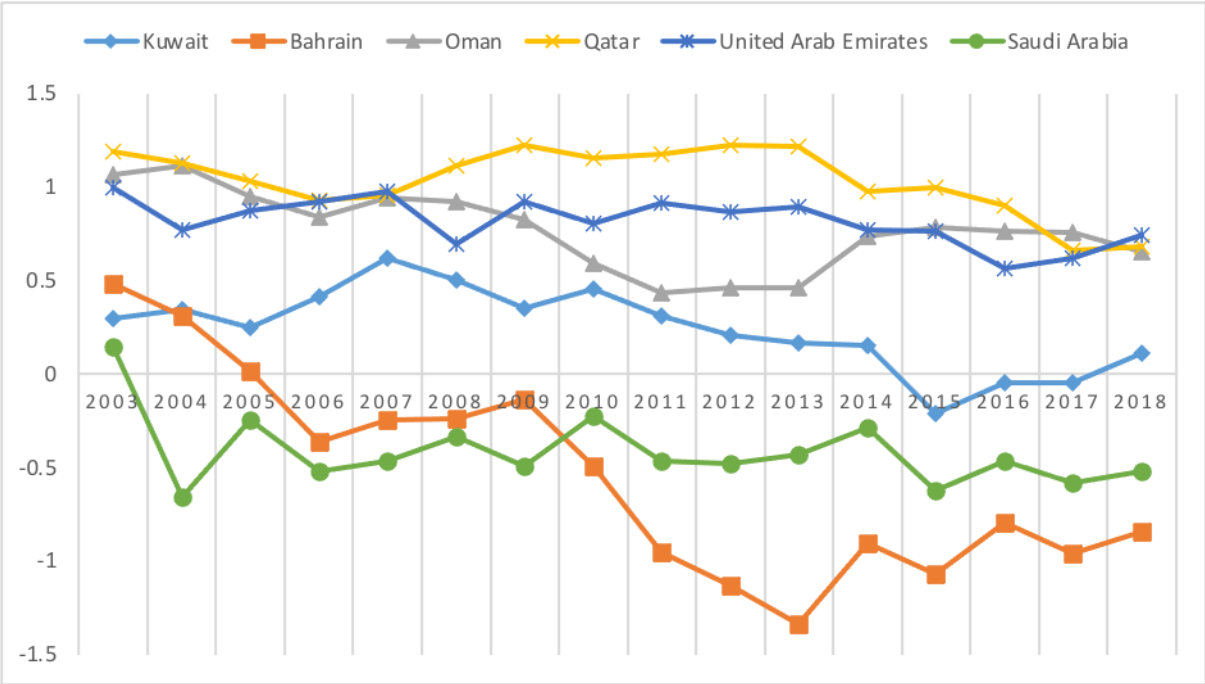
approximately

-2.5

to

2.5.

