Beyond Oil:
The Political Economy of Saudi–East Asian Industrial Relations, 1953–2013

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Abstract

This thesis investigates the political economy of Saudi–East Asian industrial relations in the past six decades, between 1953 and 2013. The analysis focuses on industrial diversification in Saudi Arabia and how this has affected Saudi Arabia's relations with East Asian states. Accordingly, Saudi–East Asian relations, which have hitherto been understood as consisting of energy producer–consumer relationships, are re-framed as "industrialising–industrialised relationships". This thesis identifies the main dynamics of such relationships as diffusion of industrial technology from East Asian states to Saudi Arabia, which is considered to be a microcosm of a larger collective shift in the global economy, from "divergence" to "convergence" caused by the progress in human resources development (HRD) among developing countries.

In order to capture that dynamics, this thesis develops two concepts: "techno-sovereignty" and "techno-diplomacy". Techno-sovereignty assumes a developing state's pursuit of greater level of self-reliance in industrial technology through investment in HRD and avoidance of dependence on single external source of technology. On the other hand, techno-diplomacy is defined as an advanced state's diplomatic strategy of implementing the transfer of industrial technology to a developing state in order to acquire other types of gain from that state in return.

Saudi Arabia's pursuit of techno-sovereignty has been implemented in two steps: first, to invite foreign direct investment (FDI) from multiple advanced states for establishing industrial production; and, second, to "Saudise" the production over the years through the transfer of knowledge, skills and technologies from the foreign investor to national industrial workers. Saudi–East Asian industrial relations have followed these patterns: Japan has practiced techno-diplomacy towards Saudi Arabia mainly in return for oil; and Taiwan has done so mainly in return for diplomatic recognition – since Taipei has been in competition with Beijing since 1949 regarding its international legitimacy. Those quid pro quo relations have provided Riyadh with strong bargaining chips vis-à-vis Tokyo and Taipei in demanding industrial cooperation from them in the past decades.

Currently, as the focus of industrial diversification in Saudi Arabia shifts from capital-intensive heavy industries to labour-intensive manufacturing industries, the insufficiency in HRD in Saudi Arabia, deriving from the "rentier" nature of its society, increasingly poses obstacles to further progress of the process. Accordingly, East Asian states' contributions to the development of HRD institutions in Saudi Arabia have been coming to the fore in their bilateral industrial relations in addition to the FDI, the trend which is likely to remain important in the coming years.

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Abbreviations

AOC	Arabian Oil Company (Japan)
bpd	barrels per day (oil)
CoE	College of Excellence (Saudi Arabia)
CPC	Chinese Petroleum Corporation (Taiwan)
CPO	Central Planning Organisation (Saudi Arabia)
EDC	Economic Development Committee (Saudi Arabia)
FDI	foreign direct investment
GCC	Gulf Cooperation Council
GOTEVOT	General Organisation for Technical and Vocation Training (Saudi Arabia)
HRD	human resources development
IAC	Islamic Association of China
IJPC	Iran–Japan Petrochemical Company
IOC	international oil company
IR	International Relations
ISI	import-substitution industrialisation
JAIDO	Japan International Development Organisation
JCCME	Japan Cooperation Centre for the Middle East
JICA	Japan International Cooperation Agency
KACST	King Abdulaziz City for Science and Technology
KASP	King Abdullah Scholarship Programme
KAUST	King Abdullah University for Science and Technology
KFUPM	King Fahd University of Petroleum and Minerals
LDCs	least developed countries
MENA	Middle East and North Africa
METI	Ministry of Economy, Trade, and Industry (Japan)
MITI	Ministry of International Trade and Industry (Japan)
MNEs	multinational enterprises
NICDP	National Industrial Clusters Development Programme (Saudi Arabia)
NIEs	newly-industrialising economies
NIS	National Industrial Strategy (Saudi Arabia)
NOC	national oil company
NSC	National Science Council (Taiwan)
OAPEC	Organisation for Arab Petroleum Exporting Countries
ODA	official development assistance
OPEC	Organisation for Petroleum Exporting Countries
OTCA	Overseas Technical Cooperation Agency (Japan)
PRC	People's Republic of China
ROC	Republic of China
RTEI	Riyadh Technical Electronics Institute
R&D	research and development
SABIC	Saudi Arabian Basic Industries Corporation
SAFCO	Saudi Arabian Fertiliser Company

SAGIA	Saudi Arabian General Investment Authority
SANCST	Saudi Arabian National Centre for Science and Technology
SMEs	small and medium-sized enterprises
SOE	state-owned enterprise
SR	Saudi riyal (currency)
TAITRA	Taiwan External Trade Development Council
tpa	tonnes per annum (petrochemical)
TVTC	Technical and Vocational Training Corporation (Saudi Arabia)
WTI	West Texas Intermediate
WTO	World Trade Organisation

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Introduction:

Saudi Arabia's Development beyond Oil and Pivot to East Asia – How Are They Related?

In recent years, we have been witnessing a new Saudi Arabia. The kingdom, which was founded upon the stringent Wahhabi school of Islam some eight decades ago, has been showing many new features which had hardly been imagined in the previous century.[1] Those new features include: the unravelling of the country's close relationship with the US and the concomitant reinforcement of its "Look East" policy seeking stronger ties with Asian powers; a much stronger push towards industrial diversification away from oil in the time of – and in spite of – new oil windfalls, with an increasing amount of capital invested in new, labour-intensive manufacturing industries, even including automobile assemblage; the unprecedented level of state spending on education and research, with a greater emphasis placed on science and technology in order to achieve what is referred to as an "Islamic scientific Renaissance" (النهضة العلمية الإسلامية); and the reconsideration of the country's heavy dependence on foreign expatriate workers, and the struggle to find practical solutions to the problem of rising youth unemployment – which has been seen as

[1] For recent and up-to-date understandings of Saudi Arabia's politics and economy, see Aarts and Nonneman (2005), Niblock (2006), Lacey (2009), Lippman (2012), House (2012), and Haykel, Hegghammer, and Lacroix (2015).

one of the deep-rooted causes of violent Islamism, and mass protests which erupted in the time of the Arab Spring.[2]

These changes have been moving Saudi Arabia into the unknown, where today's common sense can easily fall into tomorrow's misperception. In addition, these multiple changes occurring simultaneously make us question how they are related with each other, and whether they will collide or coexist. Furthermore, it seems that the history of twentieth century Saudi Arabia must be revisited once again because many changes which are becoming visible today are, in fact, the outcomes of the long-term shifts whose origins should be traced back to the past decades when changes were occurring in a more latent manner.

Among them, the two most major changes addressed by this thesis are: (1) Saudi Arabia's pivot to East Asia; and (2) its industrial diversification away from oil. Perhaps, these two are seen by many as novelties today, but are likely to become norms in the coming years – and decades.

Saudi Arabia's Pivot to East Asia

Probably, Saudi Arabia's pivot to East Asia is best understood in the context of the long-term transformation of the global economy. Since the Industrial Revolution, the centre of manufacturing production has been moving across oceans: in the nineteenth century, the

[2] Willis 2012: 337.

centre was in the UK and other West European countries; in the twentieth century, the centre moved across the Atlantic Ocean to North America; and, in the current century, it is moving across the Pacific Ocean to Asia, particularly to East Asia.[3] According to the International Monetary Fund (IMF), the combined GDPs of four major East Asian economies in 2013 amounted to $16.16 trillion, consisting of China's $9.46 trillion, Japan's $4.89 trillion, South Korea's $1.30 trillion, and Taiwan's $0.48 trillion.[4] Collectively, they were almost on a par with the GDP of the US ($16.76 trillion).

The amount of wealth in these East Asian economies is likely to far exceed that in the US by the middle of the century as their combined populations (over 1.5 billion) are about five times larger than that of the US (slightly above 300 million).[5] Given such currently ongoing re-orientation of the global economy, it is no surprise that any state in the world has begun practising a "pivot" to East Asia in order to benefit from its stronger trade and investment links with East Asian economies.

Saudi Arabia's pivot to East Asia, which has also been called its "Look East" policy, initially attracted media attention when the previous king Abdullah paid a visit to Beijing in January 2006.[6] It was Abdullah's first foreign visit outside the Middle East region after his enthronement in the previous summer. Since then, Saudi Arabia's economic exchanges with East Asian countries – not only China but also Japan, South Korea, and Taiwan – have

[3] "The Future of Factory Asia: A Tightening Grip", *The Economist*, 14 March 2015.
[4] International Monetary Fund, "World Economic Outlook Database", October 2014, http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/index.aspx [accessed 1 December 2014].
[5] Central Intelligent Agency, World Factbook, https://www.cia.gov/library/publications/the-world-factbook/ [accessed 1 October 2014].
[6] Anand Giridharadas, "Saudi Arabia Pursues a 'Look East Policy'", *The New York Times*, 26 January 2006.

grown rapidly.[7] As a result, Saudi–East Asian relations, and more generally Gulf–Asia relations, gained high topicality in the intellectual sphere, with a number of scholars, journalists, and think-tank researchers beginning to investigate these emerging links.

For instance, the Gulf Research Centre (GRC), a Geneva-based think-tank, annually hosts the Gulf Research Meeting (GRM) at the University of Cambridge. Gulf–Asia relations have been its regular workshop theme since its very first meeting in 2010. The outcomes of these workshops have already been published in two edited volumes: *Asia–Gulf Economic Relations in the 21st Century: The Local to Global Transformation* (2013) edited by Tim Niblock, and *Security Dynamics of East Asia in the Gulf Region* (2014), coedited by Niblock and Yang Guang. In addition, the GRC has been issuing the *Gulf–Asia Research Bulletin* since 2007; which is probably the first research periodical dedicated to this theme. Christopher Davidson, a scholar at the Durham University in the UK, also pioneered this field with his book *The Persian Gulf and Pacific Asia: From Indifference to Interdependence* (2010), in which he examines the relationships between Gulf Cooperation Council (GCC) states and three East Asian states – China, Japan, and South Korea – in a comprehensive manner, analysing both their economic and political aspects. Gulf–Asia relations have increasingly been major topics of enquiry in the US too. For instance, the Middle East Institute in Washington D. C. has been running the Middle East–Asia Project (MAP) since 2012, issuing the *MAP Bulletin* on a regular basis.[8]

[7] For the snapshots of Saudi–East Asian relations after 2006, see Yamada (2013).
[8] Middle East Institute, "Middle East–Asia Project", http://www.mei.edu/map-project [accessed 1 December 2014].

As a result, excellent collections of hard facts have already been accumulated in this field while these facts had previously been kept only within the circles of practitioners like policymakers and businesspeople. Accordingly, as the studies of Gulf–Asia relations become richer in facts, a greater number of political scientists are drawn to the field too with the intent to use these facts to test their theories: to assess, to what extent, the existing theories can explain Gulf–Asia relations; and to consider, if they are unable to do so in a sufficient manner, how to contrive new, more effective approaches.

The Centrality of Energy to the Analysis of Gulf–Asia Relations

The major trait of the current scholarship on Gulf–Asia relations is the centrality of energy to the analysis. Saudi–East Asian relations are often considered to exemplify the relationships between a major oil-exporting state and major oil-importing states. This, doubtless, derives from the indispensability of energy trades to both Saudi Arabia's and East Asian states' economies. According to the statistics of BP, Saudi Arabia was the world's largest producer of crude oil in 2013, with its production level at 11.5 million barrels per day (bpd); followed by Russia's 10.8 million bpd and the US' 10.0 million bpd. On the other hand, the four major East Asian economies (China, Japan, South Korea, and

Taiwan) consumed 17.2 million bpd of crude oil in total in 2013, which was only slightly less than the consumption in the US (19.0 million bpd).[9]

The revenues made by the export of oil enormously support Saudi Arabia's state finance. Saudi Arabia is a "rentier state", which depends on oil rents for 89% of its state revenue (2013).[10] Thus, ensuring demands for its oil in foreign markets is a paramount concern for Saudi policymakers as it is central to the regime's survival: this is sometimes referred to as "demand security"; in contrast with what is known as energy security for oil-importing states, which should be put more precisely as "supply security".[11]

In the latter half of the twentieth century, most of the demand for Saudi oil was in Western markets, and Asian markets were still marginal to Saudi Arabia's demand security then. For instance, in 1975, Saudi Arabia's Asia-bound oil exports (mostly to Japan) were only 1.9 million bpd, or 29% of its total exports.[12] However, following the two oil crises in the 1970s, West European states began diversifying the sources of their oil imports away from the Gulf to other regions such as from the North Sea, the former Soviet Union, and North Africa; they also increased the share of nuclear energy in their energy mix.[13] Concurrently, East Asian economies, especially Asian Tiger economies, began rising in the final quarter of the twentieth century, with their increasing demands for oil largely

[9] BP, "Statistical Review of World Energy 2014", http://www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy.html [accessed 1 December 2014].
[10] Luciani 1987; Saudi Arabian Monetary Agency, "Annual Statistics", 16 November 2014, http://www.sama.gov.sa/en-US/EconomicReports/Pages/YearlyStatistics.aspx [accessed 1 December 2014].
[11] Boëthius 2011.
[12] Saudi Arabian Monetary Agency, various years.
[13] Hoogeveen and Perlot 2007: 489–491.

compensating the decline of West European demands. By 2000, Saudi Arabia's Asia-bound oil exports had reached 2.9 million bpd, or 46% of its total exports, almost on a par with its exports to the West.[14] In the first decade of the current century, China's and India's economic growth further added to the Asian demand for oil. In 2013, 5.2 million bpd, or 68% of total Saudi oil exports, were destined for Asia, while the share of the West had declined to 29 % (the US 19% and Europe 10%). Out of 5.2 million bpd of oil, 1.2 million bpd went to Japan, 1.1 million bpd to China, 0.9 million bpd to South Korea, 0.8 million bpd to India, and the remaining 1.2 million bpd to other Asian countries (such as Singapore and Taiwan).[15]

For all four East Asian economies, Saudi Arabia remains their largest crude oil supplier. In 2013, Saudi Arabia provided 33% of Japan's total oil imports, 19% of China's total oil imports, 34% of South Korea's total oil imports, and 35% of Taiwan's total oil imports.[16] Since East Asian economies lack alternative sources of oil imports, comparable to Latin American sources for the US and Russian and North African sources for West European economies, the oil supply from Saudi Arabia and other Gulf sources remains indispensable to East Asian states' energy security.

In short, Saudi Arabia and East Asian states are in need of each other: Saudi Arabia needs East Asian economies for the state's fiscal security; and East Asian states need Saudi

[14] Saudi Arabian Monetary Agency, various years.
[15] US Energy Information Administration, "Saudi Arabia", 10 September 2014.
[16] US Energy Information Administration, "Japan", 31 July 2014; "China", 4 February 2014; "South Korea", 1 April 2014; Bureau of Energy, Ministry of Economic Affairs, Republic of China, "Tsuichin Yuanyu Chinkou Laiyuan", 13 November 2014.

oil for their energy supply security. This makes it quite reasonable that the oil trade has been considered to be central to Saudi–East Asian relations: the picture is very clear.

Saudi Arabia's Economic Diversification away from Oil

Nevertheless, while energy remains central to Saudi–East Asian relations, their non-oil economic relations have also become more active in recent years. In recent years, Saudi Arabia and other GCC states have actively been investing in the diversification of the economy, based on a perception that the oil monoculture economy is not sustainable towards the future. As J. E. Peterson once put, they are now seeking "life after oil".[17] However, in comparison with the clear political-economic dynamics of oil trades in Saudi–East Asian relations, the dynamics of their non-oil relations still remain enigmatic, analyses of which largely remain fact-based and lack coherent systematic understanding. As a result, the non-oil relations are often treated only as an auxiliary to the oil trade relations and have not been fully elaborated in their own right.

Perhaps this is partly because theoretical debate on economic diversification in Saudi Arabia and other GCC counties is still on-going. In recent years, there have appeared comprehensive studies of economic development in Saudi Arabia, such as *The Political Economy of Saudi Arabia* (2007) by Tim Niblock (with Monica Malik) and *The Saudi Arabian Economy: Policies, Achievements, and Challenges* (2005; 2010) by Mohammed A.

[17] Peterson 2009.

Ramady. In addition, new terms and concepts have been introduced to capture the recent changes in GCC economies, such as Martin Hvidt's "Dubai model", Steffen Hertog's "island of efficiency", and Matthew Gray's "late-rentierism".[18] These works revisit the classical rentier state theory's pessimistic view of industrialisation: that a state with abundant oil rents does not need to practice industrial policy but only needs to allocate.[19]

We may see more empirical works and theory developments in the coming years as Saudi Arabia and other GCC states have accelerated their industrialisation drive in recent years. For instance, the Saudi government launched the National Industrial Strategy (الاستراتيجية الوطنية للصناعة) in 2010 in order to develop labour-intensive manufacturing industries.[20] The strategy envisions doubling the share of the manufacturing sector in GDP from the current 10% to 20% by 2020.[21] Saudi policymakers frequently call for a need to make a transition to a "knowledge economy" (اقتصاد المعرفة) as well,[22] which has been a buzzword among GCC policymakers in recent years.[23]

The originality of this thesis is to incorporate the recent theoretical discussion regarding economic diversification in Saudi Arabia and other GCC countries into an understanding of Saudi–East Asian relations; and, through that operation, to develop its own theoretical perspective on the process of industrial diversification in Saudi Arabia. In particular, this thesis introduces new concepts such as "production with rentier

[18] Those concepts will be discussed in detail in Chapter 2.
[19] Luciani 1987: 74.
[20] "MOCI to Launch $16bn Industrial Strategy", *Arab News*, 30 April 2010.
[21] National Industrial Clusters Development Programme, "Objectives", http://www.ic.gov.sa/ [accessed 1 October 2014].
[22] "Al-Jasser: Knowledge-Based Economy Vital for Growth", *Arab News*, 5 November 2013.
[23] Ulrichsen 2012.

characteristics" and "rentier society" which enable us to capture the unique dynamics of industrialisation in a resource-dependent Saudi economy from the viewpoint of human resources development (HRD) (these concepts will be discussed in Chapter 2). These concepts go hand in hand with other concepts this thesis develops for explaining Saudi–East Asian non-oil industrial relations, such as "techno-sovereignty", "paradox of the techno-nationalist", and "techno-diplomacy" (these will be discussed in Chapter 1).[24]

With these concepts, the history of Saudi–East Asian non-oil industrial relations between 1953 and 2013 will be described (from Chapter 3 to Chapter 8). The advantage of this thesis in doing so lies in the fact that the thesis uses a swath of the data drawn not only from English-language sources but also from two East Asian-language sources – Japanese and Chinese: the thesis incorporates into the analysis a number of documents in those two languages which have not been translated into English. It also uses some Arabic-language sources, but only in a complementary manner (appearing in footnotes rather than in Bibliography) since much fundamental information about the Saudi economy, and at least that required in this thesis, has already been translated into English.

[24] Because of the "ground-up" nature of theory-building of this thesis, those concepts will inevitably remain suggestive rather than conclusive: they will wait for comparative studies in which they should be tested with more cases beyond Saudi–East Asian relations so that their (anticipated) generalisability will be confirmed or modified. The utility of case studies in developing theories is discussed by George and Bennett (2005). George and Bennett argue that the method of process tracing in case studies enables us to identify the causal mechanism that lies between variables, which is often complex, involves previously unobserved variables, and requires contextual reading (Ibid.: 206).

From Energy Producer–Consumer Relationships to "Industrialising–Industrialised" Relationships

This thesis begins the development of a new analytical framework with revisiting the already-existing one. Just as mentioned above, the current mainstream account of Saudi–East Asian relations sees these relations as the relationships between an energy producer and energy consumers. While such a pattern of relationships is today taken by many for granted, how it was created in the first place is not always questioned. This thesis begins discussion with exploring how these relations have been *embedded* in the overarching structure of the global economy.

In fact, these relations in some sense represent the very nature of the modern global economy that has developed since the age of the Industrial Revolution. The Industrial Revolution that took place in Western Europe in the late eighteenth and early nineteenth century and spread to European offshoots (or "Neo-Europes") around the world thereafter created a hierarchical division of labour in the global economy: industrialised economies (often referred to as the "North") import energy and raw materials from developing economies (the "South") and use them to produce industrial products. While continuous innovation in science and technology has allowed the North to keep advancing in industrial production, the South has remained underdeveloped and monocultural.[25]

[25] While this thesis focuses on the analysis of Saudi Arabia and other resource-exporting economies, other economies in the South are monocultural in other types of commodities such as precious metals and agricultural products.

To put it differently, the energy producer–consumer relationship is a synonym for the relationship between the *underindustrialised* and the *industrialised* parts of the global economy. Of course, not all oil-exporting economies are underindustrialised: there are countries like Norway, Canada, and Australia which are well-industrialised in spite of their resource abundance. However, most oil-exporting countries are *resource-dependent* (i.e. rentier) economies which did not have a chance to industrialise, or could not capture it, before the hierarchical division of labour was imposed upon them.[26]

Previous approaches, such as the dependency theory, the rentier state theory, and the resource curse thesis, assumed that those resource-dependent economies were trapped in underdevelopment *exactly because* they were rich in natural resources – with different hypotheses about the causal mechanisms. Nevertheless, industrial diversification in energy-exporting economies has become increasingly visible in recent years. Saudi Araba is one of the leading cases in the Gulf region, but also the UAE, with Dubai being a global transport and financial hub, have shown signs of economic (if not industrial) diversification. Indonesia, which was a rentier state between 1975 and 1991, and today is seen as one of the promising industrialising economies, would be another interesting case to investigate in terms of the relationship between oil and development.[27] Furthermore, although it is not an oil-rentier, Botswana, a major diamond-exporting country in Sub-Saharan Africa, has drawn the attention of economists to because of its successful development of an IT

[26] The distinction between resource abundance and resource dependence has been increasingly a norm in the analysis of the relationship between oil and development in recent years (Brunnschweiler and Bulte 2008; Kropf 2010). Michael Herb counts over 20 rentier economies in the world that are located in the Middle East and North Africa (MENA), Sub-Saharan Africa, Latin America, and Southeast Asia (Herb 2005: 299).
[27] Rosser 2004; Lewis 2007.

sector.[28] As a greater number of cases today defy the notion of resource curse, economists and policymakers have also begun exploring how governance and policies can possibly turn what had been believed to be a resource curse into a *resource blessing*.[29]

In the previous century, successful cases of industrialisation in the non-Western world were only limited to resource-scarce East Asian economies such as Japan, Taiwan, and South Korea. However, these "rentier economies with production characteristics" are today joining the group of late industrialisers in the global economy. These newly industrialising economies of the current century are often grouped into "emerging economies", or next-in-line "frontier economies".[30] Inter alia, the formation of the G20 in 2008, replacing the G8 as a global economic platform, was an affair that symbolised this new convergence in the global economy,[31] which is today interpreted by many as a paradigm shift rivalled in its scope only by the Industrial Revolution that had created a divergence between the rich and the rest in the first place.[32] Saudi Arabia is one of the nine developing state members in the G20: although it is the only rentier state in the G20, there are two other oil-exporting states (Mexico and Brazil) and one former rentier state (Indonesia) in the group.[33]

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[28] Gelb 2011: 74.
[29] Humphreys, Sachs, and Stiglitz 2007; Lederman and Maloney 2007; Luong and Weinthal 2010; Arezki, Gylfason, and Sy 2011.
[30] "Looking beyond Emerging Markets to 'Frontier' Economies", *Reuters*, 14 December 2012.
[31] Spence 2011.
[32] "Economic History: What Was the Great Divergence?", *The Economist*, 2 September 2013; "Economic Convergence: The Headwinds Return", *The Economist*, 13 September 2014.
[33] Other five developing states members are China, India, South Africa, Turkey, and Argentina.

Seen from this convergence perspective, Saudi–East Asian relations can be understood as being the relationships between an *industrialising* economy and *industrialised* economies in the global economy. Of course, this pattern of relationship is not alternative to the existing pattern of energy producer–consumer relationships, but is *in addition to* them: there are two types of Saudi–East Asian relationships existing at the same time. In other words, they are relationships between *the industrialising with oil* and *the industrialised without oil*. This inevitably makes the analysis of Saudi–East Asian relations presumably convoluted as we need to disentangle the ways in which the two kinds of relationships affect each other.

The Explanandum: What Is Special about Saudi–East Asian Industrial Relations?

This thesis assumes several key features of Saudi–East Asian industrial relations which are worth exploring. First of all, a hidden history of these relations must be revealed. Although some assume that Saudi–East Asian non-oil industrial relations are only a recent phenomenon, they, in fact, have a much longer history: they are almost as old as the energy relations that began in the late 1950s. This is because the origin of Saudi Arabia's industrial diversification dates back to the early 1960s. This thesis identifies 1962 as a year of critical juncture, when Petromin, or the General Organisation for Petroleum and Minerals (بترومين: المؤسسة العامة للبترول والمعادن), was established as Saudi Arabia's first state-owned industrial

enterprise.[34] Since then, Saudi policymakers have sought cooperation from East Asian states and firms for industrialisation in the kingdom. This early attempt at industrialisation is often neglected by rentier state theorists who see industrial diversification in GCC countries as a recent evolution. Such an assumption may be correct in the cases of other GCC countries such as the UAE or Qatar, but it does not apply to Saudi Arabia – as well as Kuwait.[35]Even before facing the pressures of globalisation and the youth unemployment problem in the 1990s, Saudi policymakers had proactively pursued economic diversification. Thus, the analysis must take historical developments into account, which date back to the days of the reign of King Saud (1953–64), the second king of Saudi Arabia.

Second, Saudi–East Asian non-oil industrial relations have involved more than the mere movement of goods and capital: they were more than exporting Toyota cars and Panasonic televisions to Saudi Arabia's oil-rich market; or Korean *chaebol* firms building towers, roads, plants, and other infrastructures to modernise the kingdom's outlook (which are sometime referred to as "rent recycling" and criticised by Marxian scholars as a new form of dependency).[36] This thesis assumes that the nitty-gritty of Saudi–East Asian industrial relations is a transfer of production processes from East Asia to Saudi Arabia, and subsequent diffusions of knowledge, skills, and technologies from East Asian experts to Saudi industrial workers.

The transfer of production processes requires a deeper and longer-term commitment on the part of foreign investors than in the cases of trade and financial investment. It is a

[34] For detailed history of Petromin, see Hertog (2008a).
[35] Industrialisation in Kuwait also traces back to the early 1960s (Crystal 1992; Eltony 2007).
[36] Alnasrawi 1991: 168; Cummings and Hinnebusch 2011: 330.

person-to-person process: foreign investors must bring in technologists from their home country in order to transfer knowledge, skills, and technologies to local workers through co-working.[37] Interestingly, in the case of Saudi–East Asian relations, such process was, in many cases, pre-agreed in the interstate cooperation framework involving governments and firms on both sides. Major East Asian industrial investments in Saudi Arabia have, thus, taken the form of joint ventures, in which East Asian experts and Saudi workers work together and gradually "Saudise" the production through off- and on-the-job trainings as being planned.

Third, in relation to the above point, the state has been highly involved in the process as an actor of technology diffusion. This is not only the case on the recipient side (Saudi Arabia), which has a highly state-capitalist economy, but it is the case on the sending sides (East Asian states) as well. However, the degree of commitment by East Asian states to industrialisation in Saudi Arabia has not been even across time and country. For instance, Japan was generally more committed to industrialisation in Saudi Arabia in the 1970s, the 1990s, and the 2000s, than in the 1960s and the 1980s. On the other hand, Taiwan has been more constantly committed to the process since the 1960s. Such variations in the degree of commitment by the state are further complicated by the preference of private investors. For instance, there were active investments by Japanese firms in Saudi Arabia in the 1970s and the 2000s which were concomitant with the Japanese state's strong encouragement to do so. However, private firms were much more reluctant to invest in Saudi Arabia in the 1990s in spite of the similar, or even higher, level of the commitment

[37] Easterlin 1981: 4.

by the Japanese state to the process. In the case of Taiwan, there was no significant state-business coordination problem before the 1990s when key industrial firms investing in Saudi Arabia were owned by the state under the authoritarian regime. However, the progress of democratisation and privatisation in the 1990s created a coordination problem to Taiwan that was similar to that of Japan.

In addition, the contents of bilateral cooperation have been changing as well. Different industrial sectors have been targeted for investment across time, with the focus shifting from the oil industry in the 1960s, and the petrochemical industry in the late 1970s onwards, to downstream, labour-intensive manufacturing sectors today. In addition, HRD has been increasing its weight in bilateral industrial cooperation in recent years. While foreign investors were only required to train Saudi workers through off- and on-the-job trainings in the past, they are also required by the Saudi authorities to make contributions to the development of HRD institutions in the kingdom too as a part of their corporate social responsibility. For instance, Japanese firms today run three technical colleges in Saudi Arabia specialising in auto mechanics, plastics fabrication, and the maintenance of home appliances, which are administered by the Technical and Vocational Training Corporation (TVTC: المؤسسة العامة للتدريب التقني والمهني) under the Ministry of Labour.[38]

[38] Administration of technical and vocational training schools in the kingdom was transferred from the Ministry of Education to the Ministry of Labour and Social Affairs (then) in 1980 with the creation of the General Organisation for Technical Education and Vocational Training (GOTEVOT), a precursor of the TVTC, under the latter.

Questions

To put the above into the form of questions:

(I) Why were there state-sponsored diffusions of industrial technology from East Asian countries to Saudi Arabia?

(II) Why were the outcomes of these diffusions uneven across time and country?

And, these questions must be further separated into following four sub-questions in order to be answered in an effective and systematic manner.

(i) Why, and how, did Saudi Arabia pursue industrial diversification away from oil?

(ii) Why, and how, did Saudi Arabia seek East Asian states' industrial cooperation?

(iii) Why, and how, did East Asian states cooperate in industrialisation in Saudi Arabia?

(iv) Why, and how, did East Asian private firms invest in Saudi Arabia?

These questions are not only empirically but also theoretically challenging to answer since both industrialisation in Saudi Arabia and East Asian states' industrial cooperation with Saudi Arabia deviate from the assumptions of the conventional wisdoms.

First, regarding industrialisation in Saudi Arabia, conventional approaches which assume the negative impact of abundant oil on development are not able to explain well the fact that institutional development for industrialisation occurred in the 1960s when more oil

rents began flowing into the Saudi state coffers than ever before; and that oil windfalls in the 1970s empowered Saudi policymakers to implement their industrial plans and size them up, resulting in the creation of two major industrial cities in Jubail and Yanbu where petrochemical production began to come on stream in the 1980s. Since then, Saudi Arabia has increased petrochemical production at a steady pace: today the country is one of the largest petrochemical producing countries in the developing world, accounting for nearly 10% of the global petrochemical production.[39] In addition, new oil windfalls in the 2000s again enabled Saudi policymakers to develop new industrial cities and attract foreign direct investments (FDIs) in downstream labour-intensive manufacturing industries there. Such developments have been clearly incompatible with the notion of resource curse. If the "paradox of plenty" claimed by resource curse theorists is correct, Saudi Arabia which has the world's largest production capacity of oil should have been most underindustrialised.

Second, the fact that the Saudi state has sought cooperation from East Asian states for industrialisation does not fit well with the existing autonomy-dependency debate regarding development in the South. One end of the debate is represented by the development strategy called import-substitution industrialisation (ISI), which was implemented by many developing states in the 1950s and the 1960s. The main practice of ISI is restricting the import of foreign goods and the inflow of foreign capital in order to protect infant domestic industries from cutthroat global competition. By implementing ISI and reducing their economic links with the advanced world, many developing states attempted to overcome their dependency created by the hierarchical division of labour. This

[39] "Saudi Arabia to be World's 3rd Largest Exporter of Petrochemicals by '15", *Saudi Gazette*, 18 November 2013.

policy, however, ended up, in most cases, in a serious decline in the productivity of domestic industries as they, without being exposed to substantial competition, grew into inefficient, loss-making entities often serving political ends rather than production itself.[40]

The other end of the debate is represented by neoliberalism, or the principles of the "Washington Consensus", which call for a small state and liberalisation of trade and investment regimes.[41] Many developing states which had faced fiscal problems by the 1980s accepted the recommendations of the international financial institutions and implemented (at least parts of) neoliberal reforms. However, the outcomes of their reintegration into the global economy turned out to be mixed. While some developing economies, most notably China, grew fast by attracting industrial FDI from advanced economies, substantive deindustrialisation occurred in other developing economies which failed to do the same because of their less competitive investment climate than that of successful emerging economies.[42]

Initial success in attracting FDI does not guarantee sustainable growth either. Economies with FDIs still face the risk of "premature deindustrialisation" as their industrialisation remains dependent on foreign investors. Due to the IT-supported evolution of global supply-chains, these foreign investors today are "easy-come" but also "easy-go".[43] Indeed, some scholars address the emergence of "neo-dependency": while the classical dependency was (assumed to be) caused by the hierarchical global trade system,

[40] For succinct explanation about ISI, see: "Import Substitution Industrialization" in *The Princeton Encyclopedia of the World Economy* (Princeton University Press, 2010).
[41] Williamson 1990.
[42] Nayyar 2010: 58–61.
[43] "Emerging Economies: Arrested Development", *The Economist*, 4 October 2014.

the neo-dependency refers to the phenomenon in which foreign capital deprives a developing economy of autonomy in industrial policymaking.[44] A weak level of the state's autonomy in industrial policymaking risks domestic workers being exploited by foreign investors as cheap labour, without their acquiring the knowledge, skills, and technologies that would allow them to become capable of carrying out industrial production on their own. Thus, premature deindustrialisation occurs when the foreign investor discovers other places that are more favourable for their production and moves out of the economy.

Saudi–East Asian industrial relations do not fit either case well. Saudi Arabia did not adopt ISI as the fact that Saudi policymakers have always sought East Asian industrial investments in Saudi Arabia since the 1960s shows. However, the mode of production does not follow the neoliberal model either. A large degree of intervention both by the Saudi government and the East Asian governments was seen in the establishment of joint venture industrial projects. State-owned enterprises (SOEs) were the major actors in these projects, and the interstate economic and technological cooperation agreement set the institutional framework of planning of, and negotiation for, the project. These controlled arrangements have provided the Saudi state with a certain level of autonomy, enabling Saudi producers to set conditions for FDI, most importantly regarding transfer of knowledge, skills, and technologies from the East Asian investor to Saudi national workers in through joint venture projects.

Third, the pattern of East Asian states' industrial cooperation with Saudi Arabia essentially differs from the well-known model of aid diplomacy. The practice of aid

[44] Miller and Pisani 2007.

diplomacy, or ODA (official development assistance) diplomacy, carried out by governmental organisations, is based on the provision of humanitarian assistance, financial loans, and, short-term technical assistance.[45] Aid diplomacy usually does not involve private industrial firms in a direct manner (although firms sometimes capitalise on the improved bilateral relationship created as a result of such diplomacy).[46] However, in the case of Saudi–East Asian industrial cooperation, East Asian states actively facilitated private firms' industrial investment in Saudi Arabia by creating institutional frameworks, funding projects, providing logistical assistance, and holding business delegations and collective meetings in cooperation with Saudi counterparts.

Such state-sponsored industrial investment also contradicts the assumption of neorealism, a mainstream theory of International Relations. Neorealism identifies the nature of the international system as that of competition among states that seek the strongest power (capabilities).[47] Within such a system, the most important objective of state behaviour is assumed to be securing its own survival. If this assumption is correct, East Asian states engage in the self-harming behaviour of assisting industrialisation in Saudi Arabia. In theory, empowering industrial growth of other states would only be detrimental to one's survival in the long term because the rise of other economic powers only makes international economic competition harder. In fact, Japanese and Taiwanese petrochemical

[45] For Japan's aid diplomacy and cross-state comparisons, see Kusano (1997).
[46] Iokibe 1999: 90–93.
[47] Waltz 1979.

firms are in need of restructuring their businesses today because of the rise of competitive low-cost petrochemical production in Saudi Arabia and other Gulf countries.[48]

The Explanans: How This Thesis Will Answer the Questions

This thesis will answer these questions in the following manner: first, this thesis will analyse development in Saudi Arabia within the framework of "production with rentier characteristics". Rather than identifying the Saudi economy only as a rentier economy and "othering" it from industrialising economies, this thesis will take Saudi Arabia as a state that has, just like other developing states, pursued industrialisation since the early stages of its development. However, this thesis will also highlight the distinctive nature of industrialisation in Saudi Arabia which is presumably affected by the presence of abundant oil. In other words, rather than asking *whether or not* a rentier economy industrialises, it will ask *what* the industrialisation in a rentier economy *is like*.