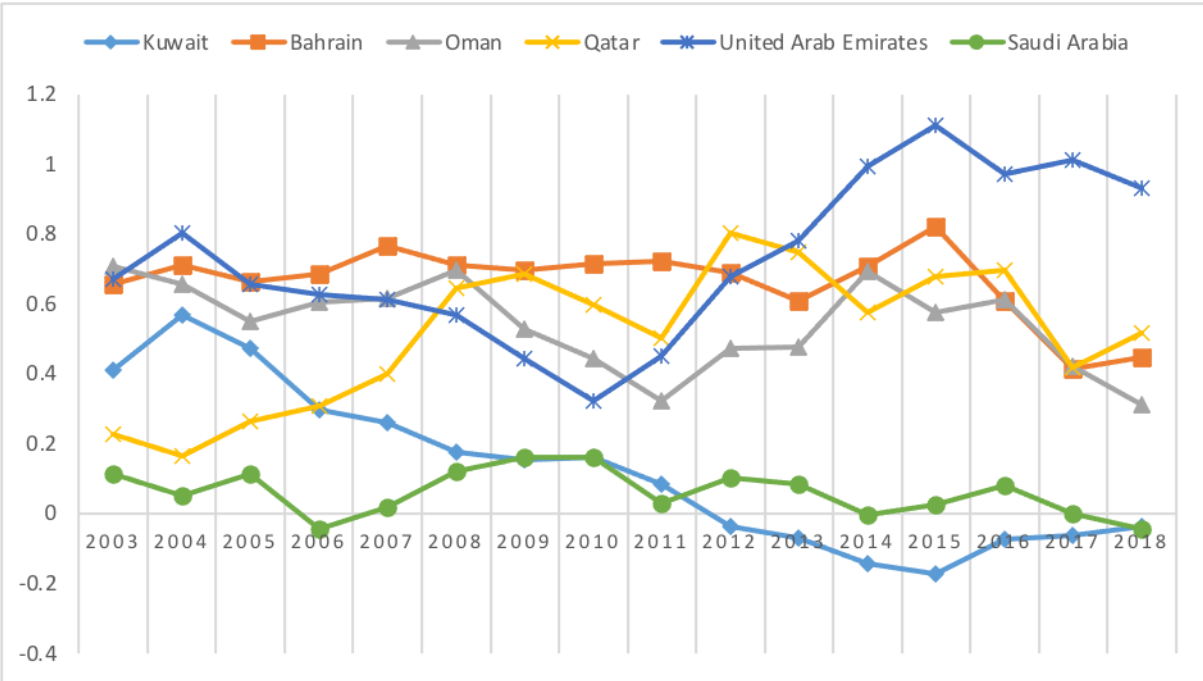
Figure B26: GCC: Political Stability and Absence of Violence/Terrorism, 2003–17



Source: Authors' own elaboration on World Governance Indicators, World Bank

Notes: 'Political stability and absence of violence/terrorism' measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, that is, ranging from approximately -2.5 to 2.5.

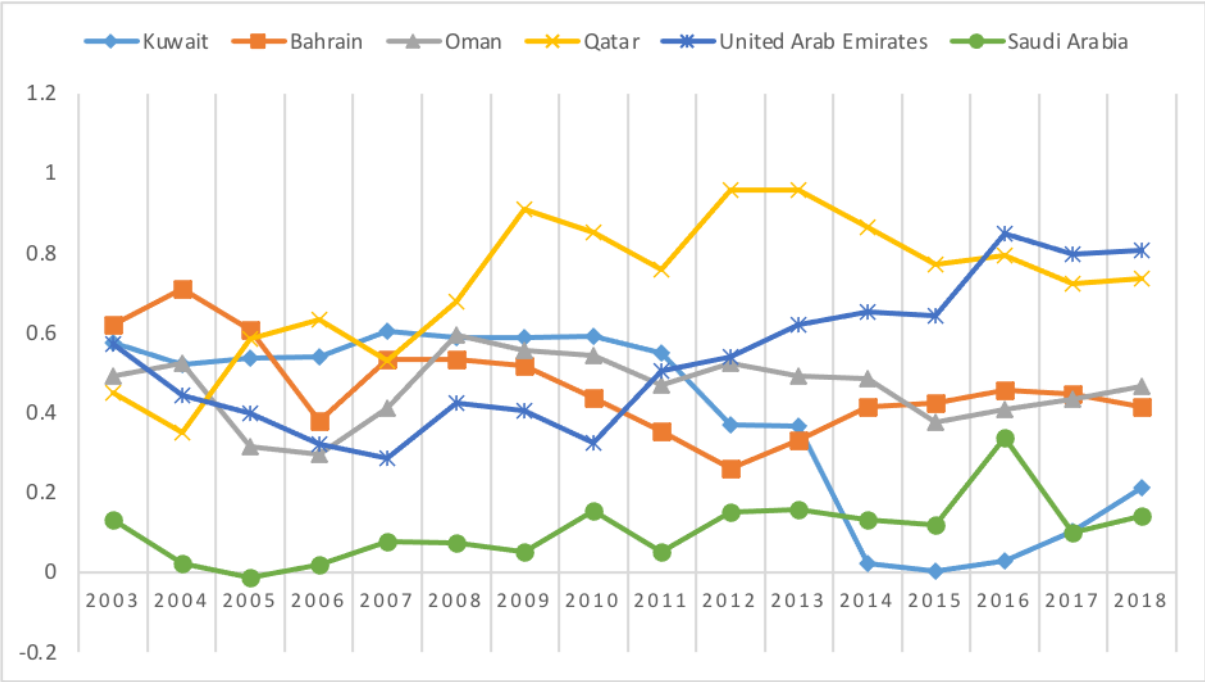
Figure B27: GCC: Regulatory Quality, 2003–17



Source: Authors' own elaboration on World Governance Indicators, World Bank

Notes: 'Regulatory quality' captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, that is, ranging from approximately -2.5 to 2.5.

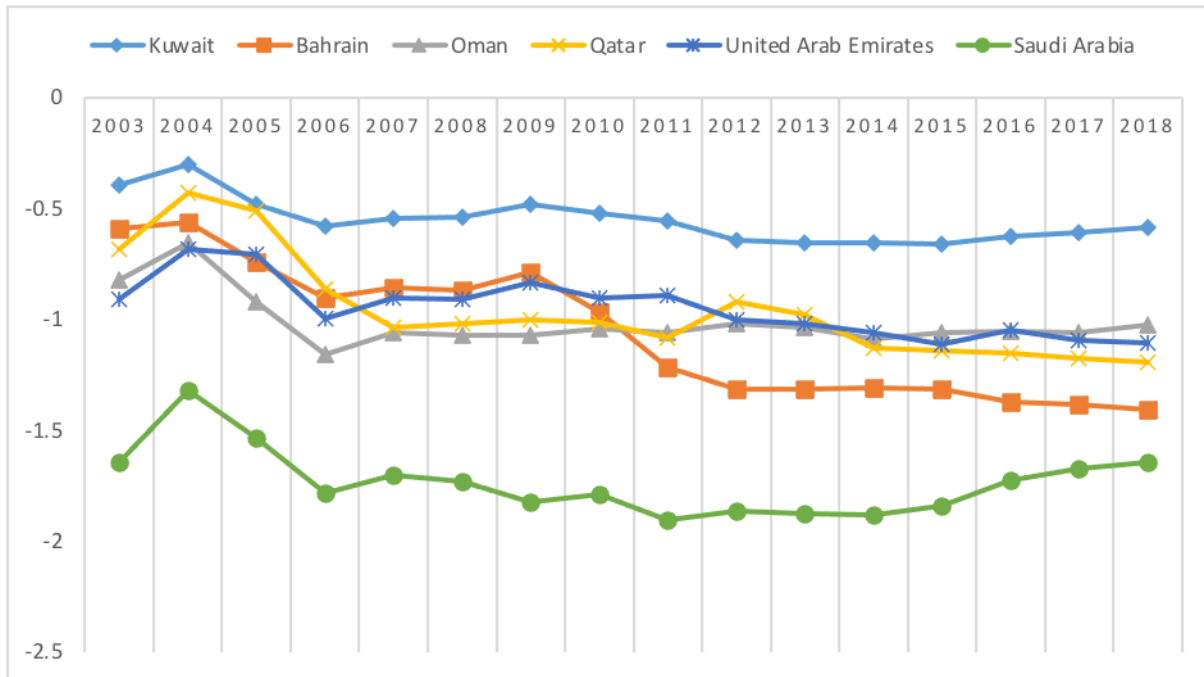
Figure B28: GCC: Rule of Law, 2003–17



Source: Authors' own elaboration on World Governance Indicators, World Bank

Notes: 'Rule of law' captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police and the courts, as well as the likelihood of crime and violence. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, that is, ranging from approximately -2.5 to 2.5.