This thesis argues that Saudi Arabia was not different from other developing states in terms of its policymakers' desire to establish what this thesis calls "techno-sovereignty", a greater degree of autonomy in industrial technology, in order to alleviate its dependency in the global economy. However, the very low initial degree of HRD significantly delayed that process, and the inflow of oil rents transformed Saudi Arabia into a resource-dependent – rather than resource-abundant – rentier economy. The level of illiteracy in Saudi Arabia was extremely high: 85% among men and 98% among women in 1970 when the country's

[48] "Japan's Petrochemical Makers Face Pressing Need for Restructuring", *Nikkei Asian Review*, 4 December 2014; ACS, interviewed by author, Taipei, April 2012.

first five-year development plan was launched.[49] Because of the absence of adequate qualified human resources, the Saudi state was unable to effectively plan and implement industrial policies until the early 1970s.

However, incremental, trial-and-error institution-building throughout the 1960s gradually but certainly prepared the Saudi state to formulate industrial policy. The oil boom in the 1970s enlarged the Saudi state's financial capacity to implement plans and create infrastructures, upon which capital-intensive industries were created, attracting the country's handful of qualified workers. Through joint venture projects with foreign firms, workers at Saudi Arabian Basic Industries Corporation (SABIC: الشركة السعودية للصناعات الأساسية), a SOE which took over the industrial production from Petromin upon its creation in 1976, absorbed knowledge, skills, and technologies. In the last two decades of the previous century, SABIC began to rise as a beacon of techno-sovereignty. However, on the other hand, the combination of the still low degree of HRD and the abundant oil rents created a "rentier society" in Saudi Arabia, which is defined in this thesis as a society which is over-consumerist, underproductive, and dependent on both the state's allocation and foreign workers.

The rentier society has been unable to provide solutions to the country's youth unemployment problem which began appearing in the 1990s and has been exacerbating thereafter. Saudi policymakers have attempted to create job opportunities by extending the production chain from capital-intensive heavy industries to downstream labour-intensive manufacturing industries. Nevertheless, while the kingdom has achieved the quantitative

[49] "Kingdom Tops World in Education Spending", *Arab News*, 2 January 2013.

leap in HRD, with 96% of all citizens literate today,[50] the *quality* of HRD has not yet caught up with such an industrial policy. The major challenge facing industrialisation in Saudi Arabia today is the reform of HRD institution so as to transform the country's rentier society into an *industrial society* which is capable of supplying qualified workers to emerging industries in an adequate manner.

Second, because of the low initial degree of HRD, Saudi policymakers inevitably faced what this thesis calls the "paradox of the techno-nationalist", that they had to bring in *more* foreign technologies and technologists in the short run in order to increase the level of the country's techno-sovereignty in the long run. While keeping the country open to foreign investments, Saudi policymakers demanded the foreign investor to transfer knowledge and skills to Saudi national workers in order to prepare them for the eventual nationalisation of production. This formula was created as a result of the country' experience in the oil industry where the full nationalisation of Aramco had taken no less than two decades since Saudi policymakers' initial intention to do so in 1960. The formula was then adopted by SABIC as its central strategy in the development of petrochemical industry. Today, Saudi policymakers attempt to repeat that practice in the development of manufacturing industries. In order to supply qualified human resources to those industries, the Saudi state has, in recent years, increasingly demanded that foreign investors make contributions to the development of HRD institutions. In this manner, Saudi policymakers have attempted to maintain Saudi industries as both *open* and *autonomous* at the same time in order to prevent

[50] "Kingdom Achieves 96% Literacy Rate", *Arab News*, 10 September 2013.

neo-dependent situation from emerging. Creation of an interstate industrial cooperation framework has been particularly effective for Saudi Arabia in pursuing such a policy.

Third, East Asian states have cooperated in industrialisation in Saudi Arabia in order to make use of the transfer of industrial technology for acquiring other types of gain from Saudi Arabia in return. This thesis calls such a foreign policy strategy "techno-diplomacy". In the case of Japan, the major reward for its techno-diplomacy towards Saudi Arabia was the supply of oil, on which Japan's energy security heavily depends on. In other words, Japan entered into a "technology-for-oil" exchange with Saudi Arabia. On the other hand, in the case of Taiwan, the major reward was the maintenance of diplomatic recognition by Saudi Arabia as Taipei has been in diplomatic competition with Beijing regarding international legitimacy since 1949. In other words, Taiwan entered into a "technology-for-recognition" exchange with Saudi Arabia. Japan and Taiwan were in need of developing techno-diplomacy because conventional aid diplomacy based on humanitarian assistances and financial loans was not effective enough towards Saudi Arabia, which was a *capital-rich* developing country and what it demanded was not capital but technology.

These rewards (the supply of oil and diplomatic recognition) explain the unevenness in the level of commitment by East Asian states to industrialisation in Saudi Arabia across time and country because of the changes (in the case of Japan) and the continuity (Taiwan) of the level of importance of these rewards over time. Another factor that has caused the unevenness in outcome is the preference of private firms regarding investment in Saudi Arabia. Their investment decision is determined primarily by market fundamentals of the

investment destination such as geography, human resources, feedstock, market size, and the investment climate. Their preference is also shaped by the economic environment surrounding them at all domestic, regional, and global levels. Thus, how East Asian industrial firms have perceived the Saudi market within their overarching global strategy must be taken into account.

The Data

This thesis uses both primary and secondary sources in four languages: Arabic, Chinese, English, and Japanese. These sources include documents and reports of states and international organisations, memoirs by responsible individuals such as policymakers and diplomats, books published by private firms about their corporate history, newspapers and periodicals both general and specialising in certain fields (such as policy, business, industry, and culture), and all kinds of academic and semi-academic publications (such as books, journal articles, and master/doctoral dissertations) as well as conventional and new types of online sources such as websites and blogs. The sources were collected during the field research the author conducted in Saudi Arabia, Taiwan, and Japan, with three months spent in each country (nine months in total). The author also conducted document/archival research in the UK, the US, and China. The libraries and archives I consulted are as follows.

In the UK: the British Library; the National Archives (the Foreign and Commonwealth Office files); the library of the School of Oriental and African Studies

(SOAS) at the University of London; the libraries affiliated to the University of Oxford, particularly the Social Science Library and the Middle East Centre Library, in addition to the closed stacks of the Bodleian Libraries. In the US: the Library of Congress; the National Archives and Records Administration; the Mulligan Papers at Georgetown University; the libraries affiliated to the University of Chicago. In Saudi Arabia: the King Abdulaziz Public Library; the Prince Salman Central Library at the King Saud University; the library of the Institute of Public Administration; the library of the King Faisal Centre for Research and Islamic Studies; the library of the King Abdulaziz Foundation for Research and Archives. In Japan: the National Diet Library; the Diplomatic Archives of the Ministry of Foreign Affairs; the library of the Institute of Developing Economies; the library of the Japan Cooperation Centre for the Middle East; the library of the Japan International Cooperation Agency; the libraries affiliated to the University of Tokyo. In Taiwan: the National Central Library; the Academia Historica, the archives of the Institute of Modern History at the Academia Sinica; the libraries affiliated to the National Chengchi University. In China: the National Library of China; the library of the Institute for West Asian and African Studies at the Chinese Academy for Social Sciences; the libraries affiliated to the Peking University.

In addition, I conducted around 40 interviews in Saudi Arabia, Taiwan, Japan, and the UK. The interviewees included incumbent and retired state officials, firm managers and businesspeople, journalists, scholars, and those in schools such as managers, teachers, instructors, and students in those countries. (The list of the interviewees is included in the Bibliography section of this thesis.)

Chapter Breakdown

This thesis consists of eight chapters: two on theoretical discussion and six on empirical evidence. In the theory section, Chapter 1 will place Saudi–East Asian industrial relations in the wider context of the global economy since the Industrial Revolution, identifying HRD and the diffusion of industrial technology as a key variable in shaping the relations. By doing so, it will set the scene for understanding Saudi–East Asian industrial relations as industrialising-industrialised relationships. The concepts of "techno-sovereignty" and "techno-diplomacy" will be introduced and discussed here. Chapter 2 will focus on the political economy of Saudi Arabia. It will first critique previous approaches that have argued for the negative impact of oil on development, such as the dependency theory, the rentier state theory, and the resource curse thesis. Then it will introduce the analytical frameworks of "production with rentier characteristics" and "rentier society", arguing that we should enquire into the *nature* of industrialisation in rentier economies rather than posing a yes/no question about the presence and speed of industrialisation. It will also highlight the importance of HRD as a variable, in addition to oil, in shaping the patterns of industrialisation in Saudi Arabia.

The empirical chapters will be divided into two equal-length time periods: (1) from 1953 to 1983; and (2) from 1983 to 2013. Chapter 3 will examine the early stages of industrialisation in Saudi Arabia between 1953 and 1983. The narrative will begin with the rise of economic nationalism emerging in Saudi Arabia in the 1950s. Then, how the strategy for industrial diversification was formulated in a trial-and-error manner in the

1960s will be examined. This will be followed by an analysis of the implantation of that strategy in the 1970s. The chapter will end with an explanation of the emergence of the petrochemical industry in the early 1980s. Chapter 4 will analyse Saudi–Japanese industrial relations in the same period. The analysis will begin with the story of Arabian Oil Company (AOC), a private Japanese oil firm investing in Saudi Arabia, which this thesis identifies as playing a pioneering role in Japan's techno-diplomacy towards Saudi Arabia. Then the analysis will move to on the absence of substantial industrial cooperation in the 1960s and its rise in the 1970s. In particular, how the agenda of energy security emerged in Japanese politics and resulted in the creation of the technology-for-oil exchange between the two states will be highlighted. Chapter 5 will examine the case of Taiwan in the same period. The narrative will begin with how the rise of diplomatic competition between Taipei and Beijing resulted in the early beginnings of Taiwan's techno-diplomacy towards Saudi Arabia in the 1960s. Then it will analyse how Taiwan won this race and entered its heyday of bilateral industrial relations with Saudi Arabia in the 1970s.

Chapter 6 will examine industrial diversification in Saudi Arabia between 1983 and 2013. It will first reassess the oil glut period, which has been generally considered to be a period of stagnation in the Saudi economy, suggesting that it was, in fact, the period of a steady, down-to-earth industrial growth in terms of techno-sovereignty. The chapter will also address the rentierisation of the Saudi society in this period, and how Saudi policymakers since the new oil boom period in the 2000s have attempted to solve the problem of youth unemployment by reforming the rentier society in particular through three sets of policies: industrial expansion, HRD, and labour nationalisation. Chapter 7 will

examine Saudi–Japanese industrial relations in the same period. It will first examine the re-decline of Japanese industrial investments in Saudi Arabia in the 1980s. It will also explain why Japan's techno-diplomacy towards Saudi Arabia in the 1990s aiming to preserve AOC's oil concession failed. Then, the analysis will move to on the 2000s when new currents in Japanese industrial investments in Saudi Arabia emerged. Chapter 8 will examine Saudi–Taiwanese industrial relations in the same period. It will first analyse how the golden age of the bilateral relationship was broken by Riyadh's normalisation with Beijing at the expense of its formal diplomatic relationship with Taipei in 1990. Then it will discuss how the two states reformulated their bilateral relationship in an informal manner, and how the new relationship affected Saudi–Taiwanese industrial relations thereafter.

Finally, Conclusion will review the arguments of this thesis and put forwards the prospects of Saudi Arabia's industrial diversification and Saudi–East Asian industrial relations in the coming years.

Part I: Theoretical Frameworks

Chapter 1

From Divergence to Convergence:

Human Resources Development, Diffusion of Technology, and Global Industrialisation

"There is a tremendous political push behind the Saudis' will to industrialise their country… The Saudi industries of the future are supposed to form an economy that will outlast the perhaps short-lived era of oil as the world's primary energy source… The Saudi Government sees that the effective sources of the skills and technology they need are the United States, Japan, and the major industrialised countries of Europe. They want politely but firmly to put these countries in a position in which they cannot but proffer the assistance required." – H. B. Walker, a British diplomat at the UK embassy in Jeddah, Saudi Arabia (1974).[51]

"The important thing is that monogamy is not enough for the Saudis anymore. They've decided to take a couple of other wives. This is a logical move by the Saudis, not one against the United States, but a step away from overdependence on America… The relative monopoly of the United States is in the process of being broken." – Chas Freeman, a former US ambassador to Saudi Arabia (2006).[52]

[51] FCO 8/2336.
[52] "Saudi Arabia Pursues a 'Look-East Policy'", *The New York Times*, 26 January 2006.

This chapter will set an analytical framework of Saudi–East Asian relations, which, as discussed in Introduction, will be identified as the "industrialising–industrialised relationships". This chapter will take three steps in doing so.

First, it will contextualise Saudi–East Asian relations in the larger and longer horizon of the modern global economy. In particular, the long-term shift of the global economy from "divergence" to "convergence", in which human resources development (HRD) and diffusion of technology have played indispensable roles, will be discussed as an overarching structure of the relations. In accordance with this structure, the degrees of development of three states discussed in this thesis (Japan, Taiwan, and Saudi Arabia) will be measured.

Second, it will develop a concept from that overarching structure that explains the behaviour of Saudi Arabia as an industrialising state. The concept will be named "techno-sovereignty" and defined as the state's pursuit of greater levels of self-reliance in industrial technology. It will assume that the notion of techno-sovereignty has been integral to the Saudi state's attempt of diversifying its economy away from oil and seeking multiple external sources of industrial technology since 1953.

Third, it will put forwards the concept of "techno-diplomacy" that also derives from the overarching structure and explains the behaviour of Japan and Taiwan as industrialised states. Techno-diplomacy will be defined as the state's diplomatic strategy of implementing the transfer of industrial technology in order to achieve other types of gain in return. It will assume that Japan and Taiwan have practiced techno-diplomacy towards Saudi Arabia in the past decades.

1.1. Divergence and Convergence

Saudi–East Asian relations have long been understood as energy producer–consumer relationships. Put differently, they are "underindustrialised–industrialised" relationships. Such relations imply a global division of labour in which underindustrialised Saudi Arabia earns revenues from exporting natural resources, and industrialised East Asian states produce industrial products through processing those imported natural resources as raw materials. In general, this division of labour has been understood as an inequality between developing economies and advanced economies, often referred to as a "dependency" or a "North–South divide". As a first step to understanding the nature of these relationships, we must consider how the divide was created in the first place in our global history.

Some institutionalist economic historians such as James Robinson and Daron Acemoglu, who co-authored *Why Nations Fail: The Origins of Power, Prosperity and Poverty* (2012), trace the divide back to the late Medieval and early modern periods. They argue that institutions, which countries had then and have developed since then, determine the degree of those countries' development today. According to their argument, those countries which had inclusive institutions, characterised by trust and transparency, like the ones in Western Europe and North America, effectively industrialised thereafter. On the other hand, those which had authoritarian, patrimonial, and extractive institutions failed to invest capital in growth and innovation, ending up in the enduring poverty and stagnation.[53]

[53] Robinson and Acemoglu 2012.

This difference created the domination of the global economy by a handful of countries in the North by the early twentieth century.

Then, in the latter half of the century, some developing countries in the South, referred to as newly-industrialising economies (NIEs), showed remarkable upward mobility in the global divide. According to Atul Kohli, another institutionalist economic historian, whether developing countries are able to catch up, or not, largely depends on, to what degree, their premodern, extractive institutions were uprooted by the colonial administration and replaced with pro-development institutions.[54]

These "childhood matters" theories of divergence are persuasive, but discouraging at the same time. While the idea that today's developments are based on their historical foundations makes good sense, its somewhat deterministic assumption that those with bad childhoods are likely to be trapped in bad life leaves little room for policymakers to create fundamental changes.[55]

Moreover, the reality seems increasingly defying this assumption: even those with bad childhoods have begun to show their greater upward mobility today. Economies considered to only have compromised institutions are collectively rising, creating a middle ground between the North and the South called "emerging economies". What is common to those economies is that they have acquired advanced industrial technology from the North through attracting FDIs by taking advantage of their low-cost land and labour and other comparative advantages. Indeed, in addition to institution, Robinson and Acemoglu argue for the importance of technology to growth in *Why Nations Fail*, saying:

[54] Kohli 2004.
[55] "Creating Economic Wealth: The Big Why", *The Economist*, 10 March 2012.

> "World inequality toady exists because during the nineteenth and twentieth centuries some nations were able to take advantage of the Industrial Revolution and the technologies and methods of organization that it brought while others were unable to do so. Technological change is only one of the engines of prosperity, but it is perhaps the most critical one. The countries that did not take advantage of new technologies did not benefit from the other engines of prosperity, either."[56]

> "With a few exceptions, the rich countries of today are those that embarked on the process of industrialization and technological change starting in the nineteenth century, and the poor ones are those that did not."[57]

On the other hand, Jeffrey Sachs, a developmental economist and a vocal critic of *Why Nations Fail*, who attacks the book's institutionalist explanations as an "oversimplification", claims that even countries without inclusive institutions *can* industrialise through capitalising on the global diffusion of technology; and that the unevenness in developing countries' reception of technology has been caused by other factors such as geography and the investment climate.[58] Sachs argues that institutions may matter at more advanced levels such as the stage of "innovation" in technology, but they do not matter greatly at the "catch-up" stage. He states:[59]

[56] Robinson and Acemoglu 2012: 271.
[57] Ibid.: 301.
[58] Sachs 2012.
[59] Jeffery Sachs, "Reply to Acemglu and Robinson's Response to My Book Review", 3 December 2012, http://jeffsachs.org/2012/12/reply-to-acemoglu-and-robinsons-response-to-my-book-review/ [accessed 1 December 2014].

> "[I]nnovation is not the only source of growth. Diffusion of technology (meaning the spread of innovations to more places) is also a key part of growth, indeed the main explanation for catch-up growth (rapid growth in economies not at the technology frontier). A full theory of economic development needs a focus on both innovation and diffusion. Acemoglu and Robinson of course acknowledge catch-up growth but consider it to be of secondary importance whereas I believe it to be a vital part of the development story and also a vital factor in accounting for "why nations fail" or succeed."

However, two questions arise here: (i) Why did diffusion of industrial technology to countries in the South not take place for such a long time?; and (ii) Why is it taking place so rapidly in recent years? To know answers to those questions, we must trace the *history* of technology diffusion.

The Industrial Revolution which began in England in the late eighteenth century completely reshaped the paradigm in the global economy by marginalising the already-existing inequality among economies in the world, and creating a new hierarchy. An interesting fact is that this early diffusion occurred fairly rapidly in countries in Western Europe (such as France, Belgium, Netherlands, and later Germany and Italy) and countries of European offshoots (or "Neo-Europes") in North America and Oceania. However, the pace of diffusion significantly slowed down in the early twentieth century and did not much spill over further. The non-Western world, with the exception of Japan, was left out of the

diffusion.[60] Thus, the North–South divide, which would continue throughout the latter half of the twentieth century, was already entrenched at the beginning of the century.

One obvious reason for the slowdown of technology diffusion was colonialism – political hierarchy imposed by European empires on non-Western countries. While European colonisers brought in modern technologies to non-Western countries, the exploitive nature of colonial administration did not provide local people with sufficient opportunities to control those technologies and make use of them for their own development. In most cases, the control of technology was monopolised by Western experts and used only to make their colonial rule more effective and their exploitation of resources more efficient.[61] On the other hand, many local elites, in alliance with those colonisers, were complacent, in many cases, about their privileged status under colonial rule, and spent their wealth not to create technological progress on their own but to cement their status through the distribution of the wealth for patronages – as in the case of landed elites in post-Ottoman Arab states.[62]

Thus, many new nationalist leaders in developing states in the mid-twentieth century aspired to have their own national technologies and technologists upon the independence of their state.[63] They desired to achieve their own Industrial Revolution through the control of modern technology and grow more self-reliant. Nevertheless, despite their early optimism, most developing countries failed in doing so. In fact, the North–South

[60] Thus, the words "modernisation", "industrialisation", and "Westernisation" have been often used as synonyms in the non-Western world.
[61] Edgerton 2006: 134.
[62] Owen 1981: 290.
[63] Edgerton 2006: 136.

divide kept widening after decolonisation as continuing innovation in advanced countries made a technological learning curve steeper for developing countries: Alexander King warned, in 1987, of the emergence of "technological colonialism" as the developing world seemed entrenched in a perpetual dependence on the Western technology.[64] In addition, as globalisation guided by neoliberal economic philosophy exposed industries in developing countries to cutthroat global competition in the 1990s, the inequality in the global economy came to be addressed in an ever critical manner. As symbolised by the "Battle of Seattle" in 1999, the anti-globalist movement criticised globalisation as only serving the interests of capitalists from the North while harming those in the South.[65]

Interestingly, however, the world in the 2000s turned out to be quite different to what these anti-globalists had expected. Many developing countries began to industrialise belatedly, creating a growing middle tier in the global economy. Between 2000 and 2010, developing countries grew at an annual rate of 6%, compared with 4.3% between 1960 and 2000. As a result, global wealth became more evenly distributed. By 2010, nearly a billion people were lifted out of extreme poverty of earning less than $1 a day, halving the share of extremely poor people in the world from 43% in 1990 to 21% in 2010.[66] Yet, perhaps the most symbolic event was the replacement of the G7 with the G20 as a major forum of the global economy in 2008. This was cataclysmic, given that the G7 economies were already major global economies at the beginning of the twentieth century: the century-long oligopolistic structure of the global economy began to be broken eventually.

[64] King 1987: 24.
[65] James 1997.
[66] "The World's Next Great Leap Forward: Towards the End of Poverty", *The Economist*, 1 June 2013.

In the words of *The Economist* magazine, this convergence was a "historic change rivalled in its scope only by the extraordinary industrialisation that opened the global gaps between the rich and the rest in the first place".[67] Certainly, it is too early to make a full assessment of the shift. Although many understand the shift as the "rise of the rest", [68] some believe that it has been more the result of the staggering growth of a single country: China. For instance, nearly three quarters of the abovementioned poverty reduction in the past two decades took place in China.[69] In addition, growth in many developing countries has been driven by China's fast industrialisation particularly through the rapidly rising demand for raw materials, including oil, which pushed up their prices. Thus, as China's hyper-growth slows down today, so is growth in other developing countries.[70]

This thesis, however, believes that the convergence is not a phantom phenomenon because the seismic change in the 2000s was preceded by a long-term "tectonic movement". During the past six decades, the diffusion of modern industrial technology from the North to the South had occurred in a slow, quiet, but certain manner. It was just like a movement of the earth's crust which always precedes the "sudden" occurrence of the earthquake. And what triggered the earthquake – the rapid rise of new technological powers in the South – was the development of information technology (IT) which enabled firms in advanced

[67] "Economic Convergence: The Headwinds Return", *The Economist*, 13 September 2014.
[68] Zakaria 2008.
[69] "The World's Next Great Leap Forward: Towards the End of Poverty", *The Economist*, 1 June 2013.
[70] Sharma 2012.

economies to create extended global supply-chains, to which many of those new powers began to be incorporated under the neoliberal global economic regime.[71]

HRD as a Key Factor for the Diffusion of Industrial Technology

One of the key factors for that gradual diffusion of technology is considered to be HRD.[72] A country must possess a pool of literate and appropriately-educated workers in order to receive modern industrial technology from abroad. Without them, any attempt to industrialise the country with imported technology would inevitably fail shortly.

Perhaps one of the best examples of failure is the Ottoman Empire's attempt of modernisation during the Tanzīmāt period (1839–76), in which the Sultan Abdülmecid I (r. 1839-61) implemented large-scale, state-led industrialisation projects in order to catch up with post-Industrial Revolution Western European economies. A number of state-run industrial projects were created for transferring European industrial technology to the empire.[73] Nevertheless, production did not take root in the Ottoman society because of the absence of sufficient workers who were able to control imported European technology. For instance, one Belgian expatriate worker employed at a cloth factory in Izmit wrote in his diary in 1848:[74]

[71] Fu and Soete 2010.
[72] Easterlin 1981.
[73] Clark 1974: 66–67.
[74] Ibid.: 75.

> "You could not call it Turkish cloth – it [is] only cloth made in Turkey by European machinery, out of European materials, and by good European hands."

HRD in the Ottoman Empire, where the literacy rate was only around 5% even at the end of the Tanzīmāt period,[75] was too underdeveloped to support the state's modern industrial projects and caused the empire's long dependence on European technologies and technologists.[76] Likewise, the prospect for modernisation in the Qing Dynasty was also severely constrained by the low level of literacy, estimated to be only 18% in 1899, and the traditional nature of school education: a full development of modern education began in China only after 1905.[77] In other parts of the non-Western world which fell under European colonialism, European colonisers justified their exclusion of local citizens from the control of imported technology: because of the high level of illiteracy, only a handful of local citizens were sufficiently qualified to control European technology.

Low levels of literacy kept constraining development in those countries even after decolonisation. Table 1.1. shows the gaps in literacy rates between the West and the non-Western world in the latter half of the twentieth century. In 1950, while the vast majority of citizens in the West were already literate, only slightly above one-thirds of all citizens in the non-Western world could read. The gap gradually became narrower thereafter. By 1970,

[75] Karpat 2002: 512–513.
[76] The Middle East region was certainly a hub of intellectual activities before the Middle Ages. However, the region came to stagnate thereafter while Western Europe began to innovate. Historians attribute the stagnation to multiple factors such as epidemics, the invasion of the Mongols, the diversion of major trade routes, and the rise of military regimes (Issawi 1991: 282).
[77] Xu and van Leeuwen 2013.

nearly half of all citizens in the non-Western world had become literate; and by the end of the century, around three quarters of non-Western citizens had become literate. In this sense, it took nearly a half century for today's emerging economies to enhance their levels of HRD, to the extent that they possess a pool of industrial workers ready to absorb advanced foreign industrial technology.

Table 1.1.: Estimated Adult (Over 15) Literacy Rates, by Regions

Region	1950	1970	2000
West	93%	95%	99%
Non-West	36%	48%	76%
Latin America	58%	74%	90%
East Asia	52%	58%	91%
Southeast Asia	32%		
MENA	17%	29%	63%
South Asia	17%	32%	59%
Sub-Saharan Africa	17%	28%	60%
World	56%	63%	82%

Source: UNESCO (1957, 2006)[78]

This long "latency period" is understandable since the improvement of education is a time-consuming process. To implement modern school curricula, teachers must be educated first, and then students learn and become parts of the society's workforce taking generations. In fact, Western European countries had their long latency period before their Industrial Revolution too. For instance, the male literacy rate in England was only 30% in the 1640s, but the figure doubled to 60% by the mid-eighteenth century, on the eve of the Industrial Revolution.[79] What caused the rise of literacy in Western Europe is considered to be the

[78] UNESCO 1957: 15; UNESCO 2006: 166.
[79] Melton 2001: 82.

Reformation, in which the Protestants encouraged lay Bible-reading, and thus funded schools and conventicles (and the Catholics responded by promoting literacy, too, in order to propagate their faith).[80]

It is methodologically not easy to establish the causal linkage between HRD and economic growth in a quantitative manner because of the disagreement over measurement, the limited availability, and often the poor quality of, data, and the difficulty of identifying the complex interactions through which HRD is involved in the growth process.[81] Nevertheless, it would be logically hard to deny the relationship between the rise of literacy rate and the increase in the number of industrial workers ready for using transferred technology, at least at early stages of development – although, at more advanced stages, the *quality* of secondary and higher education should matter more. It is a matter of *how* rather than *whether* HRD influences industrialisation.[82]

The presence of that linkage is also suggested by the significant divergence in literacy within the non-Western world shown in the above table. In 1950, over half of all citizens in Latin America and East Asia were already literate while only around 17% of all citizens could read in the Middle East and North Africa (MENA), South Asia, and Sub-Saharan Africa, respectively: Southeast Asia, where around one-thirds of all citizens were literate, fell in the middle. It may not be a coincidence that NIEs in the 1970s were from those two regions: East Asia and Latin America. By the end of the century, those two regions (including Southeast Asia) had achieved over 90% literacy rates, well-catching up

[80] Ibid.: 82–87.
[81] OECD 2001: 30.
[82] Pearson and the Economist Intelligence Unit 2012: 6.

with the West. On the other hand, the rest of the non-West (MENA, South Asia and Sub-Saharan Africa) still lagged behind in 1970, with less than one-thirds of all citizens in those regions literate. Those regions, nevertheless, had eventually passed the benchmark of half by the end of the century, catching up with what East Asia and Latin American were half century before.[83]

Japan and Taiwan: The Origins of the East Asian Miracle

The HRD factor explains Japan's early modernisation in the late nineteenth century and Taiwan's earlier take-off than other developing countries in the late twentieth century as well.

Japan underwent rapid state-led modernisation-cum-industrialisation after 1868 under the Meiji imperial regime. On one hand, Japans steady development was ensured by the preservation of its political sovereignty and the absence of the penetration of colonial interests into the country. Japan, being located in Far East, carried little colonial value to European empires because it was "en route to nowhere": behind Japan existed only the vast Pacific Ocean. Neither did Japan have natural resources nor large consumption markets that would have attracted European merchants to. Nonetheless, Japanese policymakers, witnessing the colonial interests' penetration into the Ottoman Empire, India, and the Qing

[83] Many institutionalists argue that this divergence in HRD was caused by different institutions (e.g. North and Thomas 1973); but different levels of HRD may lead to the different qualities of institutions as well (Glaeser et al. 2004): probably, those two factors interact in a complex manner. Some recent works attempt to disentangle those complex patterns of interactions both in a qualitative manner (e.g. Mokyr 2009) and a quantitative manner (e.g. Acemoglu, Gallego, and Robinson 2014).

dynasty, proactively pursued modernisation and industrialisation, believing that they would be the only way to ensure Japan's national self-reliance and enables the country to survive the predatory international politics of great powers.[84] In addition, they also thought that developing the country as a strong modern industrial state through the policy of "enriching the country, strengthening the military" (富国強兵) would only enable it to have a power to correct unequal treaties which the *ancien regime* of the Tokugawa Shogunate, a regime of samurai warriors, had signed with European empires.[85]

On the other hand, Japan's competitive industrialisation was made possible by HRD in the country *before* the Meiji period. During the peaceful Tokugawa period (1603–1868), Japan's agricultural productivity significantly grew, and the accumulated capital began to be invested in commercial activities. Those commercial activities first developed in urban areas, but began to move to rural areas in the late eighteenth century after the cheaper labour in agricultural villages.[86] Since farmlands in Japan were geographically limited in its territory, children of farmers began to find jobs in those commercial activities. This resulted in the rise of education among farmers, who accounted for nearly 80% of the population during the Tokugawa period. Private schools for farmers' children were created in almost all villages, and by one estimate, the male literacy rate in Japan on the eve of the Meiji

[84] Pyle 1996: 98.
[85] Those treaties, creating the anger among low-rank samurais, ignited political conflicts and led to the eventual demise of the Tokugawa Shogunate (Pyle 1996: 65–68).
[86] Shimbo and Saito 2004: 341.

modernisation reached over 50%.[87] Thus, those literate workers in rural farmlands promoted "proto-industrialisation" there before the full, Western-style industrialisation.[88]

Around the same time, privileged samurais and wealthy merchants began to form intellectual communities. Those emerging intellectuals studied not only Eastern knowledge but learned European knowledge as well. In spite of Japan's isolationist policy during the Tokugawa period, the Dutch were exempted from the exclusion, and Dutch merchants brought in to the country literature on European science and technology. On the eve of the Meiji Restoration, "Dutch learning" (蘭学), or more generally "Western learning" (洋学), were already widely appreciated by reformist samurai bureaucrats and merchants who had developed their businesses under their protection.

Based on this tradition of Western learning, the Meiji government proactively invested in the development of HRD institutions. To do so, the new regime employed a practical policy of absorbing, rather than purging, a number of former reformist samurai bureaucrats of the Tokugawa Shogunate into its policymaking.[89] Schools with modern curricula were created at all levels and their enrolment rates began to rise rapidly: by 1900, 95% of the children had come to attend primary schools.[90] Several higher education institutions were also established to transfer Western scientific and technological knowledge to new generations, the most important of which was the Imperial College of

[87] Hayami 2004: 28.
[88] Shimbo and Saito 2004: 341.
[89] Many of those former samurai bureaucrats also proactively joined the Meiji government in order to help their fellow samurais who had been deprived of their privilege after the demise of the Tokugawa Shogunate in making their living through assisting them in regards to HRD (Kumazawa 2007: 4).
[90] Pyle 1996: 156.

Engineering (工部大学校) founded in 1873, a precursor of today's Faculty of Engineering at the University of Tokyo.

These developments prepared Japan for rapid catch-up with Europe in the late nineteenth and early twentieth century. Employing abundant literate workers, including many female ones, from the rural areas at low costs, the Japanese textile industry began to compete with the English textile industry in the early twentieth century.[91] These Japanese textile factories employed a number of Western advisers for hastening the process of transfer of Western knowledge, skills, and technologies to those young Japanese workers, which was, to the eyes of English advisers, carried out in an "extremely rapid" manner.[92]

As Japan developed into a regional empire in East Asia in the early twentieth century, the fruit of its technological catch-up began spreading to its colonies: Taiwan and Korea. Japan's colonial rule of Taiwan began in 1895 following Japan's victory over the Qing dynasty in the First Sino–Japanese War (1894–95). During its half century-long colonial rule (1895–1945), Japan ruled Taiwan as a new, extended territory of Japan, rather than as a foreign colony in an European sense. Japanese policymakers believed that, unlike the cases of European colonialism in Asia and Africa, there was only a slight racial difference between Taiwanese and Japanese, and, therefore, around three million Taiwanese people could be assimilated into the Japanese society.[93] Based on this belief,

[91] Many entrepreneurs also emerged from the class of wealthy farmers (Pyle 1996: 111).
[92] Saxonhouse 1974: 150.
[93] The same applied to Korea too (Kohli 1994: 1272).

Tokyo adopted a "principle of extending the home" (内地延長主義) for ruling Taiwan.[94] In order to create a "Neo-Japan" in the island, the Japanese colonial regime made substantial investments in infrastructure building and development of HRD institutions for making Taiwanese prepare for modern economic development.

Schools for Taiwanese children were created at all levels, from primary to tertiary. At the end of colonial rule, the school enrolment rate among Taiwanese pupils reached over 70%, raising the literacy rate in Taiwan to second in Asia only to that of Japan.[95] In addition, many children of the rich and of intellectuals studied in high schools and universities in Japan.[96] The rise of modern education gave birth to the Taiwanese middle class who, under the colonial regime, developed a modern society as teachers, engineers, doctors, lawyers, entrepreneurs, and other professionals. Those human resources enabled the colonial administration to put forward agricultural modernisation and early industrialisation in Taiwan. By the 1930s, Taiwan became a hub of agribusiness, exporting rice and sugar to Japan.[97] In the 1930s, Tokyo also began to develop Taiwan as a strategic industrial hub as it began preparing for an invasion of southern China and Southeast Asia: infrastructure for heavy industries such as oil refinery, steel and chemical plants, and shipyards began to be developed. The Kuomintang regime of the Republic of China which began ruling Taiwan after Japan's withdrawal from the island in 1945 nationalised the

[94] This, however, means neither that Taiwanese citizens were treated in an equal manner as Japanese, nor that the Japanese colonial rule was benign. Discrimination against Taiwanese certainly existed and rebellions by Taiwanese anti-colonialists were brutally quelled by force (Wakabayashi 2001).
[95] Wakabayashi 2001: 47.
[96] Liao 2006: 91.
[97] Hayami and Ruttan 1970: 573–574; Barret and Whyte 1982: 1067.

industrial infrastructure the Japanese had built, and began further industrialising Taiwan in a state-capitalist manner.[98]

With their developments, Japan and Taiwan (as well as South Korea) became entrepôts of modern industrial technology, standing between the West and the rest of Asia. Although Japan's full colonial rule was limited only to Taiwan and Korea, a number of Asian reformists, many of whom were in exile, stayed in Tokyo in order to absorb Western knowledge, skills, and technologies from Japanese institutions before the Second World War.[99] Japanese Pan-Asianists who envisioned the liberation of Asia from the European colonial rule by the Japanese initiative supported them for their study in return for their contributions to the policymaking of the Japanese empire.