Figure B29: GCC: Voice and Accountability, 2003–17



Source: Authors' own elaboration on World Governance Indicators, World Bank

Notes: 'Voice and accountability' captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association and a free media. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, that is, ranging from approximately -2.5 to 2.5.

Appendix C – Survey Questions

<p>The questionnaire of the project ‘Towards promoting private R&D investment in Kuwait’ in collaboration with London School of Economics (LSE)</p>	<p>استبيان مشروع "نحو تشجيع القطاع الخاص للاستثمار في البحث والتطوير في دولة الكويت" بالتعاون مع جامعة لندن للاقتصاد والعلوم السياسية.</p>
<p>First KISR would like to thank you for accepting to fill this questionnaire. The purpose of this survey is to collect data about the R&D and innovation activities of large industrial firms in Kuwait with the purpose of deciding about the priorities and policies that would promote R&D and innovation in the private sector.</p> <p>This interview might take 10-15 minutes. For any inquiries, please contact:</p> <p>Dr. Husam Arman Kuwait Institute for Scientific Research Dr. Samir Abu Rumman Gulf Opinions Center</p> <p>Confidentiality: All the information will be treated strictly confidential and no identity will be disclosed unless you permit. All information gathered by this survey will be held in strictest confidence as per the established rules and regulations governing such survey. Under no circumstances will KDIPA or KISR publish, release or disclose any information on, or identifiable with, individual firms or business units</p> <p>Than You</p>	<p>بداية يتقدم معهد الكويت للأبحاث العلمية بالشكر الجزيل على استجابتكم لتلبية دعوتنا للمشاركة في الاستبيان. الهدف من هذه المسح هو جمع معلومات حول أنشطة البحث والتطوير والابتكار عند الشركات الكبيرة في الكويت بهدف تحديد الأولويات والسياسات التي من شأنها تشجيع القطاع الخاص على البحث والتطوير والابتكار.</p> <p>من المتوقع أن تستغرق مدة الإجابة ما بين 10-15 دقيقة.</p> <p>في حال وجود أية استفسارات، يمكن التواصل مع :</p> <p>د. حسام عرمان معهد الكويت للأبحاث العلمية د. سامر أبو رمان مركز الآراء الخليجية</p> <p>خصوصية وسرية المعلومات</p> <p>المعلومات التي يتم جمعها من قبل هذه الدراسة ستكون في سرية تامة حسب القوانين واللوائح الضامنة لهذه المسوح ، ولن يقوم معهد الكويت للأبحاث العلمية تحت أي ظرف من الظروف بنشر أو الإفصاح عن أي معلومات تتعلق بشركة بعينها أو وحدة أعمال محددة.</p> <p>وتقبلوا فائق التقدير والاحترام</p>

Part One: Information about R&D and innovation		أولاً: معلومات متعلقة بالبحوث والتطوير والابتكار
1. Has your enterprise invested in any of the following activities in the last three years?	Y/N	1. هل نفذت شركتكم أي من الأنشطة الابتكارية التالية خلال الأعوام الثلاثة الماضية:
• Acquisition of extramural R&D		• الحصول على البحث والتطوير من خلال جهة خارجية
• Acquisition of machinery, equipment & software		• الحصول على آلات أو معدات أو برمجيات
• Acquisition of other technologies (e.g. purchase patent)		• الحصول على تكنولوجيا أخرى (مثل شراء براءة اختراع)
• Training for innovative activities		• تدريب بهدف الابتكار
• Marketing for new product/processes		• تسويق للإبتكارات الجديدة
• Workplace decision making (e.g. strategy)		• اتخاذ قرارات متعلقة ببيئة العمل (مثل استراتيجية الشركة)
• External relations (e.g. partnerships)		• علاقات خارجية (مثل شراكات)
• Others (e.g. design products).....		• نشاطات أخرى (مثل تصميم منتجات).....
• Internal R&D (If Yes, answer below)		• البحوث والتطوير الداخلية (إذا نعم أجب التالي)
- What kind of R&D facility does your firm have internally?		- ما هي الجهة المختصة بالبحوث والتطوير في الشركة؟
- How many R&D employees does your firm employ?		- كم عدد الموظفين العاملين في البحوث والتطوير؟
- Please estimate the amount of expenditure on R&D last year?		- الرجاء اعطاء قيمة تقديرية لاجمالي الانفاق على البحوث والتطوير خلال العام الماضي
2. What of the following barriers has your enterprise encountered in doing (not doing) R&D? (if YES: high/medium/low/no effect)	H/M /L/N	2. ما هي المعوقات التي واجهتها شركتكم في القيام (أو عدمه) في البحث والتطوير؟ حدد صعوبته وأثره (عالي / متوسط / منخفض/بلا تأثير)
Cost factors		عوامل التكلفة
• Lack of funds within your enterprise or group		• نقص الأموال داخل شركتكم أو مجموعتكم
• Lack of finance from outside your enterprise		• نقص التمويل من مصادر خارج شركتكم
• Costs too high		• تكاليف عالية جداً
Knowledge factors		عوامل المعرفة
• Lack of qualified personnel and skills		• عدم وجود الموظفين المؤهلين والمهارات
• Lack of information on technology		• عدم وجود معلومات عن التكنولوجيا
• Lack of information on markets		• عدم وجود معلومات عن الأسواق
• Difficulty in finding R&D cooperation partners		• صعوبة إيجاد شركاء في مجال البحث والتطوير
Market factors		عوامل السوق
• Market dominated by established enterprises		• السوق تهيمن عليه الشركات القائمة
• Uncertain demand for innovative goods/services		• الطلب غير المتوقع على السلع أو الخدمات المبتكرة
Regulatory factors		العوامل التنظيمية

• Government regulation		القوانين الحكومية
• International regulation		القوانين الدولية
Other (please specify)		غير ذلك (يرجى التحديد).....
3. Could you provide further comments on the obstacles above that matter the most to your enterprise choice?		3. يرجى إضافة تعليقات إضافية حول العوائق أعلاه التي تهم شركتكم بشكل كبير؟
4. What proportion of your enterprise's employees are educated to degree level in STEM? [%]		4. ما نسبة موظفي شركتكم الذين يحملون شهادات في موضوعات العلوم والتكنولوجيا والهندسة والرياضيات؟ [%]
5. What is percentage of your staff who have graduated from foreign universities? [%]		5. ما هي نسبة الموظفين الذي تخرجو من جامعات أجنبية مقارنة بالجامعات محلية؟ [%]
6. What in your opinion are the points of weaknesses (if exist) of local universities vis a vis foreign ones?		6. ما هي في رأيك نقاط الضعف (إن وجدت) في الجامعات المحلية مقابل الجامعات الأجنبية؟
7. Does your enterprise stimulate the internal generation from its employees of new ideas/creativity?	Y/N	7. هل تحفز شركتكم الموظفين داخلها على الإبداع والإتيان بأفكار جديدة باستخدام أي من الآتي؟
• Brainstorming sessions		• جلسات العصف الذهني
• Inter-functional work teams		• فرق العمل متعددة الوظائف
• Job rotation within the enterprise (or group)		• تناوب الوظيفة بين دوائر الشركة (أو المجموعة)
• Financial incentives		• حوافز مالية
• Non-financial incentives (e.g. free time)		• الحوافز غير المالية (مثل وقت الفراغ ، شكر رسمي)
• Other (please specify)		• غير ذلك (يرجى التحديد).....
8. Has your enterprise involved in any of the following R&D cooperation activities with research institutes or academia?	Y/N	8. هل شاركت شركتكم في أي من أنشطة التعاون في البحث والتطوير التالية مع معاهد البحوث أو الأوساط الأكاديمية؟
• Informal contacts		• التواصل غير الرسمي
• Internships and student dissertations		• التدريب الداخلي وأطروحات الطلاب
• Students recruitment for innovation projects		• توظيف الطلبة لمشاريع الابتكار
• Publications in scientific magazines/conferences		• المنشورات في المجلات / المؤتمرات العلمية