After its defeat in the Second World War, Japan abandoned such imperial ambition and became a mercantilist state primarily pursuing economic growth.[100] Nevertheless, Tokyo continued to cultivate economic relations with Asian states, particularly Southeast Asian ones, mainly because of the closure of the vast Chinese market to Japanese businesses due to the control of mainland China by the Communist Party which practiced an economic isolationist policy until 1976. In the early 1960s Tokyo set up institutions for economic cooperation such as the Overseas Economic Cooperation Fund (OECF: 海外経

[98] While Japanese colonial rule is generally considered to have laid the foundation for Taiwan's economic take-off, the importance of the economic policy practised by the Kuomintang regime should certainly be appreciated. This point becomes clear if we consider how the economic mismanagement in North Korea has impoverished the country while Taiwan and South Korea have grown into competitive economies after decolonisation.

[99] In this sense, what Tokyo was for Asia was somewhat similar to what Cairo was to the Arab world in the first half of the twentieth century.

[100] Amaya 1989; Pyle 2007.

済協力基金), today's Japan Bank for International Cooperation (JBIC: 国際協力銀行), and the Overseas Technical Cooperation Agency (OTCA: 海外技術協力事業団), today's Japan International Cooperation Agency (JICA: 国際協力機構); and through their economic and technological cooperation projects, Japan paved the way for strong trade and investment relations with Asian countries.[101] A similar policy was pursued by Taiwan as well: in the early 1960s, Taipei began practising an economic cooperation diplomacy called "Operation Vanguard" (先鋒案). In the case of Taiwan, the main objective of that diplomacy was to maintain its international legitimacy as the only state representing the Chinese nation in its diplomatic competition with Communist Beijing.

Japan's and Taiwan's strong economic interactions with Southeast Asian countries accelerated the diffusion of industrial technology between them. This was famously theorised by Kaname Akamatsu, a Japanese economist, as the "flying-geese model" (雁行形態論).[102] Like the V-shaped pattern of flying geese, technology diffuses from the lead goose (Japan) to the second-tier geese (Taiwan and South Korea), and then to the third-tier ones (other Southeast Asian countries). In this manner, the chains of intra-Asian diffusion of industrial technology were established in the second half of the twentieth century.

[101] Iokibe 1999: 90–93; Kusano 1997: 26.
[102] Akamatsu 1962.

Saudi Arabia: Developing into "America's Kingdom"

Saudi Arabia, being located far from East Asia, was not included within the outreach of those chains of intra-Asian diffusion of technology. Neither the kingdom had become a subject for modernisation under the European colonialism: it was left un-subjugated by the British Empire primarily because of its little colonial value – just like the case of Japan. The vast majority of its territory in the Arabian Peninsula was non-arable desert suited neither for agricultural production nor modern transport. Following the defeat of the Ottoman Empire in the First World War, the British Empire secured lines of communication between the Mediterranean Ocean and the Indian Ocean via two routes: over land in Syria and Iraq and thence via the Gulf and the Arabian Sea; and through the Suez Canal and the Bab al-Mandib via the Red Sea. As long as Saudi Arabia was unable to harm these lines of communication, there was little reason for London to take an extra financial burden to intervene in politics in the middle of the Arabian Peninsula.[103]

Until the mid-twentieth century, people's life in the kingdom had largely been nomadic and self-subsistent.[104] The country's income level was extremely low, estimated only at around $25 per capita at the time of the creation of the kingdom.[105] Most of the wealth in the country was earned in the Hejaz region facing the Red Sea, which was conquered by the House of Al Saud in 1925. This region is home to two Islamic sanctuaries, Makkah and Madinah, and, thus, connected to the global Islamic economy through *hajj* or

[103] Vassiliev 2000: 275, 287.
[104] Ibid.: 288.
[105] Farmer 1959: 74.

pilgrimage. The region had a highly cosmopolitan society, and its port city, Jeddah, was a commercial hub on the Red Sea. At the time of the annexation of the region to the kingdom, Hejaz, which had been a subject for modernisation implemented by the Ottoman Empire in earlier decades, was more advanced than other parts of the Arabian Peninsula in terms of the presence of some modern technologies such as telephone lines, radio networks, and cars.[106] However, the region was still lagging behind other parts of the Arab world under the British and French rule.

It was the Americans who filled the vacuum. While the creation of the kingdom as a modern state in the Westphalian states-system in 1932 inevitably placed it in contact with the modern economy, the financial viability of the new state was still questionable. In fact, the kingdom was in dire financial straits at the time of its creation because of the slowdown of the hajj activity of global Muslims due to the repercussions of the Great Depression taking place several years before.[107] Thus, the imminent task for King Abdulaziz, the founder of the kingdom, was the diversification of the state finance, away from its overdependence on "hajj economy".

Abdulaziz sought an alternative source of income in oil. In 1933, he granted a concession to explore oilfields to an American firm, Standard Oil of California (SOCAL). SOCAL discovered a commercially-viable oilfield in Dhahran in the Eastern Province in 1938. Then, the company was joined by three other American oil firms (Texas Oil, Standard Oil of New Jersey, and Socony-Vacuum Oil) and re-established as a consortium called Arabian American Oil Company (Aramco). The full development of oil production

[106] Vassiliev 2000: 268.
[107] Ibid.: 312.

by Aramco began after the Second World War. As the oil production came to increase markedly, the wealth paid into the Saudi state coffers by Aramco in the form of concession royalties began to dominate the Saudi economy: the country's income per capita quadrupled to $100 by 1953.[108]

Nevertheless, what Aramco brought to the Saudi society was more than just oil rents. In the Eastern Province, Aramco created modern infrastructure such as a port, roads, electricity networks, telecommunication lines, and schools. Together with the US airbase in Dhahran, this opened a window to the world for Saudi citizens. State-of-the-art technologies introduced by American experts to the oil industry in Saudi Arabia impressed upon local people who had never imagined the existence of such technologies before, and stoked the aspiration of many young citizens. Aramco hired these young nationals and provided them with opportunities for education. For instance, Ali Al-Nuaimi (علي النعيمي), a former president of Aramco (1983–95) and the current oil minister (1995–present), was a Bedouin boy born in the Eastern Province in 1935. When he was 12, Aramco employed him and provided him with scholarships to study geology in Lebanon and the US, before re-joining the company.[109] In addition, a business community was formed around Aramco's production site in Dhahran, to which entrepreneurs were drawn from other towns in the Eastern Province, Hejaz, and other Arab countries, for a variety of businesses such as construction, housing, retail, and banking.[110]

[108] Taher 2011: 144.
[109] Lippman 2004: 89–90.
[110] Farmer 1959: 79.

King Abdulaziz himself strongly embraced the introduction of modern technology to the kingdom. He had a firm belief that modernisation was the only way to make Saudi Arabia a viable state both domestically and in the international system. Because of this belief, he was determined to reject his conservative advisors' objections to the introduction of Western technologies.[111] Being impressed by his railway trip from Cairo to Alexandria during his visit to Egypt in 1946, the king also ordered Aramco to construct a railway connecting Riyadh and Dammam, which was completed in 1951.[112] He also invited foreign (largely American, British, and Arab) experts and engineers to his palace to discuss with them his plan of modernisation projects.[113] While Abdulaziz was a faithful Wahhabi himself, he had a practical attitude to Western technologies: indeed, he believed that there was nothing in the Islamic faith which could justify the conservative's antagonism to improvement in communications or to scientific progress.[114]

In addition, in order to support modernisation, Abdulaziz developed modern education in the kingdom. The country's literacy rate was extremely low, estimated to be only 5% in the 1950s.[115] Most of the literate people were from the Hejaz region, which had been one of the traditional hubs of knowledge in the Islamic world. Throughout the history of Islam, a myriad of Muslim intellectuals have visited the Hejaz region for pilgrimage, some of whom stayed there longer or settled down and became localised. The region has been home to many *kuttab*, Qur'anic schools attached to mosques, some of which were run

[111] Sanger 1947: 181.
[112] Howarth 1964: 223–225.
[113] Sanger 1947: 183.
[114] Wahba 1964: 171.
[115] Abir 1993: 15.

with the endowment of foreign rulers in the Ottoman Empire, Egypt, and India in the pre-modern period.[116]

However, the knowledge taught at these schools was mostly of Islamic laws, and not that which responded to the requirements of modernisation in the kingdom. On the other hand, Hejaz also had some modern schools created before 1925 by the Turks and the government of Sharif Hussain.[117] Building upon these earlier developments, Abdulaziz developed the modern educational base in the kingdom by employing Egyptian experts and letting them transfer the Egyptian education system to the kingdom. Thus, subjects such as geography, technical drawing, and foreign languages began to be taught in schools in spite of the resistance by religious conservatives.[118]

He also sent talented young nationals to Cairo for higher education. The first group of four Saudis completed university degrees in Cairo and returned to the kingdom in 1945.[119] Some of them were then sent to the US for postgraduate studies. For instance, 192 Saudi students travelled to Cairo and 19 to the US in 1951.[120] These foreign-educated young elites began serving the state as first-generation technocrats in the 1950s as, following the death of Abdulaziz, the Saudi policymaking began shifting from a personal rule by the king to institutionalised bureaucracy.[121]

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[116] Saleh 1986: 17–18.
[117] Vassiliev 2000: 309.
[118] Ibid.: 310.
[119] Rugh 1973: 11.
[120] Vassiliev 2000: 310.
[121] Joseph Kostiner describes the gradual transformation of the Saudi state as that which "demonstrated the characteristics of an 'Ibn Khaldunian' type of chieftaincy, together with more Weberian, centralist, and institutionalized traits" (Kostiner 1993: 191).

According to Karl Twitchell, an American geologist and a prominent foreign expert in the kingdom in its early days, King Abdulaziz was fond of American experts because of his trust in the US regarding its non-intervention to his policies.[122] Saudi Arabia also entered a political alliance with the US at the final stage of the Second World War, declaring war against the Axis Powers in March 1945.[123] After the war, the alliance was converted into an anti-communist one. At the beginning of the 1950s, Saudi Arabia was thus targeted by Washington's Point IV programme, a technological assistance programme with the purpose of promoting capitalism and countering the rise of Communism in the developing world (a precursor of the USAID).[124] Under the programme, American technologists were deployed in the kingdom, mostly engaged in irrigation and agricultural projects.[125] In this manner, through both Aramco and the Point IV programme, the US came to dominate the supply of modern technology to Saudi Arabia. Thomas Lippman, a researcher on Saudi–American relations, once said: [126]

> "They [Americans] brought the country industrialization…One way or another, Americans have had a formative influence on almost every aspect of contemporary Saudi life except religion."

[122] Twitchell 1959: 92.
[123] Vassiliev 2000: 327.
[124] USAID, "USAID History", http://transition.usaid.gov/about_usaid/usaidhist.html [accessed 1 December 2014].
[125] Zuhur 2005: 50.
[126] Lippman 2004: 5.

Likewise, Toby Craig Jones argues in his book *Desert Kingdom: How Oil and Water Forged Modern Saudi Arabia* (2010) that the transfer of knowledge, skills, and technologies to the kingdom by American experts has helped the Saudi monarchy consolidate its ruling legitimacy vis-à-vis Saudi citizens, not only through the development of oil industry which has provided the state with a great distributive power, but also through the control of other resources such as freshwater.[127] The modernising monarchy of Saudi Arabia began to deepen its dependence on American technologies and technologists.

However, not everyone agrees with the theory of the US' positive collaboration with the Saudi state. For instance, Robert Vitalis harshly criticises Aramco in his book *America's Kingdom: Mythmaking on the Saudi Frontier* (2006) for its exploitative treatment of Saudi workers. He compares Aramco with European colonialism and even with the Jim Crow system, the legally-endorsed racial discrimination against African-Americans that had existed in the southern US until 1965.[128] In terms of technology, Aramco's relations with its Saudi workers were, in fact, reminiscent of European colonialism: Saudi workers were largely excluded from the control of technology in the company, and the company was more of a foreign enclave in the kingdom than a part of its national industry. Farouk A. H. Akhdar, a Saudi economist, once said about Aramco: [129]

[127] Jones 2010: 53.
[128] Vitalis 2006.
[129] Akhdar 1974: 92–93.

> "With this policy, ARAMCO continued to be an American company – with American capital, American technology, and American staff – operating in Saudi Arabia, rather than becoming an integral part of the Saudi industrial base."

This statement, which, indeed, is reminiscent of the abovementioned words of a Belgian worker in the cloth factory in the Ottoman Empire in the mid-nineteenth century, attests to the same problem the Saudis had faced then as that the Ottomans had done a century before: low level of HRD. Without sufficient qualified workers capable of replacing Americans, the Saudis could not help but accept the *modus operandi* of Aramco because they would not be able to produce and export black gold without the American hands.

Nevertheless, the Saudis did not resign themselves to remaining "America's Kingdom". They were about to launch their long, ceaseless quest to alleviate the kingdom's overdependence on the US and to grow more self-reliant in industrial technology. Although Abdulaziz, in spite of his cherishing of foreign technical experts, did not implement any development plan beyond the oil production,[130] nor had sufficient knowledge to understand how modern economy functions,[131] he, at least, discussed the future of industrialisation in the kingdom in his last several years. For instance, he requested American experts in 1948 to conduct preliminary studies for his plan of creating fertiliser production using gas in oilfields, a plan which came to be materialised two decades later (as discussed in Chapter 3).[132] The British embassy in Jeddah reported in 1955: "Government policy has been

[130] Wahba 1964: 174.
[131] Howarth 1964: 214.
[132] Petromin 1977: 266.

officially declared since 1952 to be in favour of turning Saudi Arabia into an industrial nation".[133] And here begins the narrative of Saudi Arabia as an "industrialising state".

Technopolitics

The above argument suggests that the key dynamic of Saudi–East Asian relations as "industrialising–industrialised relationships" lies in the diffusion of industrial technology from East Asian states to Saudi Arabia. It can be assumed that East Asian states have served as entrepôts of modern industrial technology for Saudi Arabia, as Saudi Arabia has attempted to diversify the sources of its industrial technology away from the US and to grow more self-reliant in regard to industrial technology. The next step of this thesis is to build up concepts which aptly explain the dynamics of the behaviour of each state towards the other in their bilateral relationships. To do so, this thesis will draw upon the approach of *technopolitics*.

The approach of technopolitics has been developed by Cold War historians in recent years. The main idea of the approach is to make a hybrid of science and technology studies and political studies. The primary objective of the approach is to discover the mutually-constitutive relationship between technology and politics: how technology shapes politics and vice versa.

[133] FO 371/114885.

The approach was first substantially developed by Gabrielle Hecht in her work *The Radiance of France: Nuclear Power and National Identity after World War II* (1998). In this work, Hecht examined the development of the French nuclear industry in the period after the Second World War, arguing that the French leadership's resolution to develop a nuclear industry was driven by its political goal to restore France's status as a world leader by demonstrating the country's technological prowess to the world. Such a goal was necessary for France at that time since the country had lost its self-respect as a result of the German invasion of France during the Second World War and the following decolonisation. The nuclear industry was chosen because it was a "quintessential symbol of modernity and national power". With this case study, Hecht defined technopolitics as the "strategic practice of designing or using technology to enact political goals".[134]

Following Hecht's work, the approach of technopolitics have been applied to a variety of cases in Cold War history – in particular, cases of developing countries, following the recent trend in Cold War history of reinterpreting the conflict as a "global Cold War" rather than seeing it merely as the relationships among superpowers and great powers.[135] Some recent works applying a technopolitical approach were included in *Entangled Geographies: Empire and Technopolitics in the Global Cold War* (2011), edited by Hecht. Multiple case studies in this edited volume explore how technopolitics has been practised in the nation-building of postcolonial developing countries, which were at the same time entangled in "new (or refashioned) imperial projections" at the time when the

[134] Hecht 1998: 1–2.
[135] Westad 2005.

world's technological hegemons changed from European empires to the two superpowers vying for a superior model of economy.[136]

The edited volume includes a study by Toby Craig Jones, an American historian specialising in Saudi Arabia which is based on his book *Desert Kingdom*. Drawing upon the approach of technopolitics, Jones provides a historical narrative of the development in Saudi Arabia, particularly focusing on the agricultural development in the Eastern Province. Jones argues that the Saudi state, supported by American technologists, shaped particular state-society relations by recreating environment in the kingdom with technology. He argues that, in addition to the distribution of oil rents (which is assumed by the rentier state theory), the Saudi state has consolidated the ruling legitimacy of its authoritarian regime through the control of freshwater and the supply of it to citizens.[137]

One of the main advantages of the approach of technopolitics is its flexibility in application. Diverse aspects of politics – and international relations – can be (re)examined in relation to technology. Thus, in the following sections, this thesis will develop technopolitical concepts that are tailored to an analysis of Saudi–East Asian industrial relations.

[136] Hecht 2011: 6.
[137] Jones 2010; 2011.

1.2. Techno-Sovereignty

First, this thesis develops the concept of "techno-sovereignty" in order to explain the behaviour of Saudi Arabia. The term techno-sovereignty, a coinage of this thesis, is an abbreviation of "technological sovereignty" and refers to a country's self-reliance in technology. Since, in reality, no country is perfectly self-reliant in technology, techno-sovereignty is what is called a Weberian *idealtyp* concept. Thus, the concept is used to describe a state's *desire* and *effort* to be less dependent on foreign technologies and technologists and to grow more autonomous in the control of technology. The above discussion on global divergence and convergence suggests that policymakers' desire to achieve techno-sovereignty can be considered almost universal among states in the world. David Edgerton, a science historian, argues that developing states recovering political sovereignty from colonial regime in the mid-twentieth century embraced a desire to create their own national technologies and technologists and to pursue catch-up industrialisation.[138]

In this regard, techno-sovereignty is considered to be one kind of expression of nationalism. Some researchers have already used the term "techno-nationalism" to explain this phenomenon. For instance, David Kang and Adam Segal have described techno-nationalism in East Asian countries as "the desire of states to free themselves from dependence on Western technologies", with the ultimate goal of creating a situation in which "the West will be as much dependent on us [East Asian countries] as we are on them

[138] Edgerton 2006: 136.

[the Western countries]".[139] This thesis uses techno-sovereignty in almost the same sense. Some authors have used the term to describe something different: a state's heavy involvement in the development of technology, as opposed to a market-driven approach.[140] This thesis refers to such a phenomenon as "techno-statism" to avoid confusion: when the term techno-nationalism is used in this thesis, it refers to techno-sovereignty.

Increase in the level of techno-sovereignty is assumed to be not a simple, linear process. It may seem that the easiest way to increase the level of techno-sovereignty is to exclude foreign technologies and technologists from the country as much as possible. However, such a self-imposition of technological isolation would only lead to the stagnation of technological progress and make catch-up industrialisation even harder. This is a problem this thesis refers to as the "paradox of the techno-nationalist". To increase the level of techno-sovereignty in a sustainable manner, a country must be open, rather than closed, to foreign technologies and technologists. Certainly, opening a country to the inflow of foreign technologies and technologists would also put the country at risk of being dominated by them. In the worst case scenario, foreign technologies and technologists would crowd out national ones, leading to the exploitation of national workers only as low-cost manual labour and the deprivation of them of opportunities to develop their own technological capacity.[141] In order to avoid falling into this "continuing dependence" scenario, policymakers in developing countries must design the country's technology regime to be not only open but also *autonomous* at the same time. In other words, the

[139] Kang and Segal 2006: 6.
[140] Ostry and Nelson 1995.
[141] Hoekman, Maskus, and Saggi 2005: 1589.

presence of foreign technologies and technologists must empower, rather than exploit, national workers by offering them windows of opportunity to obtain knowledge and skills. The diffusion of industrial technology means not a mere movement of technology, but the *absorption* of that technology by national workers.

Early technological progress in developing countries tends to be techno-statist. This is partly because of the state-capitalist nature of many developing countries that are ruled by authoritarian regimes.[142] Nevertheless, techno-statist development can take place even in democratic developing countries. In developing countries the state usually has the largest financial capacity – far larger than any private firm. Thus, in many cases, the state is the only actor that can make substantial investment in building the infrastructure necessary for launching production, such as transport, utilities, and HRD institutions. In addition, even after the creation of infrastructure, the state tends to be a prime employer of the scarce educated nationals, reproducing its centrality to the country's technological progress. State-owned enterprises (SOEs) often offer generous payment scheme and retain exceptional competitiveness in recruiting the country's best and brightest workers.

Certainly, private firms are also actors of technological progress. They make use of the infrastructure built by the state and sometimes attract workers from SOEs as well, creating second, domestic technology diffusion. In addition, as the country's HRD institutions develop and grow able to supply qualified workers to the labour market, recruitment of workers for private firms becomes easier. As private firms grow, they also demand from the state a greater stake in the economy: such a change is also encouraged

[142] In his book *The End of the Free Market* (2010), Ian Bremmer defines state capitalism as "a system in which the state dominates markets primarily for political gain" (43).

today by international financial institutions calling for small states. However, the speed and the degree of the rise of private firms may vary across industrial sectors. Participation of private firms tends to be easier in lightly-equipped sectors, such as textiles and IT. In contrast, it may be more difficult in heavy, large-scale industries, such as steel and petrochemicals, where the state often plays the role of "midwife".[143] In addition, young private firms are also disadvantaged in research-and-development (R&D) which requires large and long-term financial inputs in spite of the high uncertainty in outputs. In comparison, SOEs can easily take advantage of state-run universities and research institutions for R&D.[144]

This thesis assumes that there are two strategies that the state in a developing country can employ for increasing the level of techno-sovereignty: (1) enhancement of absorptive capacity; and (2) diversification of the sources of technology. Enhancement of absorptive capacity means to empower national workers with appropriate basic knowledge and skills so that they are able to absorb technology from foreign investors in the country and become capable of carrying out production on their own. This requires a certain level of HRD: if the level of HRD is not sufficient, national workers may only be exploited by foreign investors as cheap manual labour. This would even put the country at the risk of "premature deindustrialisation" in today's global economy, where low-skilled industrial productions constantly travel around the world seeking lower labour costs.[145] For holding

[143] Evans 1995: 74–98.
[144] For instance, university-run enterprises led the early stage of technological progress in China, but their presence has been in decline in recent years due to the growth in private firms' R&D capacity (Eun, Lee, and Wu 2006).
[145] "Emerging Economies: Arrested Development", *The Economist*, 4 October 2014.

industrial productions and upgrading them to more value-added ones, the state, thus, needs to develop the country's HRD institutions in accordance with the requirements of industry, both in terms quality and quantity. Koji Miyamoto, a Japanese economist, argues that an effective combination of FDI and HRD accelerates the diffusion of industrial technology, creating a "virtuous cycle" of development, which was the case in economies such as Singapore, Ireland, and Costa Rica.[146]

For foreign investors, however, absorption fundamentally works against their interests. While the presence of a large pool of capable national technological workers enables them to cut down their labour costs, their mastery of the production technology creates the risk of losing their market share due to the emergence of local competitors in the market, or, in some cases, even that their production would be nationalised by the host state. Thus, in theory, it is in foreign investors' interests to control the process of technology diffusion, limiting opportunities for national workers to absorb advanced knowledge, skills, and technologies.

Here arises the need for the second strategy: diversification of the sources of technology. In order to promote absorption, it is desirable to avoid overdependence on a single or only few sources of technology. Securing multiple sources of technology not only hedges the risk, but also increases the state's bargaining power vis-à-vis foreign investors. By making multiple foreign investors compete with each other, the state is able to gain an advantage in negotiations regarding achieving more favourable conditions for absorption. This strategy of technological diversification may overlap with the state's overall foreign

[146] Miyamoto 2003.

policy strategy of diversifying external relations. For instance, as the words of Chas Freeman quoted at the beginning of this chapter show, Saudi Arabia has attempted to diversify its external relations while maintaining a close alliance with the US. Gerd Nonneman theorised this behaviour as "managed multi-dependence" in his analysis of Saudi Arabia's relations with European states. He argues that Saudi Arabia is not a powerless, dependent actor in international relations, but the one that is actively seeking to enhance its relative autonomy by cultivating relations with multiple major powers and, thereby, creating room for manoeuvre.[147] This principle applies to the field of technological development as well.

Finally, it is worth mentioning that techno-sovereignty cannot be an all-time solution. In some cases, "techno-globalism" is preferred to techno-nationalism. Indeed, technological progress in the US and Europe today is made in highly cosmopolitan environments where people from different countries of origin work together.[148] However, as Jeffery Sachs rightly argued, we must discern the contexts of innovation-oriented technological progress and catch-up-oriented technological progress. In innovation-oriented countries, which have already secured a high level of techno-sovereignty and, in many cases, are able to export their national technologies and technologists to other countries, techno-globalism would be an optimal solution to further technological progress. Nevertheless, in catch-up-oriented countries, technological progress mainly means alleviating their dependence on foreign technologies and technologists and increasing the

[147] Nonneman 2001: 635.
[148] Stevens 1990; Ostry and Nelson 1995.

level of technological self-reliance so that they will grow more autonomous in the control of technology.

1.3. Techno-Diplomacy

On the other hand, this thesis develops the concept of "techno-diplomacy" in order to explain the behaviour of East Asian states in their industrial relations with Saudi Arabia. Techno-diplomacy is defined as a state's diplomatic strategy of implementing the transfer of industrial technology to acquire other types of gain in return. [149] It is a concept that forms a dyad with techno-sovereignty. The strategy of techno-diplomacy is effective when a developing state pursuing techno-sovereignty demands transfer of technology from other states: those states, then, can demand a *quid pro quo* for the provision of the technology. However, technology is only one sort of gains which developing states demand from advanced states. What developing states demand from advanced states may vary, ranging from humanitarian aid and financial grants and loans, to military assistance and arms transfer. Thus, we need to specify the conditions in which techno-diplomacy becomes an effective instrument of diplomacy.

[149] Although techno-diplomacy is an original concept of this thesis, similar terms have been in use in the past. For instance, the United Nations Conference on Trade and Development (UNCTAD) used the term "science and technology diplomacy", defined as "the provision of science and technology advice to multinational negotiations and the implementation of the results of such negotiations at the national level", to refer to inter-state cooperation on agenda items such as climate change and nuclear non-proliferation (UNCTAD 2003: 3).

First, the developing state targeted for techno-diplomacy must prioritise the pursuit of techno-sovereignty to other national policy goals. This seems to be an obvious precondition, but, in reality, developing countries are often conflict-ridden (be it by internal or regional conflict) and do not prioritise economic development and industrialisation in their national policymaking. When security is higher than development in terms of priority, other foreign policy strategies such as the deployment of forces or arms transfer would be a more effective instrument than techno-diplomacy. This implies that, in general, techno-diplomacy works more effectively in a time when conflict is at a low level.

Second, this thesis hypothesises that techno-diplomacy is a more effective strategy to be deployed towards resource-endowed developing states than towards other developing states. The rationale is that resource-endowed developing states are different from their peers in terms of the amount of capital they possess. In fact, the GCC states, which have plentiful oil and gas revenues and relatively small populations, enjoy GDP per capita almost on a par with the OECD countries. According to the IMF, Saudi Arabia's GDP per capita in 2013 ($24,953) was close to that of South Korea ($25,975); that of the UAE ($44,552) was higher than that of Japan ($38,468), the UK ($39,372), and France ($44,099); and that of Qatar ($98,986) was the third largest in the world only after Luxembourg ($112,473) and Norway ($100,579).[150] In other words, the GCC countries are *capital-rich developing countries* which are able to draw capital from the global economy through the export of oil and gas. This means that they are not highly in need of financial

[150] International Monetary Fund, "World Economic Outlook Database", October 2014, http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/index.aspx [accessed 1 December 2014].

assistances such as humanitarian aid or financial loans.[151] This makes the normal foreign policy strategy of advanced states, often termed "aid diplomacy", or more derogatively called "chequebook diplomacy", ineffective towards them.[152] What they demand from advanced states is technology which they are unable to develop on their own.

Third, what they demand in techno-diplomacy is not merely the transfer of goods but the transfer of production processes. Development in the GCC countries are often criticised as being "façade industrialisation". They purchase advanced machines from advanced economies but are, in many cases, unable to control them by themselves. In other words, their industrialisation is "turnkey-oriented": imported machines are ready-made, not requiring technological expertise on the part of the user, but requiring only the act of turning the key to operate them.[153] However, this type of industrialisation does not contribute much to the enhancement of techno-sovereignty, which is a state's autonomy in technological capability. Thus, policymakers in these countries desire to grow self-capable in respect of producing industrial outputs, rather than simply "buying" development. For the transfer of production processes, trade is not enough. There must be a process in which technologists from advanced countries work together with those in developing countries and assist them in absorption of knowledge and skills such as production-based (not merely financial) foreign direct investment and inter-state cooperation on HRD.[154] In other words,

[151] The GCC states are even emerging as donors in the international community today ("New Sources of Aid: Charity Begins Abroad", *The Economist*, 13 August 2011).
[152] Taylor 2006.
[153] Zahlan 2012: 3689 (Kindle).
[154] Easterlin 1981: 4.

the movement of *people* is required, in addition to the movement of goods.[155] Taizo Yakushiji, a Japanese scholar specialising in the analysis of technology in international relations, calls such people "techno-migrants", arguing that the diffusion of industrial technology has been made possible, in many cases, by the movement of people with technological expertise, such as the migration of persecuted French Huguenots to England on the eve of the Industrial Revolution, and German Jews seeking asylum in the US before, during, and after the Second World War.[156]

Fourth, techno-diplomacy would be effective when the transferability of technology is low in the market. When developing countries are able to attract foreign production on their own, they do not require the intervention of the state in the form of techno-diplomacy. The state's hand is required where the diffusion of technology does not occur if left to the market. The low transferability is considered to derive from two factors: (1) the nature of the industrial sector; and (2) the level of HRD in the technology-recipient state. Regarding the nature of the industrial sector, lightly-equipped industries, such as textiles or IT, are considered to be of relatively high transferability in the market because of the relative easiness of launching them. In contrast, heavy industries such as steel and petrochemicals are considered to be of relatively low transferability since they require high initial investment costs and investors often require the state's assistance in the first place.

Regarding the level of HRD, it is assumed that countries with high technological capability can more easily attract foreign production since a pool of educated workers is one of the crucial factors in the decision of MNEs to relocate production to developing

[155] Hoekman, Maskus, and Saggi 2005: 1588–1590.
[156] Yakushiji 1989.

countries. On the other hand, the state's hand is required in countries with a compromised level of HRD. Thus, techno-diplomacy sometimes involves not only the transfer of production processes but also the empowerment of national workers by assisting the development of HRD institutions. This inevitably makes *continuity* a norm of techno-diplomacy: the commitment required in techno-diplomacy tends to be long-term and institutionalised in which industrial training and formal and informal education play important roles.[157]

Fifth, this large degree of commitment required in techno-diplomacy means that advanced states practise it only when the gain in return is clearly recognised. The importance of achieving that gain must be great enough in the political objective of their diplomacy. This thesis assumes that the degree of that importance is determined by the two factors: (i) the scarcity of the reward provided by the technology-recipient state; and (ii) the degree of dependence of the advanced state on that reward. Such scarcity and dependence are considered to be *dynamic* rather than static. Thus, the degree of incentives for advanced states to practise techno-diplomacy is subject to change.

This thesis identifies different types of gains for Japan's and Taiwan's techno-diplomacy towards Saudi Arabia. In the case of Japan, the scarce reward Saudi Arabia offers is the supply of oil, on which Japan's economy is highly dependent. In the case of Taiwan, it had been diplomatic recognition: Saudi Arabia was one of the few Arab states which maintained the formal diplomatic relationship with Taiwan after the replacement of Taiwan with China at the UN in 1971. Between those two cases, the level of scarcity and

[157] Ilgen and Pempel 1987: 172–173.

dependence has been more dynamic in the case of Japan than in the case of Taiwan. The scarcity of the supply of oil by Saudi Arabia and Japan's dependence on it are greatly influenced by the demand-supply balance in the global oil market, which has been constantly changing in the past decades. On the other hand, the high strategic importance of Saudi Arabia to Taiwan's international legitimacy in the same period has rather been consistently high. This presumably explains the more fluctuating levels of Japan's commitment to techno-diplomacy towards Saudi Arabia and the more consistent levels of Taiwan's.

Sixth, the actor in techno-diplomacy is not only the state – private firms are indispensable players as well. More precisely, whether private firms appear as actors in techno-diplomacy depends on the nature of the economy in the technology-sending state. When SOEs control major industries in the economy, private firms do not appear as major actors of techno-diplomacy, of course. On the other hand, when major industrial production is in the hands of private firms, private firms would inevitably be main actors of implementation of the transfer of industrial technology. In such case, for techno-diplomacy to take place, there must be match of interests between the state and private firms in the technology-sending state. In other words, techno-diplomacy takes place only when market fundamentals are favourable for private firms to invest, yet they are unable to invest alone due to "market failure" situations. The major market failure situations are considered to be

the insufficiency of information about the market and counterpart firms and the perceived high risks of investments caused by it.[158]

In those situations, the state can assist private firms in FDI through various means, including provision of financial assistance, facilitation of the formation of a consortium (in order to disperse the risks), an offer of opportunities for their "matchmaking" with firms in the host country through cooperation with the counterpart state, a provision of logistical supports through embassies and other governmental institutions in operation in the host country. The state can also assist private firms in recruitment of local workers in the field of HRD, either directly by assisting HRD institutions in the host country through interstate cooperation, and/or indirectly by providing supports to private firms in doing so. Furthermore, the state can encourage higher education institutions to accept students from the technology-recipient country: when these students return to the country after graduation, they may serve as effective workforces for those private firms investing there.

Seventh, techno-diplomacy has the advantage of being value-neutral as a foreign policy strategy. Because of the universal nature of technology, techno-diplomacy can easily bridge the gaps between states with different social and cultural values, and help them discover common interests.[159] Such nature is particularly useful in the cases of Saudi–East Asian relations in which political and cultural differences between the two sides are large. In comparison, diplomacy that emphasises certain values may have the risk of being seen as

[158] The concept of market failure encompasses a variety of economically-unfavourable phenomena, with their common trait defined as inefficient allocation of resources (John O. Ledyard, "Market Failure", The New Palgrave Dictionary of Economics, http://www.dictionaryofeconomics.com/ [accessed 1 December 2014]).
[159] Royal Society 2011: 15.

"cultural imperialism" and damaging the bilateral relationship. For instance, the Bush administration's Greater Middle East Initiative for promoting democracy in the region met opposition by Saudi Arabia and other authoritarian Arab states.[160] Certainly, technology *can* be provocative as well. For instance, the introduction of modern technology such as telecommunication or television to Saudi Arabia has initially met opposition by religious conservatives who considered them *haram*, or forbidden under Islam. However, in most cases, their opposition was eventually rejected by the king who green-lit the introduction of those technologies for the purpose of modernisation of the country.

Conclusion of Chapter 1

Saudi–East Asian relations have hitherto been understood largely as energy producer–consumer relationships. In other words, they have been seen as the relationships between the "underindustrialised" and the "industrialised". This perspective has derived from the nature of the global economy in the period after the Industrial Revolution, where a hierarchical division of labour has been the norm. While the North has continued to grow through technological innovation, the South has remained underdeveloped and has subsisted by exporting natural resources. However, a number of developing states have begun to industrialise today and are forming a middle ground between the North and the South, owing to of a diffusion of industrial technology. Gradual progress in HRD in the

[160] Ottaway 2008: 221.

latter half of the twentieth century has enabled these "emerging economies" to absorb industrial technology from the North and to increasingly carry out industrial production on their own.

Saudi–East Asian non-oil industrial relations can also be understood using this analytical framework. Japan and Taiwan are states in the non-Western world which succeeded in industrialisation at early and semi-early periods. Thus, in the system of global technology diffusion, Japan and Taiwan have served as entrepôts of modern technologies between the West and the non-Western developing world, providing the latter with additional sources of industrial technology. On the other hand, Saudi Arabia, after the creation of the kingdom as a modern state, came to be dominated by American technologies. However, the kingdom, just as many other developing states, has pursued "techno-sovereignty", a greater level of self-reliance in industrial technology, in order to alleviate its dependence on those American technologies.

In doing so, Saudi Arabia, nevertheless, faced the "paradox of the techno-nationalist" – it had to bring more, rather than less, foreign technologies and technologists into the country at an initial stage of industrialisation, in order to establish the base of production, in spite of the risk of entrenching the country's dependence on them. Saudi Arabia has coped with this challenge by practicing two policies. The first is accelerating HRD to enhance the absorptive capacity of national industrial workers. The second is diversifying the sources of industrial technology, avoiding overdependence on the US and creating a situation of "managed multi-dependence" that is conducive to stronger bargaining power vis-à-vis

foreign investors. Through these two policies, Saudi Arabia has attempted to "Saudise" the foreign-invested industrial production over the years.

Japan and Taiwan, on the other hand, have practised "techno-diplomacy" towards Saudi Arabia, a diplomatic strategy of making use of the transfer of industrial technology to acquire other types of gain in return. Techno-diplomacy is more than aid diplomacy since it involves the transfer of production processes. Japan and Taiwan have established different kinds of *quid pro quo* relations with Saudi Arabia. In the case of Japan, the reward provided by Saudi Arabia in return for the transfer of industrial technology was mainly oil. On the other hand, in the case of Taiwan, the reward was the maintenance of diplomatic recognition (until 1990) and of a substantial informal relationship (after 1990). The scarcity of these rewards has given Saudi Arabia a strong bargaining power vis-à-vis Japan and Taiwan in demanding industrial cooperation from them, although the level of scarcity has changed over time, especially in the case of Japan.

In this manner, this thesis will explain Saudi–East Asian industrial relations as the relationships between an industrialising state that pursues techno-sovereignty (Saudi Arabia) and industrialised states that practise techno-diplomacy (Japan and Taiwan). Nevertheless, there is another factor which is considered to play an important role in these relationships: oil. We must remember that Saudi–East Asian relations are not only industrialising–industrialised relationships but at the same time energy producer–consumer relationships. Thus, how the two kinds of relationships influence each other must be explored. In particular, the way Saudi Arabia pursues techno-sovereignty is considered to be different from other non-oil-endowed developing states. In what way does the presence

of an oil industry and abundant oil rents generated by it affect Saudi Arabia's industrialisation process? And how does this presence matter to its industrial relations with East Asian states? Chapter 2 will discuss the relationship between oil and industrialisation.

Chapter 2

Production with Rentier Characteristics:

Industrial Diversification in Oil Economies

"Fifty or sixty years ago, people in Saudi society worked at everything that was legal according to their capacities and the resources available at that time. They worked as builders and artisans, using mud bricks and the leaves and trunks of the palm tree; they were shepherds and camel owners and skilled workers such as carpenters and plumbers and I can testify to that." – Abdulhadi Taher, a former governor of Petromin (2011).[161]

"[T]he problems involved in breaking the rentier pattern may be far more difficult and complex than merely constructing modern cities and airports. If the indigenous populations do not become psychologically involved in the development process, they may be transformed into a prodigal luxury class, totally dependent on rents and foreign labor. They will, in effect, be unable to operate or maintain the economy they have purchased, ready-made, in the international marketplace." – Monte Palmer, Professor of Government, Florida State University (1984).[162]

[161] Taher 2011: 164.
[162] Palmer, Alghofaily, and Alnimir 1984: 21.

The previous chapter theorised Saudi–East Asian industrial relations as the interactions between an industrialising state pursuing techno-sovereignty (Saudi Arabia) and industrialised states practising techno-diplomacy (Japan and Taiwan). This chapter will explore how oil is involved in such interactions. In particular, it will examine the relationship between oil and industrialisation, which has been a subject of academic debate for decades. First, the previous literature on this issue will be reviewed; and then the oil-industrialisation relationship will be re-examined from the perspective of HRD and diffusion of industrial technology, concerning the case of Saudi Arabia in particular.

2.1. Resource Curse or Blessing?: Critiquing the Previous Literature

Saudi Arabia, which is home to the world's second largest proven oil reserves, estimated to be 265.4 billion barrels, or slightly less than one-fifth of the world's total reserves, is an archetypal natural resource-endowed economy.[163] Therefore, the debate about the relationship between natural resources and development has reasonably been a major concern of economists studying this country. In fact, the relationship between natural resources and industrialisation has been one of the major interests of development economists since the 1960. On one hand, the records of modernisation in the West since the days of the Industrial Revolution had suggested that economies endowed with abundant

[163] Saudi Arabia's proven oil reserves had been the world's largest until 2011 when new reserves were discovered in Venezuela and made that country's estimated reserves jump to 296.5 billion barrels ("Venezuela Passes Saudis to Hold World's Biggest Oil Reserves", *Bloomberg*, 14 June 2012).

natural resources, mostly coal before the mid-twentieth century, were in an advantageous position for industrialisation. It has been widely believed that the Industrial Revolution could take place in England,[164] and rapidly spread to the rest of Western Europe and European offshoots around the world (or "Neo-Europes") owing to the presence of abundant coal reserves in those countries.[165]

However, developing countries in the non-Western world which attempted to industrialise in the mid-twentieth century found themselves not being able to repeat the success of Western economies. In spite of the rich endowment of oil, coal, and other natural resources, most developing countries failed to capture the chances to use these resources for fuelling their own Industrial Revolution. Thus, economists in the developing world began to suspect that the presence of abundant natural resources might not contribute to growth, but poses a negative impact on it in the context their countries were embedded. Here, an enquiry into a causal relationship between natural resources and industrialisation began, which has continued until today.

In what follows, three main approaches addressing that relationship will be discussed in a critical manner: (1) the dependency theory; (2) the rentier state theory; and (3) the resource curse thesis.

[164] Kenneth Pomeranz compares Britain and China in the mid-eighteenth century and argues that the Industrial Revolution took place in Britain because of the proximity of the coal deposit to artisan skills and consumer demands while it did not in China because the coal deposit was located far from these (Pomeranz 2000: 60).
[165] Sachs 2012.

The Dependency Theory

It was economists from Latin American countries who first thought of the presence of a negative association between abundant natural resources and industrialisation. In the 1960s, economists from Brazil, Argentina, Chile, and other Latin American countries questioned why their countries had failed to fulfil the early optimism about industrial growth derived from the modernisation theory – the theory that had argued that the accumulation of capital would bring in industrialisation.[166] They suspected that the culprit behind the underdevelopment in their countries and in the developing world in general was a global trade system and its hierarchical nature which had persisted since the age of colonialism; and that this system had kept developing economies in an exploited and subordinate position even after decolonisation and their recovery of political sovereignty.

This idea came to be called *la teoría de la dependencia* (the "dependency theory").[167] Dependency theorists argued that the global trade system created by the former European empires had imposed a hierarchical division of labour upon their colonies. In this system, developing economies (the South) exported raw materials to advanced economies (the North) at low prices. The advanced economies produced industrial products by processing those raw materials and exported those products back to the developing economies at high prices. This system kept exacerbating the inequality between the two worlds, making the North richer and the South poorer, capping the upward mobility of the latter, they claimed. As long as this system persisted, capital could not be accumulated in

[166] Rostow 1960.
[167] Jackson and Sørenson (2013: 187–196) offer a good overview of the dependency theory.

the South to a level sufficient to enable take-off, forcing them to remain monocultural. For a solution, they called for decoupling their economies from global trade: while radical theorists (such as André Gunder Frank and Samir Amin) insisted on a complete delinking of the economy from the global economy, more moderate ones (such as Fernando Henrique Cardoso and Enzo Faletto) proposed a milder approach of import-substitution industrialisation.[168] The theory soon became popular among intellectuals and political activists in countries not only in Latin America but in other parts of the world as well.

However, the dependency theory came to lose its credibility in the 1970s when multiple developing economies began industrialising successfully in spite of their connections to the global economy. These economies, called "newly-industrialising economies" (NIEs), grew by producing and exporting simple, lower-cost industrial products to advanced economies. Their growth suggested the neutrality of the global trade system to the industrialisation process in developing countries. In fact, some major proponents of the dependency theory admitted the theory's oversimplification. One of the major flaws of the theory was its insufficiency in identifying the diverse domestic causes of underdevelopment: Cardoso, for instance, admitted that the theory had wrongly regarded the problems in developing economies as all foreign-made.[169] The rise of NIEs demonstrated that domestic industrial policy did matter to industrialisation.[170] In this manner, the theory came to be seen as moribund by the 1980s.[171]

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[168] Velasco 2002: 44–45.
[169] Ibid.
[170] Haggard 1990: 21–22.
[171] The theory's spirit of accusing global exploitation and inequality was, however, inherited by anti-globalists in the 1990s (James 1997: 205–226).

The dependency theory was once certainly popular among Arab economists and intellectuals as well. Although the theory was generally placed on the back-burner during the oil boom period in the 1970s, the collapse of oil prices and the slowdown of industrial growth in the Arab world resulted in the resurgence of the theory in the 1980s. Arab economists such as Yusuf Sayigh, Abbas Alnasrawi, and Samir Makdisi wrote about an "Arab dependency", in which, they considered, the presence of abundant oil reserves played a large role.[172] As for Saudi Arabia, Khalid Majid Khuthaila, for instance, wrote a doctoral thesis (Syracuse University, 1984) entitled "Saudi Arabia's Development: A Dependency Theory Perspective", in which he categorically concluded: "Saudi Arabia has a dependent economy".[173] Importantly, the dependency theory, permeating every part of the global intellectual sphere as a *zeitgeist* of that time, shaped a worldview of key Saudi policymakers such as King Faisal and Ghazi Al-Gosaibi (as discussed in Chapter 3).

In addition, although the focus of discussion shifted to the rentier state theory after the 1990s, some scholars today still maintain a structuralist "core-periphery" worldview which is one of the intellectual offshoots of the dependency theory. For instance, Sally Cummings and Raymond Hinnebusch, in their edited volume *Sovereignty after Empire: Comparing the Middle East and Central Asia* (2011), describe Arab countries as "semi-sovereign", which identify as a middle category between "neo-colonialism" and "total independence".[174] Although the analysis specific to Saudi Arabia is not provided in the book, they address that Gulf counties' asymmetric economic ties with the advanced

[172] Makdisi 1990; Sayigh 1991; Alnasrawi 1991.
[173] Khuthaila 1984: "Abstract".
[174] Cummings and Hinnebusch 2011: 342.

economies had been deepened by the "recycling" of oil rents – the re-movement of capital back to advanced economies through the global trade and investment.[175]

This thesis which explains development from the perspective of HRD and diffusion of technology does not fully support the capitalocentric argument of the dependency theory. It, nevertheless, acknowledges that the theory's claim was valid to some extent, especially in terms of the price of natural resources. Before the 1970s, the pricing of oil was controlled by Western IOCs. Those IOCs priced oil quite cheaply at less than $2 per barrel (less than $15 in 2014) throughout the 1960s.[176] The post-war rehabilitation of West European countries and the rapid growth of Japan were made possible by such low-cost oil at the expense of capital accumulation in oil-exporting developing countries, to some degree.

The Rentier State Theory

In the 1990s, the mainstream discussion concerning the political economy of Gulf countries shifted from the dependency theory to the rentier state theory. While the dependency theory had been developed largely on the basis of Latin American cases, the rentier state theory was made from the observation of Gulf economies. The term "rentier state" was first coined by Hussein Mahdavy in his analysis of the Iranian economy in 1970.[177] Nevertheless, the

[175] Ibid.: 330.
[176] BP, "Statistical Review of World Energy 2014", http://www.bp.com/en/global/corporate/about-bp/energy-economics/statistical-review-of-world-energy.html [accessed 1 December 2014].
[177] Mahdavy 1970.

concept was theoretically developed by Giacomo Luciani in his paper entitled "Allocation vs. Production State: A Theoretical Framework" in the edited volume *The Rentier State* (1987) he co-authored with Hazem Beblawi.

Luciani defined a rentier state as a state whose revenue is highly dependent – with the benchmark of 40% – on the external source of income, or *rent*, represented by the export of oil.[178] Luciani called a rentier state an "allocation state" as well, as contrasted with a (normal) "production state", arguing that, while the production state acquires revenues from the taxation on domestic productive activities, the allocation state does not need to do so because it can earn revenues from the payments made by external economic actors.

The main explanandum (i.e. what is explained) of the rentier state theory was the absence of democracy in oil-exporting Gulf countries. Luciani pithily identified the logic as "no representation without taxation",[179] arguing that the authoritarian regime in a rentier allocation state can secure people's loyalty (or, at least, silence) by distributing the rent from above and making people financially dependent on the state.[180] However, Luciani claimed that such political dynamics have a significant impact on the form of economy as well. The fundamental objective of the authoritarian regime, which is co-optation of people,

[178] Luciani 1987: 70.
[179] Ibid.: 75.
[180] This presumes that oil rents directly flow into the state. However, it is not the case of all oil-exporting countries. In the case of the former Soviet states, for instance, the oil industry has been privatised and the state needs to tax on the industry. In this manner, the *ownership structure* is a key intervening variable between oil and political dynamics (Luong and Weinthal 2010: 322).

does not necessitate the state's active economic policy aimed at increasing domestic productive activities. Luciani states:[181]

> "The state, being independent of the strength of the domestic economy, does not need to formulate anything deserving the appellation of economic policy: all it needs is an expenditure policy."

Luciani, however, at the same time did not exclude the possibility of the allocation state's *evolution* into a production state. In fact, he expected gradual evolution in the cases of Algeria and Iraq which were ruled by military regimes and had less patrimonial political institutions than the case of Gulf countries. However, he was pessimistic about the possibility of evolution in the cases of Gulf countries, saying that "we may imagine a situation in which the allocation state continues unchanged until the last drop of oil is exported".[182]

Luciani's prediction was, however, defied by the developments on the ground thereafter. While industrialisation in Algeria and Iraq stagnated due to conflicts, some Gulf countries accelerated their efforts towards economic diversification. One example is the UAE. In his trilogy of journal articles about the development in Dubai, Martin Hvidt proposes the "Dubai model" of development, which he identified as active cooperation between the state and the private sector in the promotion of productive activities.[183] Hvidt

[181] Luciani 1987: 74.
[182] Ibid.: 81.
[183] Hvidt 2007; Hvidt 2009; Hvidt 2011: 87–90.

argues that the Dubai model was inspired by the experience of Singapore where a development-oriented authoritarian regime succeeded in building up a competitive economy with the strategy of developing the country as a hub of global transport and finance. Although Dubai had not exactly been an oil-rentier economy (oilfields in the UAE are concentrated in Abu Dhabi), Hvidt believes that the Dubai model is a model that can be extended to other rentier states in the Gulf region.[184]

The state-capitalist development in rentier states was also underscored by Matthew Gray who proposed a concept of "late rentierism" in his paper entitled "A Theory of 'Late Rentierism' in the Arab States of the Gulf" (2011). Gray assumes late rentierism to be the latest phase of evolution of a rentier state. According to his assumptions, there have been three stages of that evolution: (i) classical rentierism in the 1980s and the early 1990s; (ii) the transition period in the 1990s and the early 2000s; and (iii) late rentierism in the mid- and late 2000s. A late rentier state differs from a classical rentier state in following points:

- It is undemocratic but is more responsive to the society
- It opens its economy to globalisation
- It plans and implements an active development policy
- Its development is energy-driven rather than energy-centric
- It is characterised by an entrepreneurial state-capitalism
- It makes strategies by applying long-term thinking

[184] Hvidt 2011: 85.

Gray identifies factors that have driven the evolution as: (a) state maturity; (b) globalisation; (c) development policies; and (d) population and employment pressures.[185] While he admits the validity of the rentier state theory in its account of *political* dynamics in Gulf countries, he emphasises a greater complexity on the part of their economic structures, stating:[186]

> "There is more to Gulf politics than rents…rentierism remains the theory with the most utility and cogency in explaining the political dynamics, but not the economic structures, of the Gulf states…Too many variables…complicate the state and its role, requiring that the political elite develop a more nuanced, engaged and complex approach to society and policy-making."

Likewise, Steffen Hertog develops an explanation of why SOEs in the GCC countries have been more successful in profit-making than their counterparts in other developing countries. Hertog attributes the efficiency of SOEs in the GCC countries to the highly authoritarian nature of the regimes which do not have the history of populist mobilisation.[187] He argues that the strong mandate given to the owner of these SOEs, in most cases royal family members, enables them to insulate their enterprises from the rest of the economy where the thrust of political patronages tends to divert capital from the productive sector. Without such a mandate, rents would be spent by reference to a political

[185] Gray 2011: 19.
[186] Ibid.: 36–37.
[187] Hertog 2010b: 261.

logic rather than to an economic logic. Hertog calls those SOEs "islands of efficiency", implying that they are exceptional entities in the ocean of compromised institutions.

Those criticisms of the rentier state theory and revisionist views indicate that the rentier nature of the economy is, in fact, not related to the *will* of policymakers to industrialise the country and promote economic diversification away from oil. Economic diversification may not be necessary for the authoritarian patrimonial ruler, but being a rentier does not prevent the development-oriented ruler from planning and implementing economic and industrial policies either. Here, the idiosyncratic (individual) factor seems to matter greatly. Although contemporary political sciences favour structural explanations and generally shy away from the traditional "Great Man" theory, *agency*, as contrasted with *structure*, does play an indispensable role in shaping policies, especially in the cases of patrimonial rentier states where power is concentrated in the hands of a handful of monarchical decision-makers.[188] Indeed, in his recent writing, Luciani himself admits that rulers in the Gulf countries *can* be development-minded, saying:[189]

> "It is also argued that diversification and growth is not a necessity for a rentier state… However, this does not mean that a rentier state may not be committed to development. Pushing the argument to the extreme of expecting that a rentier state will prefer stagnation to development is not supported by historical experience…"

[188] Sullivan and Ismael 1991: 19–20; Hertog 2007: 539.
[189] Luciani 2012: 8–9.

The Resource Curse Thesis

In the late 1980s, almost around the same time as Luciani's presentation of the rentier state theory, the idea of the "resource curse" began to emerge.[190] The main assumption of the resource curse thesis is that developing economies endowed with abundant natural resources grow more slowly on average than their non-resource-endowed counterparts. Latin American economies again generated this idea. While the dependency theory had lost its credibility in the 1970s, the stagnation of Latin American economies, including Brazil and Mexico, the two Latin American NIEs, in the 1980s in contrast with the continuing growth of resource-scarce East Asian NIEs (Taiwan, South Korea, and Singapore) revived the speculation about the natural resources-underdevelopment links. In the following two decades, the resource curse thesis remained an open subject of debate, with different hypotheses, approaches, and case studies being developed.

In particular, a quantitative analysis by Jeffrey Sachs and Andrew Warner in 1995, examining the correlation between the ratio of natural resource exports to GDP and growth of 97 countries in the period between 1970 and 1989, statistically confirmed the negative correlation between abundant natural resources and growth.[191] This analysis activated the search for causal mechanisms of the correlation. Early researches such as Richard Auty's *Sustaining Development in Mineral Economies: The Resource Curse Thesis* (1993) identified the volatile nature of resource-extracting industries as its culprit. The presence of a boom-bust cycle in those industries makes their revenues unstable and hard to predict,

[190] Gelb 1988.
[191] Sachs and Warner 1995.

leading to a greater risk of mismanagement of the state's economic policy.[192] In fact, as the resource-extracting industries entered a bust period in the 1980s and the 1990s, Latin American countries came to suffer from a serious fiscal imbalance. Other major hypotheses included the distortion of exchange rates (often referred to as the "Dutch disease"), civil war, and weak institutions.[193] Of these, the volatility, Dutch disease, and civil war variables are unlikely to hold in the case of Saudi Arabia. Although Saudi Arabia also suffered from almost two decades-long budget deficit in the bust period, it did not face a debt crisis similar to those experienced by Latin American economies, thanks to the capital reserve it had piled up during the boom period in the 1970s and the lower level of borrowings. As for the Dutch disease, the exchange rate in Saudi Arabia has remained under the state's control as Saudi oil is traded in US dollars, to which the Saudi riyal has been pegged. Civil war has been absent in Saudi Arabia since the creation of the kingdom in 1932.

The institution hypothesis that argues that the presence of abundant oil rents creates corruption in governmental institutions and makes them incapable of effectively spending capital in the productive sector may seem to hold in the case of Saudi Arabia. However, it is difficult to identify whether the weak institutions were shaped in the period *before* or *after* the rise of the oil industry. Weak institutions do exist in non-oil-endowed Arab countries too. In addition, some oil-exporting countries such as Canada and Norway are equipped with effective institutions in spite of abundant oil rents because they developed those institutions *before* the rise of the oil industry. Michael Ross refers to this point as the

[192] Auty 1993: 241–242.
[193] Stevens (2003), Rosser (2006), and Ross (2012) offer good mapping of the research regarding the resource curse thesis.

"Beverly Hillbilies fallacy", arguing that the inappropriate behaviour of some residents in Beverly Hills is not caused by the wealth they have obtained: the fact is that those with such behaviour have moved to Beverly Hills after they had gained the wealth by chance.[194] This account sounds more plausible in the case of Saudi Arabia.

Ross also challenged the statistical validity of the resource curse thesis established by Sachs and Warner. He processed the average growth rate in GDP per capita between 1960 and 2006 and found that there was only a minor difference between the long-term growth of oil-producing developing economies and non-oil-producing ones (see Table 2.1.). From this outcome, Ross concluded that "economic growth in the oil states has not been unusually slow, although it has been unusually volatile."[195] One of the plausible reasons for this result explained by Ross is that his analysis took a time period much longer than that taken by Sachs and Warner, including a longer period of boom time.

Table 2.1.: Annual Economic Growth per Capita, 1960–2006

Period	Oil-Producing Developing Countries	Non-Oil-Producing Developing Countries
1960-1973	4.67	2.34
1974-1989	-0.38	0.97
1990-2006	2.24	1.42
Overall	1.54	1.56

Source: Ross (2012)

Indeed, Ross' analysis suggests the problem in research design of those statistical analyses that take growth in GDP or GDP per capita as a dependent variable. The problem lies in the

[194] Ross 2012: 212.
[195] Ibid.: 190.

fact that, because of the volatile nature of natural resource revenues, the change in growth is greatly influenced by the period the analysis covers – inclusion of more bust (boom) years would inevitably make the outcome more negative (positive). In other words, the outcome is strongly affected by the hidden intervening variable: the price of natural resources. The very strength of this intervening variable derives from the nature of rentierism itself. Being rentier – the economy's high dependence on natural resources – means low levels of development of industries other than the resource-extracting sector and that the economy does not have a "Plan B" in the time of plummeting prices of natural resources. Indeed, a rentier economy minus natural resources is a least developed country (LDC) in this sense. Therefore, in order to measure how natural resources affect development *outside the resource-extracting sector* itself correctly, we should take disaggregated data as a dependent variable – the data that *excludes* the wealth created by natural resources. Only by doing so, we will be able to obtain a right clue about how rents affect the development of non-oil industrial sectors.

Based on this understanding, let us briefly examine the case of Saudi Arabia. Graphs 2.1. shows the changes in GDP (left column), the oil and gas sector (middle column), and the manufacturing revenue (right column) in Saudi Arabia in the period between 1970 and 2009. The graphs are divided into four decade-long series.

Here, a high level of correlation between the change in GDP and that in the oil and gas sector is observed. A sharp rise in both occurred in the 1970s (+1563% and +2075%), followed by sharp decline in both the 1980s (-35% and -75%), modest growth in both in the 1990s (+38% and +24%), and sharp rise in both again in the 2000s (+99% and +131%).

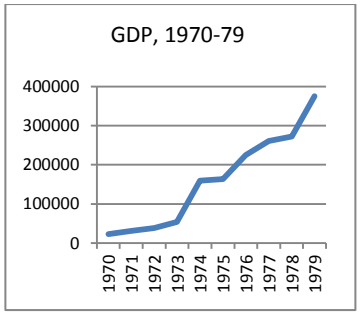
These correlations make sense since the oil and gas sector accounts for nearly a half of Saudi Arabia's GDP.

In comparison, the change in the manufacturing sector has been remarkably steady. It has been constantly upward and shown little correlation neither with GDP nor the oil and gas sector. Following the +1225% leap from the base of almost nil in the 1970s, it has continued to double every ten years since then: a +111% rise in the 1980s; a +93% rise in the 1990s; and another +111% rise in the 2000s. In those three decades, the sector grew almost ten-fold from SR 10.38 billion in 1980 to SR 99.79 billion in 2009. The scale of change is far greater than that of the oil and gas revenue which only doubled in the same period (from SR 323.04 billion in 1980 to SR 601.59 billion in 2009). As a result, the ratio between the oil and gas sector and the manufacturing sector shifted dramatically from 31:1 in 1980 to 6:1 in 2009. This data shows that, although the manufacturing sector is still marginal compared with the size of the oil and gas sector, the Saudi economy is more reliant on it today than in the past

A qualitative analysis also supports this data. In the past three decades, Saudi Arabia has succeeded in developing a competitive petrochemical industry, which today accounts for around 90% of the country's non-oil exports.[196] Indeed, Saudi Arabia stands as a leading petrochemical-producing country in the world today, accounting for almost 10% of the global petrochemical production.[197]

[196] Saudi Arabian Monetary Agency, various years.
[197] "Saudi Arabia to be World's 3rd Largest Exporter of Petrochemicals by '15", *Saudi Gazette*, 18 November 2013.

Graphs 2.1.: Growth in GDP, Oil and Gas Sector, and Manufacturing Sector in Saudi Arabia, 1970-2009 (Unit: Million Saudi Riyals)



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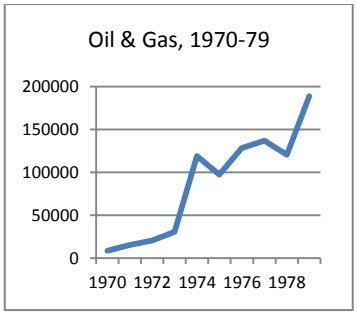

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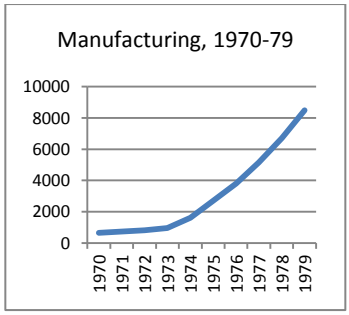

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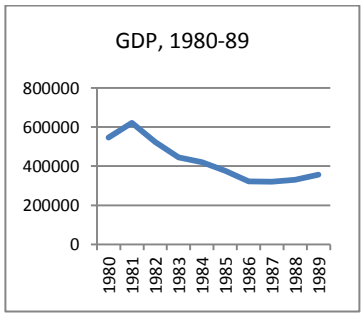

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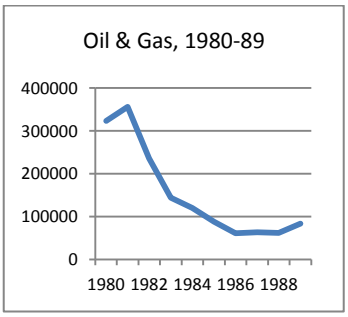

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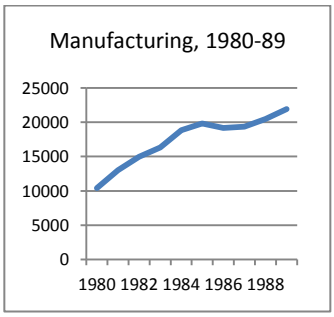

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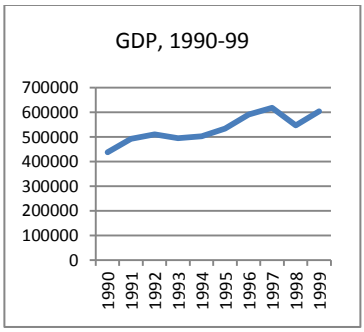

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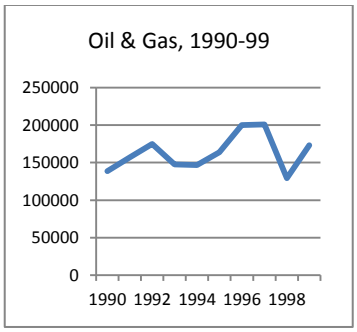

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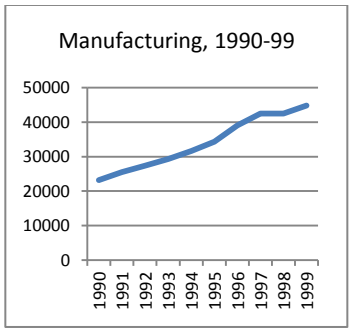

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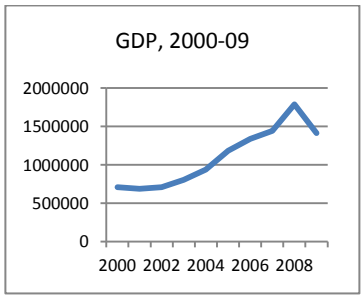

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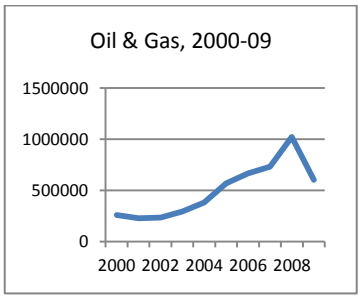

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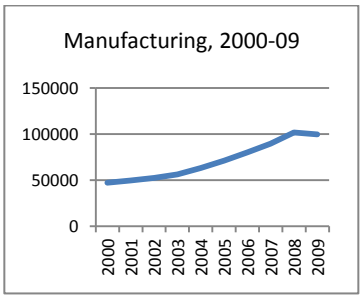

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Source: Saudi Arabian Monetary Agency (various years)

What those analyses suggest is that there is little evidence, concerning the case of Saudi Arabia, that oil has posed a negative impact on industrial development. Indeed, the constant growth of the Saudi manufacturing sector in the past four decades has been little affected by the boom-bust cycle of the oil industry. In this sense, it is interesting to see what Andrea Pampanini, a seasoned industrial consultant who conducted an in-depth investigation of two industrial cities in Jubail and Yanbu in Saudi Arabia, wrote in 1997:[198]

> "Saudi Arabia was squeezed, but hardly broke. What was actually happening was a good deal less dramatic than the doom-sayers would have the world believe, and a good deal more important."

Around that time, the global oil price was to hit the bottom, and Saudi Arabia had already suffered from 15 year-long budget deficit. Nonetheless, Pampanini, witnessing the continuing growth in petrochemical production in these industrial cities, was sanguine about the future of the Saudi development.

Here, the important fact is that Saudi Arabia developed the petrochemical industry almost from the scratch *after* the oil boom period. Thus, what oil could possibly affect was the *creation of new industries*. This is essentially different from the cases in which industries had existed since the period *before* the oil boom: in those cases, the question would rather be how oil has affected the *performance of existing industries*. Economies with such cases are, in many cases, not rentier, or at least not high rentier: they do not rely

[198] Pampanini 1997: 109.

solely on oil but have other industries as well. In other words, they are *resource-abundant* but not *resource-dependent*.[199]

In this regards, Latin American economies (non- or low rentier/resource-abundant ones) and Gulf economies (high rentier/resource-dependent) belong to different analytical categories. Unlike the Latin American cases, the oil industry emerged in the absence of industrial activities in the Gulf cases. This difference suggests that *with what they should be compared* is different between the Latin American cases and the Gulf cases. Latin American economies should be compared with other middle-income developing countries with similar levels of pre-oil (pre-commodities) boom industrialisation. On the other hand, Gulf economies should be compared with LDCs which had very low initial levels of industrialisation, like those in Sub-Saharan Africa. Indeed, it is interesting to find that the idea of resource curse is increasingly questioned in Sub-Saharan Africa as well. Rentier economies in Sub-Saharan Africa (such as Angola, Botswana, Congo Brazzaville, and Nigeria) have shown the traits of a more diversified economy in recent years. They have been developing non-oil sectors such as finance, construction, transport, telecommunications, manufacturing and agriculture by receiving increasing amounts foreign investment inflows. Indeed, a recent article from *The Economist* magazine suggests the "twilight of the resource curse", stating: [200]

[199] Brunnschweiler and Bulte 2008: 248.
[200] "African Economic Growth: The Twilight of the Resource Curse?", *The Economist*, 10 January 2015.

> "There is still a long way to go. Africa is still the continent most dependent on commodity exports… Even so, there is reason to think the "resource curse" is losing its power. Despite turmoil in commodity markets, Africa is still one of the world's fastest-growing regions. With better education systems, investment in infrastructure and sensible regulatory reforms, the continent could completely break the spell that has held it back so often in the past."

To summarise, what we can learn from the above discussion is as follows: (1) appropriate industrial policies can creates an upward mobility to the developing economy and enables it to break the dependency; (2) the rentier nature of the economy does not prevent policymakers from planning and implementing industrial policies; the reasons why policymakers implement certain industrial policies must be sought elsewhere; and (3) in rentier (resource-dependent) cases, the negative impact posed by abundant oil on industrial growth is questionable. With those understandings, the relationship between oil and industrialisation in Saudi Arabia will be discussed in more detail in the following section.

2.2. Oil and Industrial Diversification in Saudi Arabia

What, then, has driven Saudi policymakers to plan and implement industrial diversification? Why have they not been satisfied with the wealth created by oil that has enabled them to remain in power? Also, if oil has not been a curse for industrialisation in

Saudi Arabia, has it been a blessing? How, exactly, has oil affected the industrialisation process in Saudi Arabia? This section will attempt to provide answers to these questions.

The Drivers of Industrialisation

What were the drivers of industrialisation in Saudi Arabia? Perhaps, it would be helpful to identify the origin of the Saudi industrialisation before answering this question. As discussed above, the rentier state theory and the idea of late rentierism assume that the evolutional transition of rentier economies in the Gulf region to ones with productive characteristics took place after the late 1980s (at the time Luciani's paper was published), in particular in the 1990s and the early 2000s when Gulf economies began facing the forces of globalisation.[201] However, this thesis argues that the origins of industrialisation in Saudi Arabia lie much earlier. Indeed, this thesis identifies the year 1962 as a critical juncture in the course of industrial diversification in Saudi Arabia.

1962 was the year of the creation of Petromin (بترومين: the General Organisation for Petroleum and Minerals), a SOE established within the Ministry of Petroleum and Mineral Resources. While Petromin is often understood as being a Saudi NOC before the nationalisation of Aramco,[202] the organisation was also tasked the launch of industrial projects that would add value to the kingdom's natural resources.[203] The creation of

[201] Luciani 1987: 81–82; Gray 2011: 18–22.
[202] Hertog 2008.
[203] Petromin 1977.

Petromin was followed by that of the Central Planning Organisation (CPO), a precursor of today's Ministry of Economy and Planning, in 1965 in order to prepare the kingdom's first five-year development plan, which was eventually announced in 1970. What those facts tell is that the Saudi state was already equipped with basic institutions for industrial planning even before the oil boom period.

Some may believe that Saudi Arabia's industrial investments since the oil boom have been only on white elephants – big, expensive, and inefficient projects with scant economic rationale – as they were an extension of the wasteful spending of oil rents by myopic sheikhs only to fulfil their vanity.[204] However, such a view may fall into the pitfall of what Edward Said criticised as *Orientalism* – a biased and unfairly-represented perception of the object by external observers.[205] Certainly, it is not analytically appropriate to uncritically "other" Saudi Arabia by automatically assuming its policymakers' indulgence of themselves in oil rents and their indifference to development.

Indeed, as discussed in Chapter 1, this thesis begins discussion from an utterly different deductive assumption that Saudi Arabia was not different from other developing countries in terms of its policymakers' desire to achieve techno-sovereignty through empowering the country's own technologies and technologists. Hertog's agency-based explanation of the presence of the islands of efficiency directly administered by kings and princes also conforms to this assumption. Indeed, as Joel Mokyr who studied the history and pre-history of the English Industrial Revolution argues, ideas and beliefs of individuals often function as *meta-institutions* that enable growth in spite of the presence of

[204] Torvik 2009: 253.
[205] Said 1978.

compromised institutions and also contribute to the changes of those institutions in the long run.[206] Just as the elite group in the Kingdom of England on the eve of the Industrial Revolution was a mixed bag of extractive elites and enlightened ones, some Saudi royal family members and their cronies can be more development-minded than others.

Nevertheless, such a deductive assumption must be confirmed with what an inductive observation brings about. The inductive analysis of this thesis addresses following two issues in particular. First, the notion of techno-sovereignty developed in Saudi Arabia during the reign of King Saud (1953–64) in the particular domestic, regional, and international contexts which were conducive to the rise of economic nationalism. Second, in the periods thereafter, there emerged two additional factors that drove Saudi policymakers to keep making efforts for economic diversification: the predicted depletion of the country's oil reserves; and the problem of increasing youth unemployment. These two more imminent factors, built upon the underlying desire for industrial autonomy, have sustained the seamless pursuit of industrialisation by Saudi policymakers since the 1950s until today.

Economic nationalism: The kingdom saw the rise of economic nationalism in the period between 1953 (the death of King Abdulaziz) and 1962 (the creation of Petromin). It was certainly influenced by the rise of anti-colonialist movements across the developing world and the rise of Nasserism in the Arab world. While the influence of Arab nationalism in Saudi Arabia is often understood in political terms (such as the rise of protests in the Eastern Province and the alliance of King Saud and the Free Princes), the influence in the

[206] Mokyr 2009.

sphere of economy was also important. The protesters in the Eastern Province called for the creation of national industry in Saudi Arabia that would liberate the country from the "yoke of Aramco" by providing appropriate HRD opportunities to national citizens.[207] In addition, many of the first-generation Saudi technocrats, having graduated from universities in Egypt, were inspired by Nasser: being employed by the Saudi state, they attempted to practice Arab nationalism in the field of economy rather than politics.[208] Their initial target was nationalisation of Aramco (which was eventually achieved in 1980), but their eventual goal was to create the country's national industry by using oil production as what French economist Gérard Destanne de Bernis called *industries industrialisantes* ("industrialising industries") – industries that create other industries by supplying raw materials to them.[209]

The prediction of depletion of the oil reserves: In the 1960s and the 1970s, this concern was added to the drivers of industrialisation. The calculation based on the data about the oil reserves and production at that time generated the conclusion that the country would be without oil before the end of the first half of the twenty-first century.[210] Thus, preparing the country for future generations by diversifying the source of income was given a priority in the Saudi economic policy.[211] (This prediction was later abandoned, however, with the discovery of new oil reserves and the advancement of extraction technology. It is much debated today when Saudi Arabia's oil reserves will actually be depleted. However, on the basis of the current amount of its proven oil reserves (around 260 billion barrels) and

[207] Vassiliev 2000: 339.
[208] Duguid 1970: 202.
[209] Bernis coined this term when advising on Algeria's economic development (Lawless 1985: 161).
[210] Edens and Snavely 1970: 17–30.
[211] Petromin 1977.

current production levels (around 10 million barrels per day), Saudi Arabia's oil reserves will not be depleted before the middle of the twenty-first century. Nevertheless, a currently emerging concern is that the country will no longer be able to export oil in the 2030s due to the rising domestic consumption of oil, if appropriate policies to enhance energy efficiency are not be taken.[212] This concern currently acts as a pressure on Saudi policymakers to accelerate the process of industrial diversification as well as the development of renewable energy.)

The youth unemployment problem: This problem became salient in the 1990s. The country's high birth rate – seven infants per mother at the end of the 1970s – has led to the rapid increase of the country's national population in the past decades, from 7.8 million in 1980 to 11.4 million in 1990, and to 14.9 million in 2000.[213] At the end of 2014, the country's national population was 20.7 million.[214] The Saudi population pyramid shows a "youth bulge" (تضخم فئة الشباب), with the majority of people being under the age of 30. Since the early 1990s, the youth unemployment problem has become a greater concern for the Saudi regime as the Saudi state's rentier-welfare umbrella was no longer able to support all national citizens in the kingdom. The public sector, which has been a prime employer of Saudi nationals, is already bloated and has little capacity to absorb additional national employees. Today, the youth unemployment rate in the kingdom is estimated to be over

[212] Lahn and Stevens 2011: 2; "Saudi Risks Becoming Oil Importer by '30: Citigroup", *Gulf Times*, 5 September 2012.
[213] "Shoura to Vote on Birth Rate Cut", *Arab News*, 22 December 2014; Saudi Arabian Monetary Agency, various years.
[214] "KSA Population is 30.8m; 33% Expats", *Arab News*, 31 January 2015.

35%.[215] While nearly 10 million school graduates are estimated to enter the job market by 2030, the public sector is only capable of absorbing an additional one million national workers.[216]

Importantly, the increase in the number of jobless young people is likely to be considered by the Saudi regime not only as an economic problem but also as a security problem. Saudi policymakers fear that being jobless after completing school degrees will create a sense of deprivation among young nationals and will make them more vulnerable to political radicalisation. [217] The rise of violent Islamism, represented by Al-Qaeda and its affiliates, in the late 1990s and the early 2000s has certainly created this concern among Saudi policymakers. In addition, the repercussions of the Arab Spring in the kingdom in 2011 further added a concern that jobless young nationals could form a secular mass opposition as it has been pointed out that high graduate unemployment and growing gaps between regions and rich and poor were among the major components of political changes in the Arab Spring.[218] Thus, the creation of job opportunities for young Saudi nationals is a central concern of Saudi policymakers today. This concern has been driving the Saudi state's efforts to advance industrial diversification to downstream, labour-intensive manufacturing sectors, in which the private sector, especially small and medium-sized enterprises (SMEs), is expected to play a significant role.

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[215] "Saudi Arabia: Out of the Comfort Zone", *The Economist*, 3 March 2012.
[216] "600,000 Saudis Flood Job Market Yearly", *Arab News*, 27 March 2014; "Most SMEs in Saudi Arabia 'Are in Red and Yellow Zones'", *Arab News*, 5 October 2011.
[217] Gambetta and Hertog 2009.
[218] Willis 2012: 337.

Politics and Industrialisation

Some may raise objections to the argument of this thesis that the Saudi state has been production-oriented in the past decades. In particular, there is a widely-held belief that the underdevelopment in the Arab world has been caused by *politics* – by the fear held by rulers of authoritarian regimes that economic development will lead to a formation of a formidable threat to them as it will make people more independent from the state, lead to the formation of collective interests, and eventually result in the rise of powerful political opposition.[219] This belief suggests that keeping the society underdeveloped and dependent on the state is an optimal method by which authoritarian regimes can maintain their upper hand over the society. This thesis, nevertheless, argues that the Saudi authoritarian regime has promoted, rather than hindered, industrialisation because of its calculation that industrialisation would reinforce, rather than erode, its ruling legitimacy. There are multiple rationales for this.

First, due to the concentration of oil rents in the hands of the state, industrial diversification in Saudi Arabia has largely been state-capitalist. SOEs have dominated industrial employment. Even today, when the sector is open to private investors, over 80% of the profits in the petrochemical industry are made by SOEs: 72% by SABIC and 9% by SAFCO.[220] Thus, the structure in which people (and the most talented ones among them) are beholden to the state has persisted. In addition, major private firms in Saudi Arabia are

[219] Malik and Awadallah 2012.
[220] "Three Petchem Firms Capture 89% of Sector Profits in 2013", *Arab News*, 25 January 2014.

family-owned and keep close relations with the Saudi monarchy. For the Saudi monarchy, providing influential commercial families with economic opportunities is conducive to strengthening the tribal alliance which forms the foundation of the regime's stability. As Hertog's concept of "segmented clientelism" suggests, those businesses are vertically connected with the regime, and lack horizontal association among themselves as the formation of business associations is legally banned in Saudi Arabia.[221] This makes them atomised societal actors which remain vulnerable to the regime's co-optation.

Second, some may still question the long-term transformation of the state–society relations that have been generated by industrial diversification. Although private firms are aligned with the regime now, they may slip out of the regime's control in the near future. This supposition may have certain validity. However, it is also true that the regime is able to control such firms through many channels, such as finance, land, licensing, regulation, and the judiciary. For instance, the Saudi state announced in March 2014 the creation of a state-owned holding company for downstream sectors, the Saudi Arabian Company for Industrial Investment (SACII).[222] Likewise, the creation of industrial cities in which major productive activities are invited make major private industrial firms inevitably dependent on the state for a variety of inputs. In particular, the provision of gas, which can be supplied only through the state-controlled pipelines, Saudi Aramco's Master Gas System, is a powerful bargaining chip retained by the state vis-à-vis private firms.[223] While cheap gas creates a strong feedstock advantage for industrial producers in Saudi Arabia, the rise in the

[221] Hertog 2006.
[222] "New Company to Carry out 20 Projects with SR7.45bn Investments", *Arab News*, 27 March 2014.
[223] A Japanese firm investing in Saudi Arabia (anonymous), interviewed by author.

domestic consumption of gas has made the supply–demand gap extremely narrow in recent years.[224] With the scarcity of gas, the privileged supply of gas gives the state a strong co-optative power.

Third, industrial diversification is, indeed, required for the authoritarian regime to maintain its ruling legitimacy. Allocation of oil rents through the employment in the public sector is not enough for the authoritarian regime to maintain the approval of citiznes. In fact, the regime has to do much more than that. As Michael Herb suggests that the "price of support" the regime attempts to buy from people is not fixed but "subject to inflation",[225] what citizens, especially educated young citiznes, tend to demand from the state is diverse opportunities rather than only employment and financial rewards. What those educated young citiznes seek in their life is not only a job but a "career" – in which they can feel a sense of growth and self-actualisation. Indeed, Michael Hudson rightly observed in 1977 that the rise of technocracy and early industrialisation in Saudi Arabia offered emerging generations of educated Saudi nationals such careers, status and opportunities.[226] Put differently, this suggests that not doing so – staying complacent about the allocation of rents – would probably put the regime at a great risk in the long run of facing those young nationals with the sense of deprivation turning into a political opposition. Today, as a far larger number of educated young nationals enter the job market, not empowering the private sector to create jobs for them would lead to a great cost to the regime's security.

[224] "Saudis Face Growth Limits over Natural Gas Supplies", *The National*, 10 May 2012.
[225] Herb 1999: 242.
[226] Hudson 1977: 179–180.

Fourth, some may argue that "import tycoons" making profits through the import of foreign industrial products would present opposition to domestic industrialisation, which would lead to the erosion of their market shares. However, this would probably not be the case of Saudi Arabia where major import tycoons mostly import expensive high-end products from advanced economies. The technical standard of those products is too high for Saudi producers to catch up with immediately. "Made in Saudi Arabia" products are unlikely to compete with those imported products since they target different customer groups: rather, the great concern for emerging Saudi producers is whether their technologically less sophisticated products will find a market among capital-rich Saudi consumers who are already used to high-end imported products.

In addition, it is likely that many import tycoons will be offered major stakes in the production chain of currently emerging manufacturing industries. For instance, some auto agencies in the kingdom have already entered the truck assembly business, and currently plan to launch the production of auto components.[227] The reason why import tycoons are being transformed into industrial producers is not only because of the abovementioned tribal alliance between the regime and powerful commercial families but also due to the human resource factor. In many cases, those import tycoons employ the country's most qualified national technical workers outside the oil and petrochemical industries. Many of them also invest in technical training schools in order to recruit qualified graduates from them. Those workers currently carry out maintenance and repair jobs (of autos, home appliances etc.), but they can be utilised in the production as well. Thus, import tycoons

[227] Anonymous (someone involved in the development of one of the new economic cities currently under development), interviewed by author.

have a great advantage in setting up new industrial productions compared with other would-be producers which have to recruit national technological workers in the labour market from scratch.

The Impact of Oil on Industrialisation: Resource Blessing?

If oil has not been a curse for industrialisation in Saudi Arabia, has it been a blessing? Indeed, recent analyses of Saudi and Gulf economies increasingly endorse the notion of a resource blessing. For instance, Luciani recently published an edited volume entitled *Resource Blessed Diversification and the Gulf Development Model* (2012). In the book's introduction, he made a sanguine prediction, stating:[228]

> "A realistic assessment would tell us that the GCC countries have at least half a century of resource blessing ahead of them, and there is plenty that can be accomplished in such a time frame".

The analysis in the previous section of this chapter about the steady growth of the Saudi manufacturing sector in the past decades also suggests the presence of a resource blessing. However, in order to confirm the positive impact of oil on industrialisation, we must carry out a *qualitative* analysis as well. In the case of rentier economies, quantitative analyses are

[228] Luciani 2012: 28.

not enough because they are oxymoronic entities, being "capital-rich underdeveloped economies". In the world after the Industrial Revolution, the accumulation of capital has always been an outcome of industrial production. This common logic, however, does not apply to rentier economies which accumulate capital largely by earning rents from external economies and allocate them to different sectors. Thus, in order to correctly observe the degree of industrialisation in rentier economies, we have to employ a *non-capitalocentric* method of observation. This thesis proposes the qualitative observation of the degree of technology diffusion as an evaluation criterion.

Seen from the perspective of technology diffusion, the impact of abundant oil reserves on industrialisation in Saudi Arabia is primarily considered to be positive. Oil rents have greatly enhanced the state's financial capacity to plan and implement industrial projects, enabling industrialists to import state-of-the-art foreign industrial technologies which are not affordable for those in average developing economies. In addition, oil rents have enabled the state to invest in HRD. On one hand, the absolute initial underdevelopment of HRD institutions in the country has meant that the Saudi state has had to spend oil rents on providing scholarships to gifted Saudi students to complete higher education degrees in foreign countries (largely Egypt and Lebanon until the oil boom period, and the US and the UK after the 1970s). On the other hand, domestic HRD institutions have been gradually developed, enabling the Saudi labour market to supply qualified national workers to industry since the 1980s – although the size of the pool of such workers is still small today. These developments have enhanced the absorptive

capacity of Saudi workers, preparing them for acquiring knowledge, skills, and technologies from foreign investors in the kingdom.

In addition, the presence of oil production has created an enormous feedstock advantage for the Saudi petrochemical industry. Saudi producers have been able to use cheap associated gas extracted alongside oil production while producers in oil-importing countries must use more expensive naphtha distilled from imported crude oil as a feedstock. The cost difference between associated gas (which used to be flared in the oilfield, wasted and causing air pollution) and naphtha is great, particularly in the time of high oil prices.[229]

However, perhaps the most important function of the presence of abundant oil reserves is the fact that it has enabled Saudi Arabia to attract industrial FDI in spite of the country's great disadvantage in doing so. Certainly, Saudi Arabia has a geographical advantage: it is located in the middle of three regions – Europe, Asia, and Africa – and thus can market itself as a strategic hub for business activities. The UAE, particularly Dubai, has pursued economic diversification by capitalising on this advantage.[230] However, other factors, such as the country's harsh ecology, the limited size of its domestic market (the population of Saudi Arabia was only around six million in 1970), the absence of industrial infrastructure, and, above all, the low degree of HRD had made Saudi Arabia a place unfavourable for industrial FDI. That oil rents enabled the Saudi state to invest in industrial infrastructure and HRD partly alleviated this problem. Nevertheless, what was more important was that the Saudi state's full control of the country's oil production after the nationalisation of Aramco in 1980 created for the Saudi state a powerful bargaining chip as

[229] Energy Security Analysis Inc. 2010: 13.
[230] Davidson 2008.

regards demanding FDI from foreign firms and states in return for the supply of oil to them. Since the demand–supply gap in the global oil market was narrow before the mid-1980s, making the supply of oil a *quid pro quo* for industrial cooperation by Western IOCs and their home governments functioned quite effectively. Western IOCs (such as Exxon, Mobil, and Royal Dutch Shell) invested in the petrochemical industry in Saudi Arabia primarily not for petrochemical production itself but in return for "incentive oil" provided as a reward by the Saudi state.[231]

This strong bargaining power also enabled the Saudi state to ensure that knowledge, skills and technologies were transferred from foreign investors to Saudi industrial workers. In its agreements with foreign investors, the Saudi state stipulated conditions that were favourable for technology diffusion. In most cases, petrochemical FDIs occurred in the form of joint ventures which were either equally-owned or where the Saudi side had the majority of the stake. In those joint ventures, foreign investors were required to "Saudise" the production over the years by providing Saudi workers with sufficient training opportunities. This enabled SABIC, a Saudi industrial SOE, to make a transition from the stage of the "paradox of the techno-nationalist" to a stage in which it has grown as a beacon of techno-sovereignty, without falling into becoming a neo-dependent foreign enclave. The Saudisation of SABIC has progressed remarkably well, with a rate of over 70% achieved by 2000 and with a rate of over 80% today.[232] Some workers at SABIC have also generated

[231] Masseron, Marshall, and Harvey-Bletsas 1990: 430. Saudi Arabian Basic Industries Corporation 2001: 39.
[232] Saudi Arabian Basic Industries Corporation, various years; Achoui 2009: 43; Abdulsalam Al-Yamani, "How SABIC Changed Dreams into Reality", *The Peninsula Times*, 18 March 2014.

the "second technology diffusion" within the kingdom as they moved to new entrants in the Saudi petrochemical industries, such as private firms and Saudi Aramco.

In this manner, the presence of abundant oil reserves had, in many ways, positive impacts on the early industrialisation in Saudi Arabia. Perhaps the best way of thinking about this is to apply a counterfactual assumption – imagining what Saudi Arabia would have been like if the country was not endowed with oil. Given the county's harsh ecology which does not allow substantial agricultural development and the extremely low initial level of HRD,[233] it is more likely that the kingdom, without oil, would have been unable to accumulate capital to invest even in basic industrial infrastructure and HRD institutions, and probably would have remained a LDC until today. The country could have been as poor as Yemen, a country neighbouring Saudi Arabia in the Arabian Peninsula without large oil reserves. Yemen's GDP per capita has been one of the lowest in the Arab world: only around $1,500 in 2013, a level similar to the Sub-Saharan African average.[234]

2.3. Production with Rentier Characteristics: A "Rentier Society" Approach

Nevertheless, seen from the perspective of technology diffusion, there are also signs that urge us to be cautious about the future of industrial diversification in Saudi Arabia. There is a possibility that the abovementioned positive impact of oil, which has been conducive to

[233] Abir 1993: 15.
[234] International Monetary Fund, "World Economic Outlook Database", October 2014, http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/index.aspx [accessed 1 December 2014].

industrialisation in the past decades, may not continue in the upcoming process of further industrial diversification. Indeed, this thesis suggests that, in order to assess the long-term impact of oil on industrialisation, we must develop a new analytical question. In the past, the question we have asked was *whether or not* a rentier economy industrialises. However, the question we must ask today is *what* industrialisation in a rentier economy *is like*. In other words, given that we already know that a rentier economy can industrialise, we should explore now the nature of "production with rentier characteristics" – a distinctive mode of industrialisation created by the rentier nature of the economy – in addition to acknowledging the presence of "rentier states with productive characteristics".

This thesis suggests that, seen from such a perspective, the long-term impact of oil on industrialisation in Saudi Arabia will be a mixed bag. This is mainly because the industrial sectors Saudi Arabia is currently developing are different from the ones it has developed in the past. In the past, the focus of industrial diversification was on capital-intensive heavy industries, particularly petrochemical. However, Saudi Arabia is now attempting to develop downstream labour-intensive manufacturing industries which can create a greater number of job opportunities. In 2010, Saudi Arabia announced the National Industrial Strategy (NIS) which targeted the development of five manufacturing sectors: automotive, minerals and metals processing, solar energy, plastics and packaging, and home appliances.[235]

The presence of oil reserves will not assist the development of these industries as much as that of the petrochemical industry. First, the feedstock advantage enjoyed by the

[235] National Industrial Clusters Development Programme, "Organisation", http://www.ic.gov.sa/ [accessed 1 December 2014].

Saudi petrochemical industry, which is driven by the availability of cheap gas, is inevitably diluted as the production chain moves downstream. While manufacturing industries still benefit from the supply of cheap gas and cost-competitive petrochemical inputs, the advantage is not as decisive as in heavy industries. Second, while foreign investors in the Saudi petrochemical industry, many of whom were Western IOCs, came to Saudi Arabia for the incentive oil, foreign investors Saudi Arabia needs to attract for developing manufacturing industries are not directly in need of incentive oil. For instance, Saudi Arabia already announced in 1974 the creation of an auto industry by inviting American and Japanese auto firms to the kingdom.[236] However, such an industry did not materialise as those foreign auto firms did not find Saudi Arabia an attractive place for investment in the end.

Third, and most importantly, the petrochemical industry is a machine-oriented industry which does not require a large number of workers. Thus, even a country with a relatively small pool of qualified technological workers, like Saudi Arabia and other Gulf countries, can develop such an industry as long as it is capital-rich and able to pay for the importation of machinery. Some call this kind of machine-based industrialisation in Saudi Arabia "turn-key industrialisation", implying that the imported machines were already ready-made and required Saudi workers only to turn their keys.[237] In fact, Saudi workers in the petrochemical industry do more than just turn a key. However, because the oil and petrochemical industries have already absorbed the country's scarce qualified engineers, there is only a tiny pool of qualified technologists outside those islands of efficiency.

[236] Tracy 1974.
[237] Ilgen and Pempel 1987; Zahlan 2012.

This is the Achilles' heel of the development of manufacturing industries in Saudi Arabia. While the very objective of the development of those labour-intensive industries is the creation of job opportunities to cope with the country's rising youth unemployment problem, there are currently not many *employable* Saudi national workers in those emerging industries. Indeed, just as Ghassan Salamé once pessimistically questioned the prospects of democratisation in the Arab world asking "democracy without democrats?", [238] "industrialisation without industrial workers?" is a critical question in Saudi Arabia today. In fact, in emerging manufacturing plants in Saudi Arabia, the administrative sections have achieved high rates of Saudisation; but only a few national workers are deployed in the production line on the factory floor.[239]

The Rentier Society in Saudi Arabia

The scarcity of qualified industrial workers in Saudi Arabia is considered to have multiple causes. First, this scarcity is certainly attributable to the extremely low initial level of HRD in the kingdom: the literacy rate in the kingdom was only 15% among men and 2% among women in 1970 when the first five-year development plan was launched. [240] The development of HRD institutions in the country, thus, had to start from a very basic level, with both the quality and quantity of education significantly compromised. Second, the

[238] Salamé 1994: 3.
[239] Anonymous (one of the manufacturing plants in the Eastern Province), interviewed by author.
[240] "Kingdom Tops World in Education Spending", *Arab News*, 2 January 2013.

religious conservatives' control of the Ministry of Education resulted in long hours of religious teaching in the curricula of primary and secondary education in the kingdom, accounting for almost one-third of the total hours. The heavy weight of religious teaching has arguably prevented the school curricula from placing a strong emphasis on mathematics and science. Thus, even though higher education institutions offer industry-related technological courses, there are not many high school graduates who are qualified and/or interested in those courses. For instance, among Saudi university graduates in 2010, only 5% majored in engineering, in comparison with 19% in humanities, 18% in Islamic studies, and 13% in business management.[241] Third, some argue that it is a tradition in Saudi society that people avoid technical, manual-labour professions, which they consider to be of less dignity, or even *'aib* (عيب) or shame.[242] As the words of Abdulhadi Taher, a former governor of Petromin, at the beginning of this chapter make clear, there is a counterargument to this claim as well. Perhaps the presence of those different opinions is due to the regional diversity in the kingdom. In particular, the Hejaz region has traditionally been home to vibrant commercial activities and may have developed a different work culture from other parts of the kingdom (Taher himself was a Hejazi). Some instructors of technical training schools in Saudi Arabia the author interviewed also suggested that their students from agricultural towns, such as Hufuf (الهفوف) and Jazan (جازان), have shown

[241] "Only 5 percent Saudis Study Engineering", *Arab News*, 6 April 2014.
[242] Palmer, Alghofaily, and Alnimir 1984: 20.

more positive attitudes towards technical activities – although this argument is still impressionist and needs to be triangulated by a full cross-regional survey.[243]

It may be also possible to argue that the rentier nature of Saudi Arabia has hindered the country from developing HRD institutions that would lead to high employability of Saudi citizens in industry. Indeed, some resource curse theorists argue that there is a negative impact of abundant natural resources on HRD. Thorvaldur Gylfason, for instance, argues that "resource-rich nations can live well off their natural resources over extended periods, even with poor economic policies and a weak commitment to education".[244] The recent global school ranking of 76 countries created by the OECD based on the maths and science test scores at the age of 15 also put rentier countries in low positions.[245] The ranks of GCC countries were: the UAE 45th; Bahrain 57th; Saudi Arabia 66th; Qatar 68th; and Oman 72th (Kuwait was absent) while Iran was 51st and Botswana, a diamond rentier was 70th. (Other 12 rentier counties were absent from the ranking.) Since non-oil-exporting Arab countries also ranked in low positions (such as: Lebanon 58th; Jordan 61th; Tunisia 64th; and Morocco 73th), natural resources alone should not be able to account for the underdevelopment of HRD institutions in rentier countries in the Middle East. Nevertheless, it is worth exploring the natural resources-HRD relationships and attempting to disentangle the complex causal webs which may exist between the two.

This thesis argues that, in the case of Saudi Arabia, abundant oil rents accumulated during the oil boom period created a distinctive society which tends to be underproductive,

[243] Saudi Electronics and Home Appliances Institute, interviewed by author, Al-Dir'iyah, May 2014.
[244] Gylfason 2001: 858.
[245] Sean Coughlan, "Asia Tops Biggest Global School Rankings", *BBC*, 13 May 2015.

dependent, and with a deficit in techno-sovereignty, which this thesis labels a "rentier society".[246] It also argues that the presence of a rentier society would make fully-inclusive industrial diversification in Saudi Arabia in the current and coming years not very easy, as it limits the supply of qualified national technological workers in the labour market. In particular, this thesis proposes the following three distinctive traits of the Saudi rentier society.

First, there is no strong economic rationale for self-production due to the easy access to advanced foreign technologies. Due to the exceptionally high purchasing power among Saudi citizens created by oil rents, Saudi citizens are able to purchase advanced foreign products which those in average developing countries cannot afford. The dissemination of advanced foreign products in the Saudi market has established Saudi consumers' preferences for them over low-cost products the quality of which is compromised. On one hand, this means that Saudi consumers tend to avoid products exported from other developing countries – in fact, Saudi Arabia is one of the few markets where "Made in China" products are eschewed by national consumers.[247] On the other hand, it means that Saudi local producers struggle to find opportunities in the market, while producers in East Asian countries initially established their production base by producing imitations of imported foreign products and selling them at lower-costs to the domestic

[246] The term "rentier society" has already been used by some authors. For instance, Paul Stevens suggests that a rentier society has been understood by many researchers as a society in which "easy access to riches bred idleness and provided no incentive to accumulate or innovate" while criticising the argument that "it is not conducive to analytical rigour" (Stevens 2003: 22). This thesis attempts to unpack the more detailed causal process between oil rents and the underproductive nature of Saudi society.
[247] "'Made in China' Label Discourages Saudis", *Arab News*, 22 January 2014.

market. Although the quality of those products was generally compromised, they would find market among consumers who could not afford the original imported products. Then, with the profit earned from the sales, the producers upgraded the technology. Such opportunities have been largely limited for Saudi producers. In other words, abundant oil rents made super-consumerism a norm in the Saudi society, which has nipped self-production in the bud. Entrepreneurs found more opportunities in import businesses than in production businesses.[248] Some imported products were even cheaper than traditional, home-made products. As a result, the traditional handicrafts industry in the kingdom, which had provided both men and women in family with work opportunities, was significantly marginalised.[249]

Second, oil rents made the Saudi society largely dependent on the state. To some extent, the dependence was created by the political trade-off assumed by the rentier state theory: in order to secure people's loyalty (or silence) to the authoritarian regime, the state co-opted people by providing employment in the public sector, which offers not only job security but also a generous salary, short working hours, social services, promotion by seniority, and retirement benefits.[250] Such a privileged work environment in the public sector not only siphoned off human resources away from the private sector, but also strongly institutionalised the job preferences of nationals. On one hand, it reinforced what Hazem Beblawi called the "rentier mentality" in the society – a break in the work–reward

[248] Niblock 1982: 77.
[249] Niblock 1982: 96. Le Renard 2008: 613.
[250] Fasano and Goyal 2004.

causation and the subsequent loss of the culture of hardworking.[251] On the other hand, it established the strong association between jobs and social status. The private sector became unattractive for Saudi nationals not only in terms of financial reward but also because of the fear among them of being looked down upon by other nationals and put in a disadvantaged position as regards social relations, including marriage.[252]

Some may disagree with this claim. In some regions in the kingdom, particularly the Hejaz region, private businesses have traditionally been active. Before the rise of the oil industry, the Saudi state was financially dependent on the taxes paid by Hejazi merchants (as well as by foreign pilgrims).[253] Although those Hejazi merchants lost their political clout as oil rents became a major source of income for the government thereafter, the vibrant commercial community has remained in the Hejaz region until today.[254] Nevertheless, their businesses have not been largely of the manufacturing type, but rather trade and services. In particular, many Hejazi entrepreneurs profit from the presence of the great number of foreign pilgrims by providing them with services such as hotels, restaurants, transport, or retail. In addition, the rise of the state as a mainspring of the development and the increase of foreign investments in the oil boom period resulted in the rise of what Sharaf Sabri called "commission entrepreneurs". Commission entrepreneurs make profits from the presence of the state and foreign investors through commission, contracts, sub-contracts, sponsorship, and speculation in real estate, while entrepreneurship

[251] Beblawi 1987: 52.
[252] "Saudi Youth Need to Expand Career Options", *Arab News*, 31 January 2014; Ramady 2013: 485.
[253] Niblock 1982: 93.
[254] Edens and Snavely 1970: 17.

is normally about taking risks and creating value on one's own.[255] The dependence of the private sector on the state also made the private sector susceptible to the political patronage of the ruling regime.[256]

Third, even in the small number of private industrial firms, technological work is mostly undertaken not by national workers but by foreign expat workers. Due to the initial labour scarcity, the Saudi state opened the kingdom to expat workers to implement modernisation and industrialisation projects during the oil boom period in the 1970s. Although Saudis came to use imported foreign technologies, they did not have the knowledge and skills to *control* them: thus, the work of maintenance and repair required the hands of expat workers.[257] Thus, a massive inflow of expat workers to the kingdom began. In the early 1980s, Saudi Arabia had become the top country in the world in terms of the amount of remittance outflows, outweighing the US, West Germany, and France.[258] At the beginning, this was considered only a provisional measure until HRD among nationals could catch up. However, the absorption of nationals into the public sector created a segmentation of the labour market and the social hierarchy over the years. As a result, Saudi nationals who work in the private sector came to accept only managerial positions, believing that only those positions provide them with due dignity: Daryl Champion called such mentality a "mudir syndrome" (the Arabic word *mudir* (مدير) means manager).[259]

[255] Edens and Snavely 1970: 21; Sabri 2001: 18.
[256] Malik and Awadallah 2012: 297.
[257] Sayigh 1971: 43.
[258] World Bank, Migration & Remittance Data 2013.
[259] Champion 1999: 53.

Today, as the Saudisation of the private sector progresses through legally-binding measures, the mudir syndrome is becoming an overstatement: there is an increasing number of Saudi workers below the management level. It is probably more appropriate to describe what is taking place today as a "thawb syndrome". The Arabic word *thawb* (ثوب) refers to a traditional Arab garment. One Saudi journalist told the author that Saudis prefer jobs in which they wear *thawb* and tend to avoid jobs in which they have to wear a uniform – with the exception of security apparatus jobs.[260] In fact, while 97.8% of all clerical positions in the private sector in Saudi Arabia have already been Saudised, less than 10% of engineering jobs have been done so.[261] The reliance on expat workers for technical work is even considered by some Saudis to be a virtue: they believe that accepting expat workers to the kingdom and providing them with work opportunities embody the culture of tolerance encouraged by Islam.[262] In this manner, the availability of low-cost foreign technological workers has institutionalised the hierarchical division of labour in the private sector in which uniform-wearing technical jobs has become associated with the lower social stratum, making those jobs highly unpopular among Saudi nationals.

The rentier society in which nationals tend to avoid technological professions and careers has delayed reforms of HRD institutions as well, keeping the pool of qualified national technological workers small. In fact, HRD reforms have been given a priority in the past 15 years, with almost a quarter of the annual budget allocated to HRD every year. Today, the HRD expenditure in Saudi Arabia amounts to nearly 10% of its GDP, double

[260] Sultan A. Al-Mahdi (a Saudi journalist) in discussion with the author, January 2013.
[261] "Expat Workers Hold 86% of Private Sector Jobs", *Arab News*, 9 September 2013.
[262] A former official of the Saudi Arabian General Investment Authority, interviewed by author, London, July 2012.

the global average of 4.9%.[263] Today, the country's literacy rate has reached 96%,[264] and no less than 86% of high school graduates were enrolled in universities in 2013.[265] However, due to the legacy of the rentier society, the mismatch of skills between what national students learn in schools and those required in the labour market remains large. The mismatch has resulted in the high jobless rate among university graduates, which is reportedly 48.2% today.[266] In spite of the country's increasing labour-abundance, the Saudi state's attempt of further industrial diversification to labour-intensive manufacturing sectors lacks sufficient social underpinnings. In order to develop those industries, the Saudi rentier society must be transformed into an "industrial society" first, in which technological professions and careers are highly respected by national citizens and, thereby, attract a greater number of talented young nationals. Such a transformation will perhaps be possible only through the implementation of the right policies for HRD reform, not only at the tertiary level but also at the primary and secondary levels.

[263] "Kingdom Tops World in Education Spending", *Arab News*, 2 January 2013.
[264] "Kingdom Achieves 96% Literacy Rate", *Arab News*, 10 September 2013.
[265] "Most High School Grads Enrolled in Universities", *Arab News*, 20 September 2013.
[266] "Long Work Hours, Low Salaries Keep Saudis Away from Private Sector Jobs", *Arab News*, 1 March 2014.

Conclusion of Chapter 2

Major previous approaches to the relationship between oil and industrialisation, such as the dependency theory, the rentier state theory, and the resource curse thesis, assumed that the presence of abundant oil has a negative impact on industrialisation. However, in the case of Saudi Arabia, the impact of oil on industrialisation in the past decades is considered to be positive. The initial underindustrialisation of Saudi Arabia was not caused by the presence of abundant oil, but by the extremely low level of HRD. Against the assumptions of the previous approaches, Saudi policymakers have attempted to implement industrial diversification since 1962, and the growth of non-oil industries in Saudi Arabia, especially the petrochemical industry, has been surprisingly steady since the late 1970s.

Saudi policymakers' desire to achieve techno-sovereignty has been accelerated by multiple factors, such as the rise of Arab nationalism, the prediction of the depletion of oil reserves in the near future, and, most recently, the problem of increasing youth unemployment. In terms of politics, industrial diversification has also been a necessary means by which the authoritarian Saudi regime has gained the approval of the country's educated nationals, who demand more than just a work opportunity in their life and are looking for a sense of growth and self-actualisation.

The presence of abundant oil has assisted industrialisation in Saudi Arabia in multiple ways. Oil rents have enlarged the Saudi state's financial capacity to invest in industrial infrastructure and HRD institutions. In addition, abundant oil reserves and associated gas extracted alongside the oil production have created an overwhelming

feedstock advantage to petrochemical production in Saudi Arabia. However, probably the most important contribution of oil to industrial diversification in Saudi Arabia was the strong bargaining power created by the control of oil supply for the Saudi state vis-à-vis foreign firms and states. Saudi Arabia's nationalisation of Aramco made IOCs and oil-importing states dependent upon the Saudi state for the supply of oil. Thus, the Saudi state was able to demand their contribution to industrial diversification in Saudi Arabia in return for the supply of oil. The provision of such "incentive oil" played an important role in the creation of the petrochemical industry in the early 1980, in which SABIC formed nine joint ventures with foreign firms and got knowledge, skills, and technologies transferred from the foreign investor to Saudi workers over the years.

However, seen from the perspective of technology diffusion, it is still too early to conclude that industrial diversification in Saudi Arabia represents a "resource blessing". In order to fully assess the impact of oil on industrialisation in the long term, we should explore the nature of "production with rentier characteristics" rather than asking a binary question of whether oil is a curse or a blessing to production. Saudi Arabia's industrialisation has so far been successful because it was oriented towards capital-intensive heavy industries, which are machine-based and do not require a large number of workers. The development of those industries was not greatly constrained by the major weakness of Saudi Arabia – the low degree of HRD. SABIC has drawn the country's best and brightest national technologists from the scarce pool of qualified national industrial workers.

Nevertheless, as the focus of industrial diversification today moves downstream to labour-intensive manufacturing industries, the HRD insufficiency factor is likely to place greater constraints on industrial growth. The major problem in relation to HRD in Saudi Arabia is qualitative rather than quantitative. Although the country has already achieved a 96% literacy rate and a high university enrolment rate, technical studies are eschewed by the vast majority of young nationals. Here, abundant oil rents are assumed to have negatively impacted on the development of industry-oriented education in Saudi Arabia, through the creation of a "rentier society". A rentier society is a society which is underproductive and dependent on the state and foreign labour. Because abundant oil rents enabled Saudis to import advanced foreign products, opportunities to develop self-production were nipped in the bud. In addition, national citizens' avoidance of private sector jobs has been institutionalised by the privileged entitlements in the public sector, whereas the expansion and absorption of national workers in the public sector has been enabled by oil rents. Furthermore, the "thawb syndrome" has become a norm in the private sector, with nationals only wishing to take managerial or administrative jobs and eschewing uniform-wearing technical positions. These technical positions are mostly filled by expat workers and are seen by nationals as of lower social status. To transform Saudi Arabia's rentier society into an "industrial society" where technical professions and careers are highly respected by national citizens, the country's technical education must be empowered in an appropriate manner. Accordingly, foreign investors in Saudi Arabia, including Asian ones, are increasingly demanded by the Saudi state to make contributions to the development of HRD institutions.

Part II: Empirical Findings

i. 1953–1983

Chapter 3

Paradox of the Techno-Nationalist:

The Early Attempts at Industrialisation in Saudi Arabia

"It is within our power…to erect an enormous plant, but can we run the plant properly or get the desired results from it? In my opinion, it is far better to equip ourselves with the ability to do things on our own without relying on foreigners or on anyone else." – King Faisal (1970)[267]

"The basis for optimism with regard to Saudi Arabia's development prospects is the government's commitment to development combined with the energetic extension of the infrastructure, the building of critically important institutions both inside conventional ministries and as autonomous organizations." – Yusuf Sayigh, a Palestinian economist (1971)[268]

"We know that those major oil companies have the world's leading technologies but they need petroleum. We, on the other hand, have the world's largest petroleum reserves, but we need technology. So we fairly bartered petroleum for technology. It's a straightforward exchange." – Ghazi Al-Gosaibi, the former minister of industry and electricity and the first chairman of SABIC (2001)[269]

[267] Al-Farsy 1980: 64.
[268] Sayigh 1971: 54.
[269] Saudi Arabian Basic Industries Corporation 2001: 54.

As discussed in Chapter 1, Saudi Arabia increasingly became "America's Kingdom" in its early stage of development after the Second World War in terms of industrial technology. Because of the absence of industrial activities before the creation of the kingdom and the extremely low literacy rate at that time (estimated to be only 5% in the 1950s),[270] the Saudi economy's deep dependence on American technology was inevitable. As the concept of the paradox of the techno-nationalist suggests, it was the only way for the kingdom to prepare itself for industrialisation in the future. However, in parallel with bringing American technology into the country, there also began the ceaseless quest by Saudi policymakers for techno-sovereignty. During the three decades after the death of King Abdulaziz between 1953 and 1983, Saudi policymakers attempted, by trial and error, to prepare the kingdom for industrialisation with its own national technologies and technologists.

3.1. The Rise of Economic Nationalism in Saudi Arabia

What King Saud, the second king of Saudi Arabia, witnessed when he inherited the kingdom from his father Abdulaziz in November 1953, was the rise of anti-colonial nationalist movements both in the Arab world and in the wider developing world. As decolonisation was set in motion at the global level in the 1950s, anti-colonialist movements became ever popular among elites and intellectuals in non-Western developing countries. Those states which had recovered political sovereignty from European empires

[270] Abir 1993: 15.

now called for liberation from the persisting economic colonialism (also referred to as "informal imperialism") as well.[271] In the Arab world, anti-colonialism was mainly expressed in the form of Arab nationalism. In particular, the ideology embraced and propagated by Egypt's leader Gamal Abd al-Nasir (henceforth "Nasser") had ripple effects in every corner of the Arab world. Nasser's ideology ("Nasserism") was a combination of pan-Arabism calling for eventual unification of Arab states, and anti-imperialism opposing the lingering political and economic control by European powers.[272]

Nasserism was brought to Saudi Arabia through two major channels. The first was the presence of Egyptian and other Arab workers in the kingdom, in particular in the oil industry rapidly developed by Aramco in the Eastern Province in the late 1940s and the early 1950s. Due to the absence of qualified national human resources, Aramco employed a large number of workers from neighbouring Arab countries as well as among the Palestinian refugees.[273] Those Arab expats disseminated Nasserism to their Saudi co-workers and formed with them secular anti-monarchical movements. Thus, a major strike by workers of Aramco took place in October 1953, a month before the death of King Abdulaziz. In addition, an opposition group called the Front of National Reforms (جبهة الإصلاح الوطني) was formed in the Eastern Province and called for limiting the political power of the Saudi monarchy by the introduction of a constitution and an elected parliament.[274]

[271] Gallagher and Robinson 1953.
[272] Podeh and Winkler 2004: 1.
[273] Farmer 1959: 77.
[274] Vassiliev 2000: 339.

Importantly, these opposition movements in the Eastern Province not only made political demands, but they also made many economic demands as well. In particular, they called for liberation of Saudi Arabia from the "yoke of Aramco" and proposed the development of a nationally-owned industry. They also argued that the improvement of literacy and the development of higher education and technical training for Saudi nationals would be necessary for achieving that goal.[275] Although the US was not exactly a colonial power like the UK or France, Aramco and American experts working in the kingdom were increasingly seen as depriving Saudis of opportunities to grow more autonomous in terms of industrialisation. The rise of anti-colonial economic nationalism in the kingdom led to King Saud's decision in 1954 to unilaterally dismiss the US' Point IV technical assistance programme in the kingdom. In his telegraph to London on 18 September 1954, an official at the British embassy in Jeddah reported the king's decision, stating: [276]

> "Recent trends have tended to confirm that 'Saudi Arabia for the Saudis' is to be more than ever the watchword."

> "The Saudis seem now to have decided to run the development of Saudi Arabia themselves – even if they do it slowly, inefficiently and at great expense – rather than take the easy road of allowing foreign organisations to do the work for them… The bogey of foreign economic domination seems to haunt them, and perhaps it is in this guise that the Point Four scheme has been presented to them."

[275] Ibid.
[276] FO 371/110109.

The rise of economic nationalism in the kingdom also moved King Saud closer to the international anti-colonialist movement. In April 1955, the kingdom sent a delegation headed by Crown Prince Faisal, a younger brother of Saud, to the Asia–Africa Conference in Bandung, Indonesia, which was led by major Third World leaders such as Zhou Enlai of the People's Republic of China, Jawaharlal Nehru of India, and Nasser of Egypt, and called for solidarity for anti-imperialism. In addition, the outbreak of the Suez Crisis in October 1956 further drew Saudi Arabia closer to the Arab nationalist camp. Responding to the Israeli invasion of Egypt, Saudi Arabia severed its diplomatic relationships with the UK and France which were allied with Israel in the invasion.[277] Those developments inevitably made Saudi Arabia seek non-Western sources of industrial technology, in particular East Asian ones, given that seeking the assistance of the Soviet Union was out of the question because of the kingdom's fundamental anti-Communist political alliance with the US.[278]

The Rise of Economic Nationalists: Faisal and the Technocrats

Nevertheless, in spite of his desire to overcome Westerners' control of the industrialisation in the kingdom, King Saud lacked a clear vision to establish the state's capacity to plan and implement industrial policy. Thus, as an increasing amount of oil rents began flowing into the state coffers in the mid-1950s, expenditures sprawled without discipline, creating a

[277] Vassiliev 2000: 351.
[278] Arabian Oil Company 1995: 37–38.

serious risk of a fiscal imbalance.[279] Eventually, the country's first financial crisis occurred in 1957 which was triggered by a drop in oil prices. In order to save the kingdom from the crisis, extensive executive power was given to Prime Minister Crown Prince Faisal in March 1958. Thus, Faisal began developing the kingdom's economic policy for the first time. In August 1958, he created the Economic Development Committee (EDC) to overhaul the productivity potential of the existing and proposed government projects, with the eventual goal to create a five-year plan for the period between 1959 and 1964 (if this had materialised it would have been 11 years earlier than the actual implementation of the first five-year plan in 1970). The EDC, however, could not achieve its goal because it became heavily loaded with the works of reviewing proposed projects and could not afford capacity for planning.[280] Nevertheless, the EDC was the origin of an autonomous economic policy in the kingdom, which was followed by trial and error attempts at institution building throughout the 1960s.

To plan and implement an economic policy, Faisal brought in young foreign-educated national technocrats to policymaking. These first-generation technocrats had been sent to Egypt for higher education during the reign of King Abdulaziz. Upon their return to the kingdom in the 1950s, they were employed by the state, being tasked with institutional development of the state bureaucracy in pursuit of professional policymaking.[281] Here, the second major channel of dissemination of Nasserism to the kingdom existed. Some of those young technocrats who used to study at Egyptian universities surrounded by Egyptian

[279] Vassiliev 2000: 341.
[280] Edens and Snavely 1970: 22–23.
[281] Rugh 1973: 12.

intellectuals had naturally become fans of Nasser. Thus, Nasserism existed *within* the regime as well as among those *against* the regime.

One of the most important early technocrats was Abdullah bin Hamoud Al-Turaiqi (عبد الله بن حمود الطريقي). Born in the Najd in 1925, he was one of the first group of Saudi students who obtained a university degree in Egypt: a Bachelor of Science from the King Fuad I University (today's Cairo University), in 1944. He then moved to the US for postgraduate study and obtained a MA in petroleum engineering and geology from the University of Texas. After this study, he worked as a trainee at Texas Oil Company (Texaco, owned by Chevron today), one of the four American investors in Aramco. Having some experience in the American oil industry, Al-Turaiqi returned to the kingdom in 1953 and was employed by the Ministry of Finance. In December 1954 he was appointed a director general for petroleum and mineral affairs in the ministry.[282] At that time, the oil policy was on the administrative turf of the Ministry of Finance because the Saudi state's oil policy was almost solely to make sure that Aramco produced oil and paid a concession to the Saudi coffers.[283]

Al-Turaiqi personally admired Nasser and was looking for opportunities to practise Arab nationalism in his own technocratic duties.[284] One of his achievements was granting a concession to Arabian Oil Company (AOC) of Japan in December 1957, to break the monopoly of Aramco in the oil industry in Saudi Arabia (discussed in detail in Chapter 4). However, his ultimate goal was the nationalisation of Aramco – just as Nasser nationalised

[282] Duguid 1979: 197–201.
[283] Pampanini 1997: 5.
[284] Duguid 1970: 202.

the Suez Canal in the previous year. As a technocrat serving the kingdom, he could not agree with Nasser's call for the unification of the Arab states (which was generally seen by the Saudis as a pretext for using Saudi Arabia's oil wealth for Egypt's own economic development).[285] He instead set his goal as the recovery of economic sovereignty from Western capital, for which he could work as a Saudi technocrat. Al-Turaiqi was first patronised by Crown Prince Faisal but then sided with King Saud and the Free Princes in the power struggle between the king and the crown prince. Thus, in December 1960, he was appointed by King Saud to a ministership of the newly created Ministry of Petroleum and Mineral Resources. A few months before the appointment, he also cooperated with his equivalents in Iraq, Kuwait, Iran, and Venezuela, creating the Organisation for Petroleum Exporting Countries (OPEC) in September 1960. These oil-exporting states also wanted to bring back the control of oil production from the hands of Western IOCs. Thus, the formation of OPEC seemed to be a significant move towards establishing economic sovereignty in the world's major oil-exporting countries.

However, Al-Turaiqi's decision was *not* to nationalise Aramco right away. Instead, he only demanded greater control of the company by the Saudi government, criticising the fact that company's real authority lay in its headquarters in the US, not in Saudi Arabia.[286] Some saw behind the decision of Al-Turaiqi a shadow of the Mosaddeq incident: in 1953, the US, using the CIA, toppled the Iranian government led by Prime Minister Mohammed Mosaddeq following his decision to nationalise the oil production operated by Anglo-Iranian Oil Company (today's BP). Others argued that Al-Turaiqi feared the possibility that

[285] Podeh and Winkler 2004: 29.
[286] Duguid 1970: 203.

oil-importing states in Western Europe and Japan, which were in a political alliance with the US, would place an import ban on Saudi oil if Aramco was nationalised. At that time, the US was still a major exporter of oil in the capitalist camp and the proportion of oil exported from the Gulf region in the global oil export was still only half (17% in 1950) of the figure today (33% in 2013). Thus, the US' political allies in Western Europe and Japan would be able to forgo oil from Saudi Arabia.[287]

Nevertheless, the most important reason for the fact that nationalisation of Aramco did not take place immediately was the Saudi state's technological incapacity in terms of operating the oil production on its own. Aramco's oil production was heavily dependent on the knowledge, skills and technologies of American experts, and there were not enough national human resources in the kingdom who could replace those American experts.[288] Here, a contrast can be made with the case of the nationalisation of the Suez Canal in 1956, from which Al-Turaiqi drew much inspiration. In the 1950s, Egypt was a leading hub of science and technology in the Arab world as a result of the almost century-long attempt at modernisation since the age of Muhammad Ali. While the country was dominated by European capital and technology in the late nineteenth century, Egyptian policymakers in the early twentieth century implemented state-led modernisation programmes with which they attempted to transfer knowledge, skills and technologies from European expats to Egyptian nationals.[289] Such efforts gradually created technological capacity among Egyptians. Thus, when Nasser ordered the nationalisation of the Suez Canal, Egypt already

[287] "Petroleum Producers Shift Attention from Middle East", *Reuters*, 15 August 2014.
[288] Duguid 1970: 204–205; Akhdar 1974: 93.
[289] Owen 1981: 293.

had a pool of qualified human resources which would enable Egypt to operate the canal on its own only with minimum assistance from foreign experts.[290] In other words, it took 87 years for Egyptians to prepare for, and eventually carry out, the nationalisation of the canal which had been created by the French in 1869.

In comparison, the journey of Saudi Arabia to build up its own capacity to run the operation of Aramco had not yet begun. Thus, Saudi policymakers suspended their ambition to immediately nationalise the company and decided to focus instead on capacity building among Saudi nationals, to make them grow capable of running oil production on their own in the not too distant future. That job was passed from Al-Turaiqi to Zaki Yamani (أحمد بن زكي يماني) in March 1962, as Faisal won his power struggle with King Saud and retook control of the kingdom's policymaking. Faisal and Yamani, while taking less confrontational attitudes towards Aramco, worked on preparing the kingdom for eventual nationalisation of the company by developing the capacity of its Saudi workers and gradually increasing their power within the company.[291] In June 1962, the General Organisation for Petroleum and Minerals (Petromin: بترومين) was created within the Ministry of Petroleum and Mineral Resources. The creation of Petromin, prepared by Al-Turaiqi, was designed to build a state-owned enterprise in the country's oil industry (a "Saudi version of Aramco") and to prepare it for taking over the operation of Aramco in the near future.[292] In September 1963, Faisal also created the College of Petroleum and Minerals (today's King Fahd University of Petroleum and Minerals, or KFUPM) in

[290] Zahlan 2012: 3724 (Kindle edition).
[291] Vassiliev 2012: 345.
[292] Hertog 2008: 650.

Dhahran, to educate the next generation of Saudi oil technologists. The college invited foreign teachers from the US and Lebanon and ran courses in English to prepare its graduates for technical work in Aramco.[293]

As Robert Vitalis has addressed in his *America's Kingdom*, Saudi and Arab workers in Aramco in the 1950s were in segregated and subordinated positions in the company.[294] Although the concession agreement made between the Saudi state and SOCAL in 1933 stipulated that the company would employ Saudi workers "as far as practicable", Saudi workers were excluded from key managerial and technical positions. Thus, in the second major protest by Aramco's workers that took place in 1956, protesters called for improvement of working conditions for Arab workers in the company, demanding the equal treatment of them and their American colleagues.[295] Aramco's pretext for privileging American workers over Saudi and Arab workers was the difference between them in qualifications and capacity. To some degree, this difference was real: there were not enough qualified workers ready for technical work among the company's Saudi and Arab workers.[296] On the other hand, Saudi policymakers retained a suspicion that Aramco was intentionally slowing down the transfer of knowledge, skills and technologies to Saudi workers. For Aramco, effective training of Saudi workers was a double-edged sword: while the replacement of American workers with Saudi workers would lower operation costs, it would also strengthen the Saudi state's bargaining power vis-à-vis the company regarding

[293] Vassiliev 2012: 345–346.
[294] Vitalis 2006: 23–25.
[295] Vassiliev 2000: 337.
[296] For this reason, Aramco employed a number of Italian ex-soldiers stranded in the Middle East after the end of the Second World War (Strika 1999: 7).

the transfer of control. Farouk A. H. Akhdar, a Saudi economist, criticised this calculation by Aramco: [297]

> "With this policy, ARAMCO continued to be an American company – with American capital, American technology, and American staff – operating in Saudi Arabia, rather than becoming an integral part of the Saudi industrial base."

Thus, Faisal and Yamani's focus on HRD was designed to invalidate Aramco's claim that Saudis were not yet ready to take key positions within the company. They also pressed Aramco to implement effective training and educational programmes for Saudi nationals both within and outside the company. As a result of the capacity building, 77.3% of Aramco's 12,023 workers had been Saudised by 1973.[298] In addition, 445 out of 968 supervisory-level positions in Aramco had been Saudised by 1975.[299] Thus, although the operation remained partly dependent on American experts, Saudi policymakers became confident in running the operation of Aramco by Saudis. Thus, the Saudi state began taking control of Aramco in 1972, with 25% participation, and finally fully nationalised the company in 1980.

The legacy of this two-decade long process of the nationalisation of Aramco was that it made Saudi policymakers discover the paradox of the techno-nationalist and that it set the *modus operandi* of Saudi industrial policy. This modus operandi consists of three

[297] Akhdar 1974: 92–93.
[298] 80.6% of Petromin's 2,423 workers had been Saudised by then as well (Knauerhase 1977: 9).
[299] Braibanti and Al-Farsy 1977: 30.

steps: (1) to invite foreign investments to establish the production base in the kingdom; (2) to build the capacity of Saudi workers through HRD and transfer of knowledge, skills and technologies from the foreign investors to them; and (3) to eventually nationalise (Saudise) production.

The Failure of Industrial Nationalism: Petromin and the CPO

Faisal's goal was not only the nationalisation of Aramco, but also establishing the country's national industry which could add value to the country's natural resources on its own. As his words quoted at the beginning of this chapter suggests, he was a staunch economic nationalist. Thus, when he created Petromin in 1962, Faisal envisaged it not only as a Saudi version of Aramco, but also as a launching pad for industrial diversification beyond oil.[300] In addition, it was then estimated that the country's oil reserves would only last for 70 years, meaning that the country would be without oil before the end of the first half of the twenty-first century.[301] Thus, the generation of alternative sources of income for future generations of Saudis emerged as a major, if not impending, task for Saudi policymakers. Petromin was headed by Abdulhadi Taher (عبد الهادي طاهر), a Madinah-born technocrat in his early 30s. Like Al-Turaiqi and Yamani, Taher was one of the first generation of Saudi technocrats. Born in 1930 (five-year younger than Al-Turaiqi and the same age as Yamani), he graduated from the Ain Shams University in Egypt in 1956 and then proceeded to

[300] Petromin 1977: 15.
[301] Edens and Snavely 1970: 20.

postgraduate study in the US, eventually completing a PhD in business administration at the University of California, Berkeley, in 1964.[302] As a governor of Petromin (1962–86), Taher attempted to establish the base of national industry in the kingdom.

Following three years of planning and negotiation, Petromin set up its first industrial project, Saudi Arabian Fertiliser Company (SAFCO: شركة الأسمدة العربية السعودية), in July 1965. For its planning, Petromin used the report of the feasibility study conducted by Aramco in the 1950s.[303] Prior to the establishment of the company, Petromin agreed with Occidental, independent (non-major) American oil firm, on that Occidental would provide Petromin with technical know-how for constructing a plant and establish training programmes for Saudi workers. However, the project did not take the form of a joint venture. The company was invested 51% by Petromin with the remaining 49% released to Saudi investors. The plant was constructed in today's Jubail in the Easter Province and came on stream in November 1969, with a production capacity of over 400,000 tonnes per annum (tpa) of ammonia and 400,000 tpa of urea. The vast majority of its products were exported by Occidental to markets nearby, such as India, Pakistan, Iran, and Afghanistan.[304] King Faisal congratulated the beginning of the production, saying: "I pray to Allah that this be a beginning, not an end".[305]

In addition to Petromin, King Faisal also attempted to create a five-year plan, which did not materialise, in 1959. During King Saud's return to power between 1960 and 1962,

[302] Mulligan Paper, "Abdul Hady Taher", 17 December 1962; "Jiddat Tuwaddi' Muhandis al-Bitrul al-Shahir 'Abd al-Hadi Tahir", *Al-Bilad*, 13 February 2013.
[303] Pampanini 1997: 7.
[304] Petromin 1977: 270.
[305] Ibid.: 273.

the EDC Faisal had set up in 1958 was replaced by the Supreme Planning Board (SPB). The SPB, however, also failed in producing a development plan due to its inappropriate institutional design which allowed for the penetration of ministerial turf wars: just like the EDC, it became occupied with the work of reviewing a large number of proposals made by ministries before carrying out planning.[306] In 1965, King Faisal created the Central Planning Organisation (CPO: الهيئة المركزية للتخطيط), a precursor of today's Ministry of Economy and Planning. Based on the previous experiences, the CPO was designed to be insulated from ministerial politics by directly reporting to the king and transferring the work of reviewing ministerial proposals to the Ministry of Finance.[307]

Having a sense of rivalry between them, Petromin and the CPO attempted to grow themselves as bridgeheads of economic nationalism in Saudi Arabia in the late 1960s.[308] However, they soon faced common challenges: the absence of qualified and experienced national human resources. SAFCO turned out to be a commercial failure and was rescued by the Saudi government which subsidised industrial inputs to the production such as gas, water, and electricity, and purchased its products to use them as foreign aid.[309] Likewise, the CPO failed to produce planning in the initial few years because of the shortage of trained economists. In addition, the interruption in oil exports during the Six-Day War in 1967 and the financial burden Saudi Arabia undertook for other Arab states in the aftermath of the war significantly constrained the CPO's planning capacity, causing a delay in the

[306] Edens and Snavely 1970: 23.
[307] Ibid.: 25.
[308] Hertog 2008: 651.
[309] SPDC 2001: 23.

creation of a five-year plan.[310] As the glass ceiling imposed on both institutions by the insufficient degree of HRD became clear, Saudi policymakers became aware of the existence of the paradox of the techno-nationalist on this front too. Just as Saudisation of Aramco was still a work in progress, Petromin and the CPO were also in need of foreign experts, from whom Saudi workers could absorb knowledge, skills and technologies and grow capable of running the operation on their own.

Thus, Taher switched the strategy of Petromin from creating projects independently to seeking the formation of joint venture with established and competitive foreign firms. From the experiences of SAFCO, he became aware of the fact that only partial technological cooperation by foreign firms was not enough and that Petromin's future projects would require foreign firms' long-term commitment to management and training.[311] Thus, Taher began touring the US, Western Europe, and East Asia, seeking opportunities for negotiation to set up joint ventures. On the other hand, the CPO, headed by Hisham Nazer (هشام ناظر), a Jeddah-born former deputy oil minister, after 1968, expanded the employment of foreign experts, reducing the proportion of Saudi national staff to only around 20–25%.[312] In particular, a team of 25 experts from the Stanford Research Institute (SRI), a think-tank at Stanford University in the US played a key role in the CPO's preparation of a five-year plan.[313] They provided the CPO with sector-specific

[310] Edens and Snavely 1970: 27.
[311] SPDC 2001: 23.
[312] Braibanti and Al-Farsy 1977:30–31.
[313] SRI became independent from Stanford University in 1970 and changed the name to SRI International in 1977 (SRI International, "Corporate History", http://www.sri.com/about/corporate-history [accessed 1 October 2014]).

advice. Empowered by the American experts from the SRI, the CPO finally launched the first five-year development plan in September 1970.

Building Modern Education

Through those struggles in the 1950s and the 1960s, Saudi economic nationalists became increasingly aware of the enormous constraints placed on development by the absolute dearth of qualified national human resources. Because of the nomadic nature of the traditional Saudi society, the vast majority of the Saudis were still illiterate in the mid-twentieth century, with the literacy rate estimated to be only around 5%.[314] Even in 1970, the year in which the first five-year development plan was launched, the figure was reported to be only 15% among males and 2% among females.[315]

The foundation of modern education in the kingdom was laid during the era of King Abdulaziz who, in spite of the opposition by religious conservatives who were afraid of losing their influence on education, introduced modern education to the kingdom by employing Egyptian advisors and experts. [316] The king created the Directorate of Knowledge (مديرية المعارف) in 1926, in which his Egyptian advisers worked on the transfer of modern school curriculums and teaching materials to the kingdom.[317] At that time, Egypt was most advanced in the Arab world in the development of modern education as a result

[314] Abir 1993: 15.
[315] "Kingdom Tops World in Education Spending", *Arab News*, 2 January 2013.
[316] Marks 1980: 60.
[317] Ibid.: 57–58.

of the transfer of the educational systems from France and Britain – to which Japanese reformists too had referred as a successful model in the late nineteenth century.[318] By 1950, the kingdom saw the creation of 90 primary schools with 13,000 pupils and 10 secondary schools with 600 students in which subjects such as geography, technical drawing, and foreign languages were taught – although over three quarters of the school hours were devoted to religious studies then.[319]

As King Saud succeeded his father, the Directorate of Knowledge was upgraded to the Ministry of Education in December 1953, with Prince Fahd serving as its first minister. Religious conservatives actively lobbied the new king with the hope of restoring their pedagogical authority. In spite of the presence of the Ministry, these conservatives set up their own administrative body for education, the General Presidency for Colleges and Educational Institutes (الرئاسة العامة للكليات والمعاهد العلمية), and began competing with the ministry by opening schools for studying *shari'a*, or Islamic law, across the kingdom.

The rise of the General Presidency's usurped the Ministry of Education of not only budget but also the kingdom's scarce literate human resources – teachers, administrative stuffs, and students.[320] Religious conservatives also succeeded in blocking Aramco's attempt to introduce American-style education to the Eastern Province. In order to recruit a greater number of qualified Saudi workers, Aramco attempted to develop schools with the

[318] Kumazawa 2007: 44.
[319] Vassiliev 2000: 310.
[320] Marks 1980: 73.

help of the Ford Foundation, an American charity.[321] However, this plan was rejected by King Saud who had met fierce opposition by religious conservatives insisting that non-Muslim foreigners must not allowed to develop school curriculums for Saudis.[322] Furthermore, they also problematised the increasing number of Saudi children and teenagers studying abroad and lobbied the king to issue a decree in April 1955 to recall Saudi nationals pursuing primary and secondary education in foreign countries, on the ground that foreign education was causing bad effects on the morals of these young Saudis.[323]

The Ministry-General Presidency competition was extended to the field of higher education as the first university with a modern curriculum was created in the kingdom in 1957. Before that, those wishing to pursue modern higher education upon their completion of secondary education in the kingdom all had to travel to foreign countries (mostly to Egypt). Domestic universities began developing gradually, with the creation of the University of Riyadh, which is today known as King Saud University (KSU: جامعة الملك سعود), in 1957. The university initially only had a department of literature, but the department of science was created in 1958, followed by the department of engineering in 1962.[324] This was followed by the creation of the College of Petroleum and Minerals, today's King Fahd University of Petroleum and Minerals (KFUPM: جامعة الملك فهد للبترول والمعادن), in Dhahran in 1963. In Jeddah, a group of Hejazi businessmen led by Muhammad

[321] The Ford Foundation was created by an automobile tycoon of the Ford family in 1936 which served during the Cold War period the purpose of promoting American-style modernisation in developing countries.
[322] Lippman 2004: 139.
[323] Marks 1980: 55.
[324] Saudi Arabian Cultural Attaché Tokyo 2010b.

Abu Bakr Bakhashab Pasha (محمد أبوبكر باخشب باشا), a transport tycoon, made donations to create the King Abduaziz University (KAU:جامعة الملك عبد العزيز) in 1967.[325] However, because of the scarcity of qualified teaching and administration staff, the development of higher education institutions progressed only slowly.

The General Presidency condemned these modern universities as teaching students a deviant worldview.[326] It also created religious universities. Following the College of Shari'a in Makkah created in 1949, which is known as the Umm al-Qura University (جامعة أم القرى) today, it created the Islamic University of Madinah (الجامعة الإسلامية بالمدينة المنورة) in 1961. It also created the Al-Imam Muhammad ibn Saud University (جامعة الإمام محمد بن سعود الإسلامية) in 1974, by merging the colleges for studying *shari'a* in Riyadh and other cities.

In order to alleviate the anti-productive competition between the General Presidency and the Ministry of Education, King Faisal set up the Supreme Educational Council in 1965 with the purpose of bringing harmony to the administration of education.[327] A major concession he made to religious conservatives, however, was the appointment of Hassan bin Abdullah Al al-Shaykh (حسن بن عبد الله آل الشيخ), of the Wahhabi authority the House of Al al-Shaykh, to the position of education minister in 1962. As a result, the greater control of the Ministry of Education by religious conservatives was established, leading to the maintenance of the heavily religion-oriented curriculums of primary and secondary

[325] King Abdulaziz University, "Why King Abdulaziz University?", http://waqf.kau.edu.sa/content.aspx?Site_ID=808&lng=EN&cid=3310&URL=www.kau.edu.sa [accessed 1 October 2014]; Bakhashab Group, "History", http://bakhashab.com.sa/history.htm [accessed 1 October 2014].
[326] Commins 2006: 108.
[327] Marks 1980: 77.

education until today.[328] Faisal, on the other hand, rejected the opposition posed by religious conservatives against his decision to develop the kingdom's female education. The College of Education for Women, today known as Princess Nora bint Abdulrahman University (جامعة الأميرة نورة بنت عبد الرحمن), was established in Riyadh in 1970.

Table 3.1.: Universities in Saudi Arabia, 1949–1975

Name	Year	Location
College of Shari'a (Upgraded to university status and renamed Umm al-Qura University in 1979)	1949	Mecca
University of Riyadh (Renamed King Saud University in 1981)	1957	Riyadh
Islamic University of Medina	1961	Medina
College of Petroleum and Minerals (Upgraded to university status in 1975 and renamed King Fahd University of Petroleum and Minerals in 1986)	1963	Dhahran
King Abdulaziz University	1967	Jeddah
College of Education for Women (Upgraded to university status in 2004 and renamed Princess Noura bint Abdulrahman University in 2008)	1970	Riyadh
Al-Imam Muhammad ibn Saud Islamic University	1974	Riyadh
King Faisal University	1975	Al-Ahsa

Source: Saudi Arabian Cultural Attaché Tokyo (2010b)

In addition to standard schools and universities, Faisal also attempted to develop technical and vocational training institutions, which had hitherto been significantly underdeveloped, with the exception of private training programmes offered by Aramco.[329] Technical high schools and colleges began to be created under the jurisdiction of three ministries: the Ministry of Education, the Ministry of Labour and Social Affairs, and the

[328] Abir 1993: 16.
[329] Marks 1980: 68.

Ministry of Municipal and Rural Affairs.[330] Those technical schools were, however, very unpopular among Saudis who generally opted for government jobs, which provided more attractive opportunities to literate and educated nationals than technical professions.[331] A Japanese educational survey team observed in the 1970s that those technical schools were largely attended by the children of foreign expat workers.[332]

In 1970, there were around half million Saudi students, slightly less than 10% of the population, studying in schools at all levels: 488,883 in primary and secondary educations (74% male and 26% female) and around 14,000 in higher education (95% male and 5% female). [333] The development of those domestic educational institutions had laid the foundation of HRD in the kingdom and began. The oil boom in the 1970s further increased the state's expenditure on education. The Saudi state's education expenditure increased from SR 469 million in 1970 to SR 3.07 billion in 1975 (over six times) and to SR 11.83 billion in 1980 (over 25 times).[334]

However, the quality of domestic education was still far from being capable of providing qualified industrial workers to the labour market. The kingdom was still heavily reliant on higher education institutions in foreign countries for developing capacity of a large number of nationals. In the 1950s and the 1960s, the most popular destinations for Saudi students studying abroad were Egypt and Lebanon, with only a handful of students being able to finance their study in the West. Then, the oil boom in the 1970s enabled more

[330] Marks 1980: 77; TVTC 2009.
[331] Abir 1993: 16.
[332] Japan International Cooperation Agency 1977: 20.
[333] Mulligan Papers, "Education in the Kingdom of Saudi Arabia", 6 May 1972; Marks 1980: 78; Saleh 1986: 22.
[334] Saudi Arabian Monetary Agency, various years.

Saudi students to pursue higher education in the West. In 1975, around 5,000 university students, or 20% of the total, were studying at foreign universities while around 20,000 were at domestic universities.[335] Among those students studying abroad, 40% were in the US, 10% in the UK, 25% in Egypt, 15% in Lebanon, and the remaining 10% in other countries.[336] Those foreign-educated Saudis began to serve as technocrats and industrial workers in the kingdom's rapid modernisation after the 1970s.

3.2. The Launch of the Five-Year Plan and Oil Windfalls

Although being constrained by the insufficient degree of HRD, the Saudi state's institution building for industrialisation progressed in an incremental manner in the 1960s. At the beginning of the 1970s, as the words of Yusuf Sayigh, a Palestinian economist, quoted at the beginning of this chapter, tell, economists were generally sanguine about the prospects of development in Saudi Arabia.[337] The participation of American experts in the CPO accelerated its planning activities, leading to the launch of the first five-year development plan in September 1970. The projected expenditure of the first five-year plan was only $9.2 billion. However, the oil windfalls in the 1970s led to the exponential leap in the expenditure in the following five-year plans. The projected expenditure of the second five-

[335] Abir 1993: 19.
[336] Braibanti and Al-Farsy 1977: 20.
[337] Sayigh 1971: 54.

year plan (1975–79) was $142 billion and that of the third five-year plan (1980–84) was $213 billion.

The sequence is quite important. While many observers of Saudi Arabia today tend to assume that petrodollars Saudi Arabia had gained in the oil boom period were spent only on extravagant projects that merely fulfilled the prestige and complacency of myopic sheikhs, Saudi policymakers, in fact, already had certain visions regarding industrial development *before* the windfall started in 1973. Ramon Knauerhase, an economist specialising in the Saudi economy, even argued that the oil policy of Saudi Arabia had been driven by Saudi policymakers' determination to implement the first five-year plan as it had been planned. Knauerhase said in 1977: [338]

> "The realization that the country's needs as projected might not be met was one of the major reasons for Saudi Arabia's effort to wrest control of oil prices from the international oil company."

Saudi Arabia's pre-oil boom institution building for industrialisation is worth emphasising since it is an important point that is overlooked by rentier state theorists. Although industrial plans were not implemented yet in the pre-oil boom period, the presence of the plans testifies to the fact that Saudi Arabia had, at least, a production-*oriented* state –as

[338] Knauerhase 1977: 7.

against the assumption of the classical rentier state theory that a rentier state only has an allocation policy.[339]

In this sense, oil windfalls following the First Oil Crisis in 1973 were doubtless a blessing for industrialisation in Saudi Arabia. The greater amount of oil rents significantly enlarged the scope of the state's expenditure for industrial infrastructure. In particular, the construction of two industrial cities in Jubail and Yanbu laid the foundation for industrial production. Jubail (الجبيل) is located in the Eastern Province, facing the Gulf. It was formerly a tiny fishing village, but already had hosted the plant of the SAFCO (which came on stream in 1969). Yanbu (ينبع) is located in Madinah Province, facing the Red Sea. It was the second largest port city after Jeddah in the Hejaz region. The construction of the second industrial city in Yanbu was strongly insisted by Abdulhadi Taher who himself was from Madinah and expressed his desire to make the Hejaz region an industrial hub as well. [340]

An increased budget for infrastructure development kept the CPO and the SRI busy conducting feasibility studies with foreign developers. Hisham Nazer came to be called "Mr Feasibility" and the SRI the "feasibility factory".[341] On the other hand, the projected development of industrial infrastructure encouraged Taher in his negotiations with foreign firms for setting up industrial joint ventures in the kingdom: now his talk sounded more realistic in the negotiations. In addition, the Saudi state's increasing control of Aramco provided him with a strong bargaining chip vis-à-vis IOCs and oil-important states in demanding from them cooperation for industrialisation. In February 1980, as the full

[339] Luciani 1987: 74.
[340] Pampanini 1997: 21.
[341] Lippman 2004: 151.

nationalisation of Aramco was completed, the oil minister Yamani stated that Saudi Arabia would grant oil only to those who were willing to help it build its industry.[342] Thus, oil supplied in return for cooperation for industrial projects in Jubail and Yanbu came to be called "incentive oil".[343]

The completion of the first five-year development plan was followed by the assassination of King Faisal in March 1975 by his nephew. Faisal, an enthusiastic promoter of industrialisation died at the age of 68. His unfinished businesses were handed on to his brother Khalid. Under the reign of King Khalid, in which Crown Prince Fahd played an influential role, developmentalism in Saudi Arabia was maintained strong. King Khalid implemented the second five-year development plan in July 1975. The projected expenditure of the second five-year plan was nearly 15 times larger than that of the first five-year plan. In the late 1970s, industrial infrastructure in Saudi Arabia was built at a rapid pace.

In spite of the continuity in industrial development, King Khalid carried out a significant reorganisation of state institutions in order to bring in his own clientele to key policymaking positions. First, the Ministry of Industry and Electricity (today's Ministry of Commerce and Industry) was created as an independent ministry to supervise industrial diversification. As a result, the Ministry of Petroleum and Mineral Resources came to specialise only in the administration of natural resources policy. Likewise, Petromin

[342] Hambleton 1982: 56.
[343] Masseron 1990: 430.

became purely an oil company.[344] Taher's negotiations with foreign firms for industrial joint venture were taken over by the Industrial Study and Development Centre (ISDC), under the Ministry of Industry and Electricity.[345] In September 1976, Saudi Arabian Basic Industries Corporation (SABIC: الشركة السعودية للصناعات الأساسية) was established as a SOE specialising in industrial production. King Khalid appointed Ghazi Abdulrahman Al-Gosaibi (غازي بن عبد الرحمن القصيبي), an Al-Ahsa-born second-generation technocrat in his mid-30s, as both the minister of industry and electricity and the chairman of SABIC. Born in 1940 (ten-year younger than Taher and Yamani), Al-Gosaibi studied law at the Cairo University and completed a PhD in Law at University College London in 1970. He was a scholar at the University of Riyadh between 1965 and 1970, serving as a dean of the Faculty of Commerce. He obtained experience as a technocrat, serving as a director general of the Saudi Railway Organisation between 1970 and 1975.[346]

On the other hand, the CPO was upgraded to the Ministry of Planning, with Hisham Nazer becoming a minister. Re-Saudisation of the CPO progressed well in the early 1970s.[347] By 1976, the proportion of Saudi officials at the Ministry of Planning reached 60%.[348] In addition, an independent institution was created for the supervision of the two industrial cities in Jubail and Yanbu: the Royal Commission for Jubail and Yanbu (RCYJ: الهيئة الملكية للجبيل وينبع). The RCYJ was designed to be a "superagency" directly reporting to the king,

[344] Petromin became a marginal oil company as the nationalisation of Aramco was completed, becoming one of the largest NOCs in the world, Saudi Aramco (Hertog 2008).
[345] SPDC 2001: 25.
[346] "The Godfather of Renovation Dies: Dr. Ghazi Al-Gosaibi", *The Majalla*, 17 August 2010.
[347] Nazer later took the position of oil minister as Yamani was dismissed by King Fahd in 1986 due to their disagreement over the kingdom's oil policy (Robinson 1988: 268–282).
[348] Braibanti and Al-Farsy 1977: 30–31.

thereby avoiding ministerial turf wars over industrial projects in those two cities.[349] The first chairmanship of the RCYJ was assumed by Crown Prince Fahd who remained at the position until 1991.[350]

Enter the Bust

With the oil boom continuing in the 1970s, the projected expenditure of the third five-year development plan increased by 50% over that of the second five-year plan, to $213 billion. However, as continuing high oil prices negatively affected the growth of advanced economies and spurred exploration of new oil fields around the world, the global supply of oil began to exceed the demand by a large margin. As a result, the global economy entered a period of "oil glut" and the price of oil began to collapse. For oil-exporting rentier economies in the world, this meant that they had entered the "bust" period of the boom-bust cycle of the oil industry (leading to the emergence of a "resource curse" discourse in the intellectual sphere).[351]

In addition, the security environment surrounding Saudi Arabia began to change markedly. The emergence of the revolutionary Islamic regime in Iran in February 1979 and Ayatollah Khomeini's announcement of "exporting the revolution" caused the Shi'ite-dominated Eastern Province to be seen as a political risk by the Saudi monarchy. In

[349] Pampanini 1997: 26.
[350] Ibid.: 40.
[351] Gelb 1988.

addition, the Makkah Grand Mosque seizure incident, which took place during November and December 1979, added concern about growing radical Islamism within the kingdom. Responding to these political events, King Fahd, who succeeded Khalid in June 1982, came to place a greater emphasis on morality and religion in the identity of the kingdom.[352] The prolonging Iran–Iraq War (1980–88) also made security remain a high priority for Saudi policymakers. The kingdom's defence-related budget was maintained at a high level in the 1980s, at around 40% of the total, on average.[353] As a result, the priority of development in Saudi policymaking was inevitably lowered.

In fact, in spite of the decline in oil revenues, the level of the Saudi state's annual expenditure was maintained above SR 100 billion throughout the 1980s. The Saudi state generated deficit budgets and ran down capital reserves it had piled up during the boom period for surviving a deficit. Nevertheless, the continuing budget deficit inevitably constrained industrial expansion in Saudi Arabia, urging Saudi policymakers to shift their development strategy to one that aimed at steadier growth.[354] In some sense, this was a healthy development for the Saudi economy. At the beginning of the 1980s, development in Saudi Arabia had already shown signs of overexpansion, with the necessity and efficiency of some projects being questioned. Tim Niblock wrote in 1980: [355]

> "The experience of the Gulf shows clearly that economic expansion is not necessarily to be equated with development and, indeed, that some forms of economic expansion

[352] Jones 2010: 217–223.
[353] Saudi Arabian Monetary Agency, various years.
[354] Niblock 2007: 104.
[355] Niblock 1980: 18.

> may be detrimental to the long-term prospects of the economies and societies concerned."

Ramon Knauerhase also warned against the too hasty development in Saudi Arabia lacking commensurate social underpinnings, saying: "a lower growth rate must be accepted…complete industrialization cannot be achieved within the time span of two or three five year development plans".[356]

In addition, the availability of plentiful cheap oil in the market caused a significant decline in the value of incentive oil supplied by Saudi Arabia and other OPEC states. Together with unfavourable business risk assessments in the Gulf region caused by the revolution in Iran and the Iran–Iraq War, this decline greatly deprived MNEs of the incentive to invest in industrialisation in Saudi Arabia.[357] These developments, however, also created a chance for Saudi policymakers to bring discipline to their development strategy. In particular, they made it inevitable that SABIC would focus only on existing projects under development. The period of "hyper-investments" during the oil boom period was now over, and the kingdom was returning to the orbit of gradual development. In hindsight, it was somewhat fortunate for the kingdom that the sprawl of industrial infrastructure stopped before it became too large and uncontrollable. With the necessary industrial infrastructure already in place, what Saudi policymakers had to do now was to establish efficient production with that infrastructure and promote Saudisation of the production.

[356] Knauerhase 1977: 33.
[357] Kennedy 1984: 391.

3.3. SABIC on Stream

After its establishment in 1976, SABIC continued negotiations with foreign firms for setting up industrial joint ventures in Jubail and Yanbu. Al-Gosaibi, who was still in his mid-30s at the time of the creation of SABIC, worked to establish the company as a bridgehead of industrialisation with other second-generation Saudi technocrats such as Abdulaziz Al-Zamil (عبد العزيز الزامل: a vice chairman of SABIC between 1976 and 1982; a chairman of SABIC and the industry and electricity minister between 1983 and 1995) and Mohamed Al-Mady (محمد الماضي: a vice chairman and a CEO of SABIC between 1998 and 2015). SABIC employed a number of Saudi graduates from foreign universities, and also received Saudi high school graduates and sent them to study at universities in foreign countries.[358] One British diplomat at that time described that the creation of SABIC and the launch of industrial projects were "seen as a prime outlet for the energies and abilities of the growing middle class of Saudis educated abroad".[359] Al-Gosaibi and many of those new foreign-educated elites adopted the perspective of the dependency theory, a popular theory of (under)development in the Third World in the intellectual sphere in the 1960s and the 1970s. Al-Gosaibi once said:[360]

> "Until now, the world has categorized human being into industrialized and primitive…and has kept the primitive as a source for cheap raw materials and cheap

[358] Abdulsalam Al-Yamani, "How SABIC Changed Dreams into Reality", *The Peninsula Times*, 18 March 2014.
[359] FCO 8/2336.
[360] Pampanini 1997: 9.

> agricultural produce, while maintaining the industrialized as master in a society formed of master and hired hands."

Al-Gosaibi, being a staunch economic nationalist, called that structure of dependency an "iron ring" and was determined to break it with SABIC. SABIC was created as an SOE, but its management took the form of a self-autonomous corporate, taking Aramco as a role model. 30% of its stake was sold to private investors in 1984.[361] SABIC's main targeted businesses were production in heavy industries, in particular petrochemicals. For Saudi Arabia, which was resource-rich and capital-abundant but labour-scarce, the choice of petrochemical as an initial flagship industry for development made good sense.[362] In particular, the availability of associated gas, which was extracted alongside the production of oil created cost competitiveness for Saudi petrochemical products since feedstock costs for petrochemical producers in oil-importing countries using naphtha distilled from crude oil were inevitably greater.[363]

From the experience of the nationalisation of Aramco and the commercial failure of SAFCO, SABIC adopted from the outset the two-step strategy of inviting FDI to create a production base first, and gradually Saudising the production through the transfer of knowledge, skills, and technologies from the foreign investor.[364] For the first step, American, European, and East Asian firms were invited by SABIC to form joint ventures.

[361] Saudi Arabian Basic Industries Corporation 2001: 33.
[362] The Saudi government also aimed to develop labour-intensive manufacturing industries, like the production of trucks and autos in the early 1970s, but these did not materialize (Tracy 1974).
[363] Associated gas used to be burned at the oilfield causing air pollution (SPDC 2001: 23).
[364] Taher 2011: 165.

Between 1979 and 1984, 10 joint venture projects were agreed (nine petrochemical projects and one steel project). Among them, three came on stream in 1983, another three in 1984, two in 1985, one in 1986, and the last one in 1988 (see Table 3.2.). These three regions (North America, West Europe, and East Asia) were leading industrial hubs at that time, but creating such diverse partnerships was also underpinned by the political and diplomatic concern which Gerd Nonneman referred to as the Saudi state's strategy of "managed multi-dependence" – increasing the state's relative autonomy by cultivating relations with multiple external powers.[365] In fact, a document of the CPO, translated by a British diplomat in 1974, stated:[366]

> "It is in the interests of the Kingdom of Saudi Arabia that its projects should be distributed among all the friendly countries of the world and that the Kingdom's connexions should not be restricted to one particular country enjoying the primary role – except in fields such as the arms field, for example, where standardisation is required. In all other matters, our links shall be diversified and multiplied with all the world's countries. For nowadays there are no links binding the countries of the world other than economic links, which have become the foundation for dealing between the world's countries."

[365] Nonneman 2001.
[366] FCO 8/2336.

Table 3.2.: SABIC Projects, 1975–1995

Project	Partner(s)	Year	Major Products
Hadeed (Saudi Iron & Steel Co.)	SABIC 75% Korf-Stahl (German) 25%	1979 1983	Steel products
SAMAD (Al-Jubail Fertiliser Co.)	SABIC 50% Taiwan Fertiliser 50%	1979 1983	Ammonia, Urea
Ar-Razi (Saudi Methanol Co.)	SABIC 50% JSMC (Japanese) 50%	1979 1983	Methanol
KEMYA (Al-Jubail Petrochemical Co.)	SABIC 50% Exxon (American) 50%	1980 1984	LLDPE, HDPE
SADAF (Saudi Petrochemical Co.)	SABIC 50% Shell USA (American) 50%	1980 1984	Ethylene, ED, Styrene etc.
YANPET (Saudi Yanbu Petrochemical Co.)	SABIC 50% Mobil (American) 50%	1980 1985	Ethylene, EG, LLDPE, HDPE
Ibn Sina (National Methanol Co.)	SABIC 50% Celanese (American) 25% Pan Energy (American) 25%	1981 1984	Methanol
SHARQ (Eastern Petrochemical Co.)	SABIC 50% SPDC (Japanese) 50%	1981 1985	EG, LLDPE
Petrokemya (Arabian Petrochemical Co.)	SABIC 100%	1981 1985	Ethylene
Ibn Hayyan (National Plastic Co.)	SABIC 71.5% LG (Korean) 15% Others 13.5%	1983 1986	Vinyl Chloride Monomer, Polyvinyl Chloride
Ibn Zahr (Saudi European Petrochemical Co.)	SABIC 70% Neste Oy (Finnish) 10% ENI (Italian) 10% Others 10%	1984 1988	MTBE
Ibn Al-Baytar (National Chemical Fertilizer Co.)	SABIC 71.5% SAFCO 28.5%	1985 1987	Ammonia, Urea
Ibn Rushd (Arabian Industrial Fibres Co.)	SABIC 53.9% Others 46.1%	1993 1995	PET, PTA, Aromatics etc.

Source: SABIC

*The year at the top refers to the year of establishment and the year at the bottom refers to the year in which the production came on stream

At the beginning, in the early 1970s, many of these foreign firms did not show a strong interest in investing in Saudi Arabia due to the insufficiency in infrastructure and HRD in the kingdom. Nevertheless, the First Oil Crisis in 1973 changed the game. Western IOCs and their governments became acutely aware of the fact that they were now increasingly dependent upon the decisions made by the Saudi and other Gulf governments regarding the supply of oil.[367] Saudi Arabia now had a stronger position in negotiations with Western IOCs and states in their home country: as the words of Al-Gosaibi at the beginning of this chapter suggest, it strongly demanded industrial cooperation from them in return for the privileged supply of incentive oil. SABIC officials understood this point clearly, that its joint venture partners came "for the oil, not the chemicals".[368]

Whatever the incentive for foreign investors was, SABIC in this way began to establish the production base in the petrochemical industry in the early 1980s, with the level of production continuing to rise at a steady pace since then. Owing to the legacy of Aramco and the international character of SABIC itself, the company developed itself as an "island of efficiency" in the Saudi economy,[369] defying the predictions of many Western economists that it would end up being a "white elephant in the sand."[370]

However, in addition to the efficiency issue, there was another rational concern about the future of the Saudi petrochemical industry. When SABIC began production in the early 1980s, the global petrochemical market was in the situation of oversupply, leaving

[367] Responding to the First Oil Crisis, the OECD created the International Energy Agency, to enable major oil-importing states to cooperate and mutually secure oil supplies by redistributing oil in the downstream market with each other (Shiratori 2010).
[368] Saudi Arabian Basic Industries Corporation 2001: 39.
[369] Hertog 2010b.
[370] Saudi Arabian Basic Industries Corporation 2001: 26.

little room for new entrants.[371] Thus, Western economists had a justifiable reason to believe that SABIC's launch of petrochemical production was unnecessary and ill-timed. Indeed, SABIC, in 1987, was able to make only 30% of its petrochemical sales in the markets in advanced countries: the remaining 70% were made in the developing world.[372] What saved SABIC from falling into immediate failure was the rise in demand in Asian markets. In particular, the opening of the vast Chinese market by the reform of Deng Xiaoping became an unpredicted blessing for the Saudi petrochemical industry (as discussed in Chapter 8): in 1987, China alone accounted for nearly 10% of SABIC's global petrochemical sales.[373]

SABIC stipulated in agreements that its foreign joint venture partners implement Saudisation of the projects over the years, by transferring knowledge, skills and technologies from foreign experts to SABIC's Saudi national workers through the provision of pre-operational training, on-the-job training, and additional training courses. It was estimated that $70,000 was spent on training one Saudi employee on average.[374] The training costs were not so small for foreign investors, but the Saudisation of SABIC did progress successfully, with burdens compensated by other advantages, primarily in the form of feedstock. In the mid-1980s, the proportion of Saudi workers in SABIC was roughly half. The figure increased to over 70% by 2000 (see Graphs 3.1.). Today, more than 80% of SABIC's over 50,000 workers are Saudis, with 99% of the administrative staff

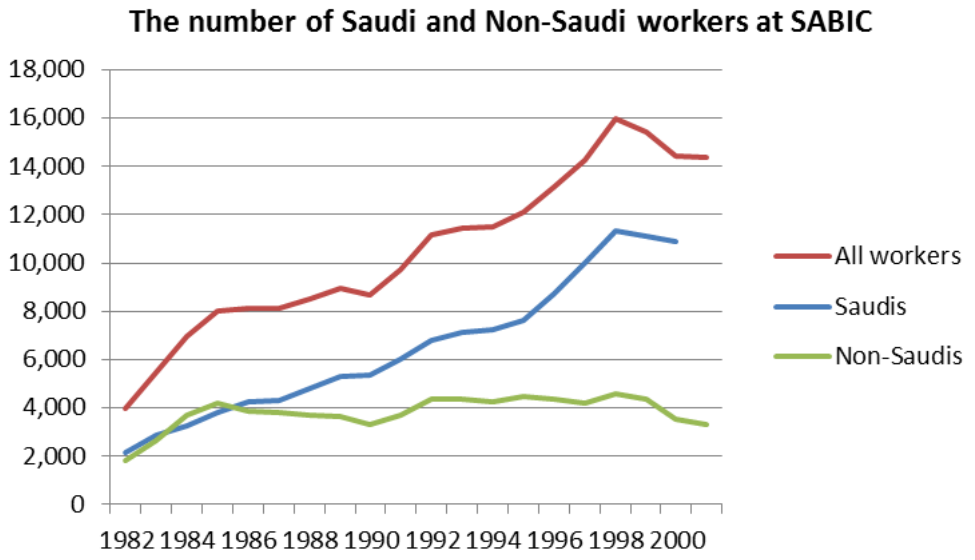
[371] "Oversupply in Petrochemicals", *The New York Times*, 2 April 1983.
[372] Saudi Arabian Basic Industries Corporation 1988: 22.
[373] Saudi Arabian Basic Industries Corporation 2001: 81.
[374] Al-Salamah 2004: 112.

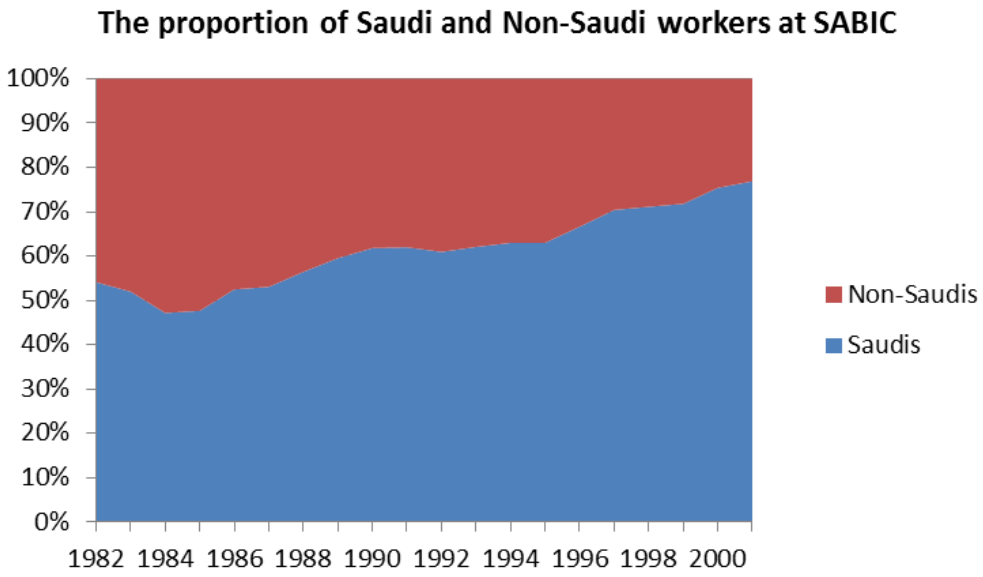
and 81% of technicians and engineers already Saudised.[375] In this manner, SABIC, drawing the kingdom's finest young talents, has grown to be a beacon of techno-sovereignty.

In addition, many of SABIC's workers later moved to private businesses as the petrochemical sector became open to private investors in the late 1990s.[376] They have also been headhunted for other state-led industrial projects in recent years.[377] For the management of SABIC, how to cope with such a brain-drain has been one of the problems until today, given the high cost of training. However, the "second technology diffusion" from SABIC to other domestic industrial producers was what the founders of SABIC had actually envisioned some 40 years ago. SABIC was designed to be a "national training house" for young Saudis, where they would find opportunities to apply the knowledge, skills and technologies they had learnt in schools and would thus grow capable of implementing production themselves, with the assistance of foreign experts.[378] The founders of SABIC expected that the company would be a source of social forces conducive to the development of the culture of production in the Saudi society.[379]

[375] Achoui 2009: 43; Abdulsalam Al-Yamani, "How SABIC Changed Dreams into Reality", *The Peninsula Times*, 18 March 2014.
[376] Abdulaziz Al-Zamil, a Chairman of Sipchem, interviewed by author, Riyadh, May 2014.
[377] SPDC, interviewed by author, Tokyo, June 2014.
[378] Akhdar 1982: 18.
[379] Pampanini 1997: 63.

Graphs 3.1.: Saudisation of SABIC





Source: SABIC

Conclusion of Chapter 3

In the 1950s, economic nationalism began to rise in Saudi Arabia. Young national technocrats who had studied at universities in Egypt and had been influenced by Nasserism attempted to establish greater autonomy in the Saudi economy and alleviate the kingdom's deepening dependence on American technologies and technologists. Their initial target was the oil industry, which was monopolised by Aramco. They, however, did not immediately nationalise the company because of the lack of an adequate number of qualified national workers to run the oil production. Thus, they instead took a gradual approach, simultaneously developing human resources through investing in HRD institutions and promoting Saudisation of the company through the transfer of knowledge, skills, and technologies to Saudi national workers.

At the same time, Saudi economic nationalists also envisioned industrialisation beyond oil. Petromin, created in 1962, was, thus, designed to be not only an SOE for oil production but for industrial diversification as well. Likewise, the CPO, created in 1965, began industrial planning. However, both Petromin and the CPO turned out to be failures due to the scarcity of qualified human resources capable of carrying out projects. Thus, just like the case of Aramco, witnessing the limits of economic nationalism, Petromin and the CPO opened themselves to foreign technologies and technologists: Petromin actively seeking joint venture with foreign firms and the CPO inviting foreign experts to carry out planning.

Those early trial-and-error experiences made Saudi policymakers realise the presence of the paradox of the techno-nationalist: they realised the necessity of establishing a technology regime that was both open and autonomous at the same time. A new policy based on this realisation led the kingdom to launch its first five-year development plan in 1970. At the same time, in competition with the religious authorities, the country's modern education began to develop after 1957. However, HRD institutions in the kingdom were still far from sufficient in supplying qualified industrial workers to industry. Many qualified national workers were educated in foreign countries, especially in Egypt and the US.

The following oil boom in the 1970s enabled the Saudi state to create substantial industrial infrastructure, especially two industrial cities in Jubail and Yanbu. The nationalisation of Aramco also provided the Saudi state with strong bargaining power vis-à-vis foreign firms and states in demanding industrial cooperation from them in return for the provision of incentive oil. Thus, SABIC, which had taken over industrial production from Petromin, established nine petrochemical joint ventures with foreign firms. SABIC, employing a handful of qualified national workers, many of whom were foreign-educated, stipulated that its foreign partners assist in the Saudisation of those joint venture projects, through the transfer of knowledge, skills, and technologies to national workers. SABIC succeeded in creating petrochemical production and Saudising that production over the years. Although the oil boom ended in the early 1980s, putting an end to the industrial expansion in Saudi Arabia, SABIC was growing as a beacon of techno-sovereignty in the kingdom.

Chapter 4

Technology for Oil: Japan and Saudi Arabia

"Japan is an advanced nation in Asia which has advanced industrial technologies. Are the Japanese interested in making their way into the Arabian Peninsula?" – King Saud (1957)[380]

"One is in need of energy. The other is in need of industrial prowess…In this sense, the exchange of energy security and economic cooperation is a principle of peaceful coexistence. We can promote this mutual reciprocity." – Yasuhiro Nakasone, an international trade and industry minister of Japan (1973)[381]

"It is necessary for us to reassure them [oil-exporting states] that they will be able to make a progress in their social and economic developments even after they have run out of oil" – Sohei Nayakama, a former president of the Industrial Bank of Japan (1973)[382]

[380] Sugimori 1981: 322.
[381] He 2011: 90.
[382] Ōta 1973.

This chapter will examine how Japan began to practise techno-diplomacy towards Saudi Arabia in the period between 1953 and 1983, responding to Saudi Arabia's request for the transfer of industrial technology. The two states established a "technology for oil" exchange in this period.

Historical Background

Oil has always been Japan's main interest in its diplomatic relationship with Saudi Arabia. The Japanese–Saudi interstate exchange dates back to 1938, a year in which a commercially-viable oilfield was discovered in Saudi Arabia by American geologists. At that time, Japan, an empire in East Asia then, was in the war with China which had broken out in the previous year (the Second Sino–Japanese War, 1937–45).

On one hand, the war with Nanking (the Republic of China led by Chiang Kai-shek of the Chinese Nationalist Party) urged Tokyo to craft a policy to win the hearts and minds of Chinese Muslims, with whom Tokyo attempted to create an alliance against Nanking. Thus, the Japanese imperial regime supported foreign Muslims, providing them with a safe haven, in return for their cooperation in policymaking.[383] It allowed Russian Tatars in exile to build a mosque in central Tokyo: the Tokyo Mosque (東京ジャーミィ) created in 1938.

[383] After 1940, Tokyo was in need of formulating Muslim policies not only towards Chinese Muslims but also towards Muslims in Southeast Asia in its attempt to create a "Greater East Asia Co-Prosperity Sphere" (*dai-tōa kyōei-ken*). For Tokyo's Muslims policies at that time, see Usuki (2010).

On the other hand, the deterioration of Japanese–American relationship caused by the war with China made the supply of oil a major concern for Tokyo. At that time, over 80% of Japan's total oil imports were supplied by the US. Thus, expecting a possible oil embargo by Washington, Tokyo began seeking alternative sources of oil.[384]

Thus, in order to initiate an interstate exchange with Riyadh, Tokyo invited Hafiz Wahba (حافظ وهبة), a Saudi ambassador to the UK, to the inauguration ceremony of the Tokyo Mosque in May 1938.[385] Building on this, Japan sent its ambassador to Egypt, Masayuki Yokoyama (横山正幸), to Riyadh in March 1939, together with a geologist from the Imperial Geological Survey of Japan (大日本帝国地質調査所), in order to launch talks with King Abdulaziz on a possible deal of concession.[386]

The talks, nevertheless, was terminated without making any substantial agreement by the outbreak of the Second World War, in which Japan entered war with the US with the attack on Pearl Harbour in December 1941. In the war, Saudi Arabia sided with the US and declared war against the Axis powers in March 1945.[387] The seven-year occupation of Japan by the US following the war further delayed resumption of the Japanese–Saudi interstate exchange, which became possible by the ratification of the Peace Treaty of San Francisco (1952) by Saudi Arabia in March 1954. With this treaty, Japan returned to the

[384] The oil embargo was implemented by the US in August 1941, to which Japan responded with its invasion of the Dutch East Indies (Iwama 2007: 47).
[385] Hafiz Wahba (1889–1967), originally from Egypt, was an advisor to King Abdulaziz. Wahba headed the General Directorate of Knowledge, a precursor of the Ministry of Education, between 1926 and 1929, and was appointed a Saudi ambassador to the UK in 1930, the post which he remained at until 1956 before being appointed to the board of directors at Aramco in 1959.
[386] Saudi Aramco 2011: 97.
[387] Vassiliev 2000: 327.

international community: Japan and Saudi Arabia eventually established a formal diplomatic relationship in June 1955.

With this diplomatic normalisation, Japan eventually began importing oil from Saudi Arabia. In fact, it was a strategic decision by the US to let Saudi Arabia supply oil to Japan. While the US was a major supplier of oil to Japan before the Second World War, the predicted depletion of its oil reserves in the near future (the US became a net importer of oil in 1972) made Washington decide to reduce its own oil exports for conserving its oil reserves, and instead let Saudi oil fuel economies of its capitalist allies in Western Europe and East Asia.[388] Thus, within the framework of the Global Cold War, Japan's energy nexus with Saudi Arabia came to be established and strengthened.

Thus, oil from Saudi Arabia became an indispensable commodity for Japan's post-war rehabilitation: Saudi Arabia supplied over half of Japan's oil imports in the mid-1950s (see Graph 4.1.). By 1960, Japan became the largest buyer of Saudi oil, followed by Italy, the US, and the Netherlands.[389] Beyond rehabilitation, Saudi oil which was supplied by Aramco at low costs assisted Japan to achieve a structural change of its economy. After the mid-1950s, the main industries of Japan began shifting from light industries to heavy industries.

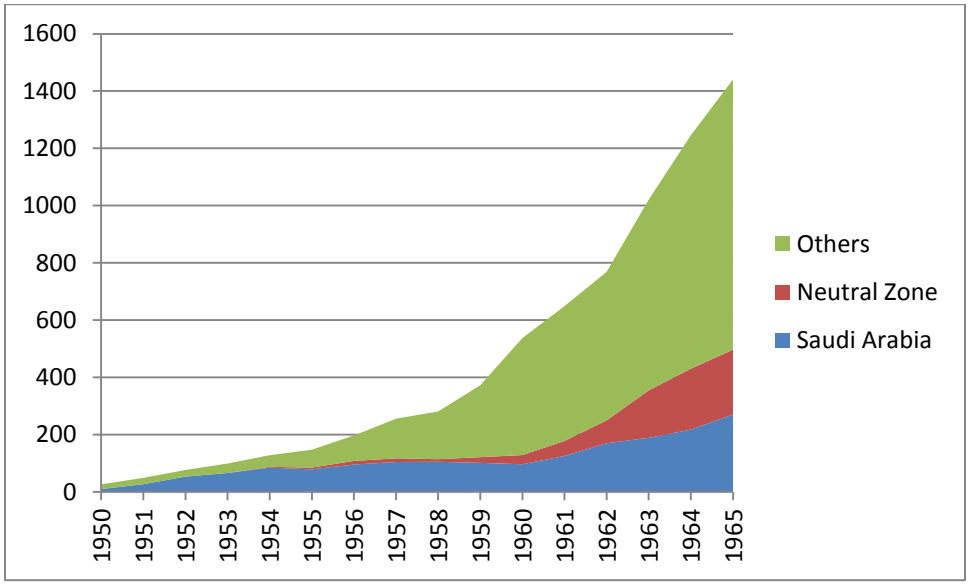
Japan, especially, succeeded in developing a competitive petrochemical industry by processing Saudi oil. The development of a petrochemical industry was announced by the Ministry of International Trade and Industry (MITI) in June 1954. The first petrochemical plant in Japan came on stream in April 1957, followed by many others. Japan's

[388] Yergin 1991: 391–408.
[389] Saudi Arabian Monetary Agency, various years.

petrochemical productions increased in an exponential manner in the 1960: the production of ethylene, the most fundamental petrochemical product, grew ten-fold in five years from 78,000 tpa in 1960 to 777,000 tpa in 1965, for instance.[390]

Witnessing Japan industrialising rapidly using their oil, the Saudis naturally came to be interested in tapping its industrial technology in return for its supply of oil, especially as economic nationalism was on the rise in the kingdom at that time, as discussed in Chapter 3, and Saudi policymakers were keen on seeking alternative sources of industrial technology away from the US, the UK, and France.

Graph 4.1.: Japan's Oil Imports from Saudi Arabia, the Saudi–Kuwaiti Neutral Zone, and Others, 1950–1965 (thousand barrels per day)



Source: Petroleum Association of Japan

[390] SPDC 2001: 31–34.

4.1. Arabian Oil Company: A Private Pioneer of Japan's Techno-Diplomacy

Nevertheless, although the oil supplied from Saudi Arabia became one of the main sources of energy in Japan, Tokyo perceived Saudi Arabia to be no more than a friendly state. This is because oil was supplied to the Japanese market by Aramco, and this supply was considered to be a part of Japanese–American relations rather than Japanese–Saudi relations. Tokyo also saw the Middle East region as a sphere of influence of Western powers. The Ministry of Foreign Affairs, in fact, continued to treat Middle Eastern affairs as a part of European affairs until May 1965 when the Ministry underwent reorganisation and an independent Bureau for Middle Eastern and African Affairs (外務省中近東アフリカ局) was established within the Ministry.[391]

Japan's post-war economic growth increased Japan's economic exchanges with Middle Eastern countries to some extent. In 1953, after the recovery of sovereignty in the previous year, Tokyo dispatched the "Middle East Economic Mission" (中東経済使節団) in order to resume economic relations with Middle Eastern states, which had been suspended since the outbreak of the Second World War. The mission began by visiting Egypt, which was at that time a hub of the Middle Eastern economy. Among Middle Eastern countries Japan had the largest volume of bilateral trade with Egypt, importing cotton and exporting light-industrial products.[392] The mission also visited Lebanon, Syria,

[391] The House of Representatives, Japan, http://www.shugiin.go.jp/internet/itdb_housei.nsf/html/houritsu/04819650504054.htm [accessed 1 October 2014].).
[392] Roundtable 1998: 4.

Iraq, Iran, and Turkey. However, Saudi Arabia was not included in the mission's itinerary. The non-inclusion of Saudi Arabia in the mission's itinerary angered the late King Abdulaziz. The king showed his strong dissatisfaction by imposing a ban on imports from Japan. The ban was lifted soon after Tokyo reacted and sent Shigeru Yosano (与謝野秀), a Japanese ambassador to Egypt, to Jeddah (where embassies existed then) and had a meeting with Abdullah bin Sulaiman (عبدالله بن سليمان), a Saudi finance minister, on this affair. However, as the incident suggests, Tokyo did not see much importance in economic relations with Saudi Arabia. Except for oil, there was not much industry in Saudi Arabia and its income was still not large enough for Japanese firms to consider it as a market for exporting products. Most businessmen did not pay attention to this desert kingdom.

An exception was Tarō Yamashita (**山下太郎**), a former colonial entrepreneur who had been active in Manchuria and called "Tarō of Manchuria" (満州太郎). After he had lost most of his businesses with the defeat of Japan in the Second World War, he came to target exploration and production of oil as his new project. His plan was based on his belief that Japan had lost the war because of an absence of oil resources in Japan and of alternative sources of oil supply to the US. Thus, he claimed that Japan should produce oil on its own in foreign countries for its survival in the post-war period.[393] In June 1956, he established the Japan Petroleum Trading Company (日本輸出石油株式会社) and began to seek investing opportunities in oil-producing countries across the world. In early 1957, Yamashita heard that Saudi Arabia had stopped negotiating with the French for the development of oilfields in the Saudi–Kuwaiti neutral zone because of its severance of

[393] Sugimori 1981: 291–292.

diplomatic relations with Paris following the Suez Crisis.[394] Yamashita visited Saudi Arabia and held meetings with Abdullah Al-Turaiqi, the then Director General of Petroleum and Mineral Affairs in the Ministry of Finance. In December 1957, Yamashita was finally granted a concession for developing an oilfield in Khafji (الخفجي), a town in the neutral zone. In February 1958, Yamashita re-established his firm as Arabian Oil Company (AOC: アラビア石油株式会社) and gained a concession from the Kuwaiti government as well. AOC discovered a commercially-viable oilfield in Khafji in January 1960, and began production of crude oil in February 1962.[395] AOC became the first example of upstream investment by a Japanese oil firm in the Gulf region. For his achievements, Yamashita, who died in 1967, was given a new nickname, "Tarō of Arabia" (アラビア太郎).

Al-Turaiqi's choice of AOC as a developer of the Khafji oilfield derived from his intention of breaking the monopoly of Aramco in the oil industry in Saudi Arabia and gradually recovering the control of oil production to the hand of Saudis (as discussed in Chapter 3).[396] He envisioned a transfer of technology from non-Aramco sources to Saudi workers as well to prepare the country for the eventual nationalisation of oil production. After negotiations with the French were scuttled, Al-Turaiqi negotiated with multiple firms,

[394] The Saudi–Kuwaiti neutral zone facing the Gulf was left undefined in the Uqair Convention setting the Saudi–Kuwaiti border. The zone was eventually divided by the two states in 1970.
[395] Arabian Oil Company 1995: 48–57.
[396] By the agreement with AOC, Al-Turaiqi also broke the principle of "fifty-fifty" – equally dividing the profit between a foreign oil firm and the host government – that had been a norm in the Gulf oil industry until then. AOC agreed with the Saudi and Kuwaiti governments that AOC take only 43% of the profit, offering the remainder to those governments (Yergin 1991: 506–507).

including independent (non-major) American oil firms and Italy's ENI.[397] In fact, AOC was not in an advantageous position in competition with these firms because it did not have any previous record of oil production. However, King Saud had been interested in bringing Japanese firms into the kingdom.[398] King Saud told Yutaka Tsuchida (土田豊), the first Japanese ambassador to Saudi Arabia (1956–60), in their meeting which took place in the midst of the Suez Crisis, his expectations of Japanese investment in Saudi Arabia, quoted at the beginning of this chapter.[399] The writing of a company history of AOC also identifies the Suez Crisis as an event that made the Saudis "shift their eyes from the Western world to Asian territories for the first time".[400]

In the Saudi oil industry, AOC functioned as an additional source of technology, besides Aramco. In the case of AOC, training of its Saudi staff members had to be more comprehensive than that by Aramco since the country's scarce qualified human resources had already been taken by Aramco and those it employed were in need of training at very basic levels.[401] For illiterate workers, the company implemented a "campaign against illiteracy" first, teaching them Arabic language. It also ran classes for mathematics, physics, chemistry, and English language. For those who had completed secondary education in

[397] Yergin 1991: 506–507.
[398] A few years before the deal of AOC, Imperial Oil (帝国石油), a Japanese oil company privatised after the Second World War, had also studied development of oil in Saudi Arabia. However, investment did not take place because the company preferred purchasing an already-existing oilfield to taking a risk in developing a new one (Sugimori 1981: 333–335).
[399] Shoji 2007: 36.
[400] Arabian Oil Company 1995: 37–38.
[401] AOC was initially unable to fulfil the project's Saudi quota. Thus, with the permission of the Saudi authority, the company instead employed Palestinian refugees who had been recruited in cooperation with the United Nations Relief and Works Agency (Arabian Oil Company 1995: 91).

Saudi Arabia, the company issued scholarships for studying at foreign universities.[402] Most of the Saudi students funded by AOC studied subjects related to the oil industry at universities either in the US or the UK. Japanese universities later began being included in their destinations as AOC set up the Tokyo Scholarship Program (TSP) in 1973. Between 1975 and 1993, 40 Saudis funded by the TSP graduated from university in Japan. Former AOC staff members recall that these scholarships were necessary until the 1980s when higher education institutions in Saudi Arabia eventually became capable of supplying qualified human resources to the labour market.[403] AOC also developed the infrastructure of the city of Khafji. In addition to the industry-related infrastructure, it created six primary schools in the city: two schools for the children of the company's Arab employees and four others for the children of other citizens in the city.[404] The company also implemented greening projects in the city. In this manner, the foundation of the city was laid by AOC.[405] Since AOC was granted concessions by both the Saudi and Kuwaiti governments, AOC made contributions to development in Kuwait as well. For instance, in 1967 AOC founded the Kuwait Institute for Scientific Research (KISR: معهد الكويت للأبحاث العلمية), a pioneering scientific research institute in the Gulf region. AOC assisted the KISR through financial

[402] Arabian Oil Company 1995: 92–93.
[403] Former AOC staffs, interviewed by author, Tokyo, June 2012.
[404] Arabian Oil Company 1995: 104–113.
[405] The city is populated by around 60,000 people today. Saudi policymakers plan to further develop the city into a greater industrial hub ("Al-Khafji Industrial City to Draw SR 2 bn Investments", *Arab News*, 31 August 2012).

contribution of annual $600,000 and through helping the institute invite Japanese scientists in fields such as desert farming, fishery and aquaculture.[406]

In this manner, AOC privately pioneered Japan's techno-diplomacy in relation to Saudi Arabia and Kuwait. The amount of oil produced by AOC reached 410,000 bpd in 1972, nearly 10% of Japan's total oil imports.[407] In return, AOC transferred knowledge, skills and technologies to Saudi and Kuwaiti citizens through its operations (on-the-job training) and through contributions to the development of infrastructure. However, although AOC's investment itself was private, Yamashita was well-supported by Japanese politicians. For instance, Yamashita's negotiation with Al-Turaiqi in 1957 was accompanied by Katsuo Okazaki (岡崎勝男), a former foreign minister. In addition, during the negotiation, Prime Minister Nobusuke Kishi (岸信介) announced the government's support for oil development in Saudi Arabia.[408] Those political initiatives impressed on Al-Turaiqi and King Saud that AOC's investment would be guaranteed by the Japanese state. AOC's project also received strong support from Japan's industrial circle. The first chairmanship of AOC was assumed by Taizo Ishizaka (石坂泰三), a chairman of the Japan Federation of Economic Organisations (日本経済団体連合会), the largest business lobby in Japan known as *Keidanren*. Another major supporter of AOC was Ataru Kobayashi (小林中), a governor of the Development Bank of Japan (日本開発銀行) who later assumed

[406] The KISR was nationalised by the Kuwaiti state in 1973, but AOC's assistance continued (Arabian Oil Company 1995: 106–109).
[407] Shoji 2007: 59.
[408] Ibid.: 38.

AOC's second chairmanship. Those supports enabled Yamashita to secure the capital needed to launch expensive exploration activities from scratch.

There were, however, also objections to such governmental and industrial supports to AOC. One of the prominent critics was Yoshitaro Wakimura (脇村義太郎), a dean of the Faculty of Economics at the University of Tokyo. Wakimura considered AOC's investment too risky and unnecessary given that oil from Saudi Arabia had already been supplied by Aramco at low costs and in a stable manner, being enabled by the close-knit Japanese–American postwar relations.[409] Nevertheless, the memory of Japan's defeat in the war was still vivid among Japanese policymakers and industrialists in the 1950s. During the Second World War, Japan's military regime propagated the slogan "a drop of oil is as essential as a drop of blood" (石油の一滴は血の一滴).[410] The slogan was remembered by many and kept being reiterated by policymakers and industrialists even after the war when they spoke about the survival of a new democratic Japan.[411]

4.2. Limited Japanese–Saudi Industrial Cooperation in the 1960s

AOC's investment in the oil industry in Saudi Arabia raised expectations among Saudi policymakers about further Japanese industrial investments in the kingdom. In the 1960s,

[409] Arabian Oil Company 1995: 41–42.
[410] This phrase was originally used by Georges Clémenceau, the French Prime Minister, in his letter to the US President Woodrow Wilson during the First World War.
[411] Fumiyou Nagaoka, "Sekiyu no Itteki ha Chi no Itteki", Forum Energy Think Together, http://www.ett.gr.jp/think/nagaoka.html [accessed 1 December 2014].

supported by cheap oil from Saudi Arabia, the Saudi–Kuwaiti neutral zone, and other Gulf countries, Japan entered a period of "high economic growth" (高度経済成長). While the focus of Japanese politics in the 1950s was on security (the Korean War, the creation of the Self-Defence Force, and the redefinition of the Japanese–American alliance), Prime Minister Hayato Ikeda (池田勇人) (1960–64) changed the course of Japanese politics towards economic growth, forming and cementing the nature of the Japanese state as mercantilist – a nature which persists until today.[412] Under Ikeda's "income-doubling plan" (所得倍増計画), Japan's economy grew at an average annual rate of 11.6% in the first half of the 1960s. Supported by rapid industrial growth in heavy industries and home appliances, Ikeda's promise of doubling income in ten years was actually achieved in seven years.[413] In 1968, Japan's GDP surpassed that of West Germany and became the world's second largest after the US. As Japan's industrial exports to Saudi Arabia increased and Japanese industrial products became more visible in markets in the kingdom, Saudi policymakers aimed to take advantage of Japanese industrial technology beyond the oil industry.

In order to establish an interstate framework for industrial cooperation with Japan, Saudi Arabia sent Prince Sultan bin Abdulaziz, a transport and communication minister, to Japan in October 1960. The official purpose of Prince Sultan's visit was to attend an international railway conference held in Tokyo, but the visit's real purpose was to request the Japanese government to sign an agreement on industrial cooperation.[414] In Tokyo, Prince Sultan had a meeting with Japan's foreign minister Zentarō Kosaka (小坂善太郎).

[412] Amaya 1989; Pyle 2007.
[413] McCargo 2000.
[414] Roundtable 1998: 10.

The meeting had not been pre-arranged, and not been expected by Japanese policymakers, but an agreement was made for cooperation in three fields: transport, communication, and petrochemicals. In order to materialise the agreement, a Japanese business delegation visited Saudi Arabia in 1962. The delegation was headed by Akiyoshi Tamaki (玉置明善), a founder of Chiyoda Corporation (千代田化工), one of the three largest engineering and construction firms in Japan. Chiyoda Corporation entered negotiation with Petromin which wanted to form a joint venture with Chiyoda for building a fertiliser plant.[415] Although this idea did not materialise, Chiyoda instead constructed an oil refinery in Jeddah for Petromin, which came on stream in 1967 and is still in operation today.[416]

Apart from the Chiyoda–Petromin deal, however, there was no major achievement in Japanese–Saudi industrial cooperation in the 1960s. In general, both Japanese policymakers and private firms remained indifferent to investment in Saudi Arabia. As long as Saudi oil was supplied to Japan's economy by Aramco in a stable manner, there was little incentive for Japanese policymakers to carry out industrial cooperation with Saudi Arabia. For Japanese private firms, Saudi Arabia was not an attractive place for investment due to its insufficient infrastructure and the weak level of HRD.

In fact, Japanese investments in the Gulf region were largely absorbed by neighbouring Kuwait. Becoming independent from the UK in June 1961, Kuwait actively pursued industrial diversification in the 1960s, creating the Shu'aiba Industrial Zone (منطقة

[415] Tamura 1983a: 274.
[416] The refinery, operated by Saudi Aramco today, currently processes 900,000 bpd of oil. However, Saudi Aramco considers its closure in several years, possibly in 2022, due to its age and environmental concern ("Saudi Aramco May Shut Jeddah Refinery in Several Years", *Arab News*, 24 June 2015).

الشعيبة الصناعية) in 1961, setting up the Higher Planning Council in 1962, and launching the first five-year development plan in 1967.[417] As a result of these active industrial policies, Kuwait began to attract foreign businesses, being a bridgehead for Japanese traders and investors in the Gulf region. In the words of Toshiro Ogushi (小串敏郎), a former Japanese ambassador to Bahrain, Kuwait in the early 1970 was just like an "exhibition pavilion of Japanese industries".[418]

In the late 1960s, Saudi Arabia followed the strategy of Kuwait for industrial planning and attempted to extend an invitation to Japanese and foreign businesses. Saudi Arabia set up the CPO in 1965 and implemented its first five-year development plan in 1970. The Six-Day War (1967) resulted in the souring relationship between Riyadh and Washington,[419] which inevitably pushed King Faisal to seek stronger economic ties with other industrialised states. Thus, referring to the Sultan–Kosaka agreement signed in 1960, Saudi Arabia repeatedly requested Japan's greater industrial cooperation. In July 1970, Abdulhadi Taher, the governor of Petromin, visited Japan. The official purpose of the visit was to attend the Osaka Expo, but Taher's real objective was to hold talks with Japanese businesses in pursuit of joint venture opportunities. In particular, Taher met firms in the Mitsubishi Group, such as Mitsubishi Corporation (三菱商事) and Mitsubishi

[417] Crystal 1992: 51; Eltony 2007: 82.
[418] Roundtable 1998: 17.
[419] Perceiving growing anti-Americanism in Saudi Arabia following the Six-Day War, Washington anticipated that King Faisal "will seek to de-emphasize his ties with the US" and "turn more towards others [such as] France and Japan" (US Department of State, Foreign Relations of the United States, 1969–1976 Volume XXIV, Middle East Region and Arabian Peninsula, 1969–1972. Document 140: National Intelligence Estimate "The Outlook for Saudi Arabia").

Petrochemical (三菱油化). Taher visited their plants in Yokkaichi (四日市) and suggested that Petromin and Mitsubishi firms build an ethylene plant in Saudi Arabia.[420]

Meanwhile, Tokyo's attitude towards Riyadh began to change. Tokyo revised its previously tokenistic attitude and considered instead a more proactive and substantial industrial cooperation strategy towards Saudi Arabia. In January 1971, a Japanese mission led by Sohei Nakayama (中山素平), a chairman of the Industrial Bank of Japan (日本興業銀行) and of the Overseas Technology Cooperation Agency (OTCA: 海外技術協力事業団), visited Riyadh. Nakayama discussed with the Saudi oil minister Yamani the creation of a full economic and technological cooperation agreement. King Faisal appreciated Japan's more positive attitude towards industrial cooperation. In May 1971, Faisal paid a visit to Tokyo for the first time, and expressed his desire that Saudi Arabia and Japan sign a new agreement in a swift manner.[421]

Tokyo's change of attitude was caused mainly by the structural shift of the global oil industry at that time. Before the early 1970s, production of oil in the Gulf region had been controlled by Western IOCs, especially those referred to as the "Seven Sisters" (the Anglo-Persian Oil Company, Gulf Oil, Royal Dutch Shell, Standard Oil of California, Standard Oil of New Jersey, Standard Oil Company of New York, and Texaco). Nevertheless, resource nationalism began to rise in oil-exporting countries in the late 1960s. The OPEC states gradually increased their stake in oil production and came to gain greater control over the pricing of oil as well. Thus, the balance of power between the OPEC and

[420] SPDC 2001: 26.
[421] Tamura 1983b: 180–184.

IOCs began to tip in favour of the former.[422] This shift no longer allowed Japan to remain a passive buyer of Middle Eastern oil.[423] Relying solely on IOCs for the supply of oil became increasingly risky. Tokyo was increasingly aware of the need to craft a policy independently from IOCs. It meant that, for securing the supply of oil, Tokyo now had to negotiate directly with the governments in oil-exporting countries.[424] Thus, energy security (エネルギー安全保障), as a policy concept, began emerging in Japanese politics for the first time since the end of the Second World War.

However, it took a while for Tokyo to understand what Riyadh wanted from Japan. In early 1971, Tokyo made a proposal to Riyadh regarding a technological cooperation agreement. However, this initial proposal did not satisfy Riyadh. Riyadh complained that the proposal "underestimated and disrespected" its desires.[425] In August 1971, Omar Saqqaf (عمر السقاف), a Saudi foreign minister, told Hideji Tamura (田村秀治), a Japanese ambassador to Saudi Arabia (1968–71):[426]

> "The proposal made by your government only prescribes technological cooperation. It does not take in our government's strong desire to count on your country for development as well. We would like your government to consider our proposal for

[422] Yergin 1991: 580.
[423] Ministry of Foreign Affairs, Japan 1972: 189.
[424] In 1973, the share of IOCs-supplied oil in Japan's total oil imports was 74.1%, but the figure dropped to 44.5% in 1980 and to 26.1% in 1985. In contrast, the share of national oil companies (NOCs)-supplied oil in Japan's total oil imports increased from 9.2% in 1973 to 44.4% in 1980 (equal to the figure of IOCs), and up to 59.7% in 1985 (more than double the figure of IOC's) (Petroleum Association of Japan: 2012: 12)
[425] Tamura 1983b: 191.
[426] Ibid.: 192.

> bilateral economic and technological cooperation agreement instead. This proposal came out of the strong desire of his Majesty and his Majesty's government to count on your country for economic and technological development, without relying on Western countries."

The major gap between the preferences of Tokyo and Riyadh was that while Tokyo envisioned a programme within the framework of official development assistance (ODA) based on interstate technological cooperation, Riyadh expected investments in industrial projects by Japanese industrial firms. As a result of further communication, Japanese policymakers gradually came to understand the preferences of Saudi Arabia. The report by the Ministry of Foreign Affairs in 1972 called for the creation of new principles in Japan's diplomacy, which "appropriately follow new currents in developing states including OPEC states". The report stated that "we must reconsider our too little response to the aspiration and efforts of oil-producing states to lay the foundation of independent economic development through leveraging energy development and promoting industrial diversification".[427] During April and May 1973, Yasuhiro Nakasone (中曽根康弘), a minister of international trade and industry, visited Saudi Arabia, Kuwait, Abu Dhabi and Iran, which, combined, accounted for over 70% of Japan's total oil imports at that time. It was the first visit to Saudi Arabia by an incumbent minister of Japan. Nakasone, after the visits, said: "Japan's resource diplomacy in the Middle East has been zero so far. We must

[427] Ministry of Foreign Affairs, Japan 1972: 193.

promote it in a proactive manner from now on."[428] As his words quoted at the beginning of this chapter suggests, an idea of exchanging technology and oil firmly began to develop in the mind of key policymakers.

However, it was AOC which was most concerned with the rising resource nationalism in Saudi Arabia. The nationalisation of Aramco was about to begin. AOC feared that it too would follow suit. Thus, in order to prevent the company from being nationalised, AOC took its own initiative of industrial cooperation. In October 1971, the company created the Japan–Saudi Arabia Cooperation Organisation (JSCO: 日本サウディアラビア協力機構), an association of private firms for promoting industrial cooperation with Saudi Arabia. The MITI, coincidentally considering institutionalisation of Japan's industrial cooperation with oil-producing states in the Middle East, decided to patronise the JSCO on the condition that the organisation's target would be extended beyond Saudi Arabia to all Middle Eastern countries.[429] Thus, with the sponsorship of the MITI, the Japan Cooperation Centre for the Middle East (JCCME: 中東協力センター) was founded in October 1973. The JSCO was absorbed into the JCCME. The JCCME was designed to serve as an interlocutor between Japanese private firms and Middle Eastern governments for promoting Japanese FDI in those countries. The centre's first chairmanship was assumed by Ataru Kobayashi, the then-chairman of AOC. The centre's managing director and assistants were also assumed by AOC's staff members.[430] Thus, on the eve of the First Oil Crisis, the MITI–AOC coalition began to pave the way for Japan's techno-diplomacy

[428] He 2011: 86–88.
[429] Former AOC staffs, interviewed by author, Tokyo, June 2012.
[430] Arabian Oil Company 1995: 121.

towards Saudi Arabia and other oil-exporting states in the Gulf region. Eventually, the coalition succeeded in preserving AOC's concession in the city of Khafji. While Aramco was fully nationalised by the Saudi government in 1980, AOC was exempted from nationalisation although it accepted the Saudi government's 60% participation in 1981.[431] Until the expiration of the concession in February 2000, the company kept supplying 5–10% of Japan's total oil imports.

4.3. The First Oil Crisis and Its Aftermath

The First Oil Crisis was a major turning point in Japan's techno-diplomacy towards Saudi Arabia. During the October War in 1973, the Organisation of the Arab Petroleum Exporting Countries (OAPEC), an Arab part of the OPEC, quadrupled the price of oil and placed embargos targeting oil-importing states in order to put pressure on them to take a pro-Arab/Palestine policy. Together with the US and Western European states, Japan was identified by the OAPEC as a "non-friendly state" and became a target for the embargo. The decision was a bolt out of the blue for most Japanese policymakers who had believed that Japan's relationships with Arab states had been well-maintained.[432] In November,

[431] Taro Shoji, a former staff member of AOC, believes that another reason for AOC's exemption from full nationalisation was the legal complexity of its operations due to its presence in the former neutral zone: it was easier for both the Saudi and Kuwaiti governments to leave it as an operator and to continue to supervise it, rather than solve the intricate legal issues relating to nationalisation (Shoji 2007: 67).
[432] Roundtable 1998: 19.

Tokyo dispatched Vice Prime Minister Takeo Miki (三木武夫) to oil-exporting states in the Middle East to convey to them Japan's pro-Arab position and to promise more economic and technological cooperation. In December, the OAPEC decided to remove Japan from its list of targets for the embargo. This incident strongly imprinted on the mind of Japanese policymakers that Japan needed to do much more in terms of its industrial cooperation with oil-exporting states in the Gulf region. Hideji Tamura, a former ambassador of Japan to Saudi Arabia (1968–71), regretted that, if the Japanese–Saudi economic and technological cooperation agreement was signed before the Oil Crisis, "it was obvious that our country would have been treated as a friendly state and would not have suffered from the Oil Crisis".[433]

Following the First Oil Crisis, two significant changes were made in Japan's policymaking circles. First, the concept of security was extended. Before the Oil Crisis, security had referred mainly to military security. However, the Oil Crisis made energy security the most important security agenda for Japanese policymakers. In the late 1970s, the administration of Prime Minister Masayoshi Ohira (大平正芳) (1978–80) called for a "General Security Initiative" (総合安全保障構想) that incorporated non-military areas of security, such as energy, food, and natural disasters, in the goals of Japan's security policy.[434] Second, as a way to achieve the goals of energy and general security, the idea of "strategic assistance" (戦略援助) was adopted. By using ODA to developing states in a strategic manner, Tokyo attempted to safeguard its non-military security interests. The

[433] Tamura 1983b: 193–194.
[434] He 2011: 90–91.

budget for ODA rapidly increased: it was only $458 million in 1970, but increased more than seven times within a decade, reaching over $3.3 billion in 1980.[435] In addition, multiple ODA bodies administered by different ministries were unified and the Japan International Cooperation Agency (JICA: 国際協力事業団; after October 2003, 国際協力機構) was created in August 1974.

Nevertheless, strategic assistance using the JICA was not sufficient as regards Japan's diplomacy towards oil-exporting Gulf states. The mainstream practice of Japan's ODA diplomacy was providing loans to capital-scarce developing states. However, Saudi Arabia and other oil-exporting states were already affluent with petrodollars and did not need much further capital injection.[436] What they wanted was the transfer of industrial technology through industrial investments. In particular, they wanted the creation of joint ventures in which Japanese firms would make a long-term commitment regarding both the construction of plants and their management.[437] For Japan, the Gulf states, which were capital-rich developing economies, were novel entities in its ODA diplomacy.[438] However, the JICA was still expected by Saudi policymakers to be active in the kingdom, in particular in the field of HRD, which would support industrial diversification in the kingdom in the long term.

In order to implement industrial joint ventures, Tokyo needed the cooperation of private firms. Although Japan's post-war economic growth is often attributed to the close

[435] Iokibe 2006: 186–187.
[436] Takahashi 1995: 94.
[437] Ilgen and Pempel 1987: 172–173.
[438] Japan Cooperation Centre for the Middle East 1974: 19.

relationship between the state and private firms, particularly large *zaibatsu* (財閥) conglomerates, the state did not have as strong coercive power as was wielded in other non-democratic states in Asia. In fact, "administrative guidance" (行政指導) by the MITI was often defied by private firms because of the lack of legally-mandated coercion.[439] Thus, whether or not Japan's techno-diplomacy was to be successful in implementation depended on private firms' own preferences in the market.

Since the 1960s, Japanese firms had been unwilling to invest in Saudi Arabia due to the shortage of industrial infrastructure and human resources there. However, the Oil Crisis changed the situation. With the influx of abundant oil rents, the construction of industrial infrastructure began in Saudi Arabia. In addition, some Japanese firms began considering recovering their loss of profits caused by higher oil prices by actively investing in oil-exporting countries.[440] As the Oil Crisis put an end to Japan's two decades-long high growth period, many firms began to explore investing opportunities in foreign markets.[441] Japanese firms were also aware of the importance of energy security which would greatly affect their business.

In fact, the Oil Crisis threw Japanese society into the greatest chaos since the country's defeat in the Second World War. Due to the government's decision to conserve energy, cities suddenly became dark again, and panicked consumers stampeded to shops

[439] A Japanese economist Kikuo Iwata argues that "contrary to the conventional wisdom, the ineffectiveness of industrial policies by the MITI promoted high economic growth through *not* constraining the competition in manufacturing sectors, raising productivity and bringing development of new products" (Iwata 2005: 154).
[440] Roundtable 1998: 21.
[441] Yoshikawa 2012.

and departments in order to hoard products, especially toilet rolls, as a rumour of their expected shortage had spread (and, ironically, this collective behaviour ended up causing their real shortage). Those events reminded many Japanese citizens of the country's energy vulnerability, which had been strongly imprinted on their mind in the defeat in the Second World War 28 years ago: the slogan, "a drop of oil is as essential as a drop of blood" became a popular slogan again in the society.[442]

Thus, the Japanese state and private firms came to form a stronger consensus in the mid-1970s about the need to practise techno-diplomacy towards Saudi Arabia and other oil-exporting states. In March 1975, Japan and Saudi Arabia finally signed a bilateral economic and technological cooperation agreement. The agreement called for industrial joint venture and interstate cooperation in the fields of oil, petrochemical, mineral, agriculture, irrigation, fishery, medical, and others, in which technology transfer from Japan to Saudi Arabia was stipulated. It also decided the creation of a "Japanese–Saudi Joint Committee" (日サ合同委員会) to be held on a regular basis, in which representatives from the two states would evaluate the progress of current projects and discuss their future cooperation. The first joint committee took place in Riyadh in January 1976, attended by Toshio Kōmoto (河本敏夫), a Japanese international trade and industry minister, Hisham Nazer, a Saudi planning minister, and Ghazi Al-Gosaibi, a Saudi industry and electricity minister.[443]

In the late 1970s and the early 1980, diplomatic exchanges between Tokyo and Riyadh remained active as well. In 1978, Japan's foreign minister and Prime Minister

[442] For how Japanese people reacted to the Oil Crisis, see Yanagida (1982).
[443] Saudi Cultural Attaché Tokyo 2010: 167.

visited Riyadh for the first time: foreign minister Sunao Sonoda (園田直) in January and Prime Minister Takeo Fukuda (福田赳夫) in September. In addition, Saudi Arabia became a target of Japan's "royal family diplomacy" (皇室外交) as well. In February 1981, Japan's Crown Prince Akihito (明仁親王), the current Emperor (1989–present), visited Riyadh.

The beginning of Japan's active techno-diplomacy towards Saudi Arabia was generally welcomed by the US too: American policymakers at that time, (wrongly) predicting that Japan would be another superpower, were interested in bringing Japan into a multilateral technological cooperation scheme in the Gulf region, which the US would preside over and potentially joined by West European states as well.[444] However, there was also an increasing concern among the American business circle about Japan's increasing economic activities in Saudi Arabia and their emerging competition with American firms there. After all, the American–Japanese coordination was kept minimum, limited only to an exchange of information in technical assistance projects, as the US embassy in Jeddah once advised Washington to do so.[445]

[444] US Department of State, Foreign Relations of the United States, 1969–1976 Volume XXIV, Middle East Region and Arabian Peninsula, 1969–1972. Document 83: Minutes of a Review Group Meeting.
[445] Cable from the US Embassy in Jeddah to the Secretary of the State Department titled "Economic Cooperation with Saudi Arabia: Japanese Interest in Coordination with United States" (6 February 1976).

Petrochemical Joint Ventures

The main achievements of the Japanese–Saudi economic and technological cooperation agreement were two petrochemical joint ventures between SABIC (Saudi Arabian Basic Industries Corporation) and Japanese consortiums: the Ar-Razi project and the Al-SHARQ project. Both projects were negotiated in the late 1970s and were agreed and came on stream in the early 1980s. The negotiations took several years because of Japanese firms' initial hesitance to invest in Saudi Arabia.

As the Japanese economy slowed down after the Oil Crisis, Japanese petrochemical firms began employing a dual strategy, relocating the production of basic products abroad and leaving and developing high-tech derivative products in Japan.[446] However, some petrochemical firms preferred to invest in Southeast Asia over the Middle East. For instance, Sumitomo Chemical (住友化学) agreed with the Singaporean government in 1975 to set up petrochemical plants in the newly created industrial zone in Jurong Island. In Southeast Asia, Japanese firms could benefit from the presence of low-cost, skilled labour forces and of sizeable local markets. In comparison, Gulf countries lacked those advantages. Setting up petrochemical production in Gulf countries required an extensive degree of training of local workers and bringing in foreign workers. In addition, major markets for petrochemical products were not in the Gulf region itself.[447] Saudi Arabia had certainly advantages such as cheap feedstock of associated gas (gas coming out alongside the

[446] Kanai 2006.
[447] Japan Cooperation Centre for the Middle East 1974.

production of oil). However, the lack of previous records of industrial projects in the kingdom made Japanese firms cautious about investment. In the Gulf region, Japanese firms generally preferred only to export products to them or to invest in one-off "turnkey" projects such as engineering, procurement, and construction (EPC) businesses for petrochemical plants. They were initially not willing to be exposed to long-term risks by investing in joint venture projects. Toshiro Ogushi, a former Japanese diplomat, recalls that the hesitant attitude of Japanese firms, in fact, aggravated Japanese–Saudi relations in the late 1970s due to the dissatisfaction of Saudi policymakers who had expected that the signing of the bilateral cooperation agreement would lead to smooth implementation of bilateral industrial projects.[448] In order to alleviate the risks faced by Japanese firms, the MITI facilitated the formation of multi-firm consortiums in order to diversify the risk and also funded the projects through the Overseas Economic Cooperation Fund (OECF: 海外経済協力基金), a precursor of the Japan Bank for International Cooperation (JBIC: 国際協力銀行). Through such cooperation, the MITI authorised Japanese petrochemical projects in Saudi Arabia as "national projects". The Japanese state's such "concerting" role finally resulted in two petrochemical joint venture projects.[449]

The first project was Saudi Methanol Company (الشركة السعودية للميثانول). It was nicknamed "Ar-Razi" following the name of a Muslim chemist, Muhammad bin Zakariya Ar-Razi (محمد بن زكريا الرازي), who lived in today's Iran in the ninth and tenth centuries. The

[448] Roundtable 1998: 23.

[449] Ilgen and Pempel compared the transfer of industrial technology from Japan to the Gulf states in the oil boom period with that from the UK, France, and West Germany and concluded that the level of state–business coordination was higher in the case of Japan than in those three other countries (Ilgen and Pempel 1987: 141).

Ar-Razi was created in February 1980 as an equally owned joint venture between SABIC and the Japan Saudi Arabia Methanol Company (JSMC: 日本サウジアラビアメタノール), a Japanese consortium led by Mitsubishi Gas Chemical (MGC: 三菱ガス化学) and Itochu Corporation (伊藤忠商事).[450] The negotiations for a joint venture began in the summer of 1975 when Itochu Corporation, already in contact with Petromin, suggested MGC to invest together in Saudi Arabia.[451] Itochu and MGC requested the government's assistance for investment. Thus, in 1977, the Basic Industries Bureau of the MITI (通産省基礎産業局), which supervised Japan's chemical industry, came to announce its support. In November 1977, JSMC was created invested 47% by MGC, 5% by Itochu, and 18% by six other Japanese firms. The OECF funded the remaining 30%. The plant was constructed in the Al-Jubail industrial city and came on stream in 1983, with the initial production of 700,000 tpa of methanol. In the joint venture agreement, it was stipulated that JSMC would transfer technology to Saudi workers and Saudise the plant's operation over years. Thus, before the beginning of the operation, MGC received in Tokyo 11 graduates of the KFUPM for professional training.[452]

The other project was the Eastern Petrochemical Company (الشركة الشرقية للبتروكيمات). It was nicknamed "SHARQ", meaning "East" in Arabic. The SHARQ was created in May 1981 as an equally owned joint venture between SABIC and Saudi Petrochemical

[450] MGC had been interested in methanol production in the Gulf region since the 1960s as the main feedback of methanol had changed from coke to natural gas (Japan Saudi Arabia Methanol Company 1992: 34).
[451] Japan Saudi Arabia Methanol Company 1992: 41–91.
[452] Ibid.: 167–187.

Development Company (SPDC: サウディ石油化学), a Japanese consortium led by the Mitsubishi Group. The origin of the project was the abovementioned visit of Taher, a governor of Petromin, to Japan in 1970.[453] Although the Mitsubishi Group did not see investment as feasible at that time, the JSCO (within the JCCME) set up a special committee for implementing the project in cooperation with the Mitsubishi Group in June 1977, in order to fulfil the bilateral economic and technological agreement. Thus, SPDC was created in January 1979 with the participation of 54 firms. The OECF funded 45% of SPDC. The plant was constructed the Al-Jubail industrial city as well and came on stream in January 1985 with the initial production of 425,000 tpa of ethylene glycol (EG) and 375,000 tpa of Linear Low Density Polyethylene (LLDPE). Just like the case of the Ar-Razi, it was stipulated in the agreement that SPDC transfer technology to Saudi workers and Saudise the plant's operation. Thus, before the beginning of the operation, SPDC received 177 Saudi employees in Japan for training; training was provided by six firms from SPDC in the period between March 1983 and March 1985.[454]

During years after the beginning of operation, these two Saudi–Japanese joint ventures achieved high degrees of Saudisation. By 1990, the proportion of Saudi workers in the Ar-Razi had reached 80% (231 out of 289) and that in the SHARQ 75% (361 out of 482). Those rates were much higher than the average Saudisation rate of all existing projects of SABIC at that time (including non-joint venture projects) – which was 61.8%.[455] In fact, the two Japanese projects recorded the two highest Saudisation rates among all

[453] SPDC 2001: 73–125.
[454] Ibid.: 133–134.
[455] Saudi Arabian Basic Industries Corporation 1990: 25.

petrochemical joint venture projects of SABIC (see Table 4.1.). Akira Miura (三浦昭), a chairman of SPDC said in 2001:[456]

> "Construction, trial operation, and production under the burning sun…The challenges for us have been beyond description, but SHARQ…has now become a world-class petrochemical complex. As for a technology transfer project called Saudisation…we are proud of the fact that the achievements made by SHARQ have been the greatest among projects that had begun around the same time."

Table 4.1.: SABIC's Joint Venture Projects, Achievement in Saudisation (1990)

Project (Year)	Nationality	No. of Saudi Employees	No. of Total Employees	Saudisation Rate
Ar-Razi (1983)	Japan	231	289	80%
SHARQ (1985)	Japan	361	482	75%
SADAF (1984)	The US	568	760	74%
Ibn Sina (1984)	The US	157	213	73%
SAMAD (1983)	Taiwan	293	417	70%
KEMYA (1984)	The US	297	438	67%
Ibn Hayyan (1986)	S. Korea	203	305	66%
Ibn Zahr (1988)	Italy, Finland	152	234	65%
YANPET (1984)	The US	702	1,213	57%

Source: Saudi Arabian Basic Industries Corporation

Identifying the reasons why these Japanese projects could achieve the highest rates of Saudisation among the projects of SABIC is beyond the scope of this thesis. One of the staff members of MGC suggested that a unique employment system in Japanese firms, in which, traditionally, more resources were spent on the in-house training of employees than in Western firms because of the exchange of loyalty and permanent employment between

[456] SPDC 2001: xv.

employees and employers in Japanese firms, might have worked in favour of developing effective on-the-job training schemes for inexperienced Saudi workers.[457] This puzzle is certainly worth exploring as a part of further investigations on Japanese–Saudi technology transfer, employing a more micro approach.

HRD Cooperation by the JICA and the JCCP

The other pillar of Japan's techno-diplomacy towards Saudi Arabia was