• Testing and standards		• الاختبارات والمعايير
• Use of licensing of university held patents		• استخدام تراخيص براءات الاختراع من الجامعة
• Problem-solving/consulting by university staff		• مهام استشارية من قبل موظفي الجامعة
• Joint R&D activities		• أنشطة البحث والتطوير المشتركة
• Other (please specify)		• غير ذلك (يرجى التحديد)
9. Has your enterprise received any public financial support for investing in R&D/innovation activities? (Y/N) If YES, could you indicate the source?		9. هل تلقت شركتكم أي دعم مالي عام للاستثمار في أنشطة البحث والتطوير أو الابتكار بشكل عام؟ إذا كانت الإجابة نعم ، هل يمكن أن تشير إلى المصدر؟
10. Are you aware of government policies for stimulating R&D and innovation in Kuwait? Y/N If YES, could you indicate which?		10. هل أنتم على علم بسياسات الحكومة لتحفيز البحث والتطوير والابتكار في الكويت؟ إذا كانت الإجابة نعم ، هل يمكن أن تشير إلى أي منها؟
11. Do you think that investing in R&D is (would be) important for the future growth of your enterprise? (Y/N) If YES could you give an example of a successful effort/initiative?		11. هل تعتقد أن الاستثمار في البحث والتطوير سيكون (مهماً) لنمو شركتكم في المستقبل؟ هل عندكم مثال لمبادرة أو مشروع ناجح قمتم به مؤخراً
12. Considering Kuwait context, what in your opinion should the government do to help private business firms to invest in R&D and innovation? Please mention the top 3.	Y/N	12. بالنظر إلى سياق الكويت ، ما هو برأيكم الدور الذي ينبغي أن تقوم به الحكومة لمساعدتكم على الاستثمار في البحث والتطوير والابتكار؟ يرجى ذكر أهم 3 أشكال للدعم.
• R&D tax credits		• ائتمانات ضريبية للبحث والتطوير
• Patent Box (lower rate of Corporation Tax to profits earned from its patented inventions)		• صندوق براءات الاختراع (تخفيض الضريبة للأرباح المحققة من ابتكارات حاصلة على براءة اختراع)
• R&D grants		• منح البحث والتطوير
• Industry-universities networking programs		• برامج التواصل بين الجامعات والصناعة
• IP protection support		• دعم حماية الملكية الفكرية
• Sponsor expert from foreign universities		• استقدام الخبراء الخارجيين من الجامعات الأجنبية
• International research networks		• شبكات البحوث الدولية
• Other (please specify)		• غير ذلك (يرجى التحديد)

13. Further comments, if any.	13. يرجى إضافة أية تعليقات ، إن وجدت.
14. Could we follow up in case we need further clarification/information?	14. هل يمكننا التواصل معكم في حالة احتياجنا لمزيد من التوضيحات أو المعلومات؟
Part two:: General information	ثانياً: معلومات عامة عن الشركة والشخص المقابل
1. Company:	1. اسم الشركة:
2. Sector:	2. القطاع: (اختيارات الصفحة التالية)
6. Date and time:	6. التاريخ والساعة:
7. Short description of the main business activity:	7. وصف مختصر لطبيعة عمل الشركة الرئيسي:
8. Total number of employees:	8. عدد العمال الكلي:
9. Percentage of employees with Uni. degree:	9. نسبة العمالة الحاصلة على شهادة جامعية:
10. Sales Growth for the last 3 years:	10. نسبة نمو المبيعات آخر ثلاث سنوات:
11. Ownership:	11. ملكية الشركة:

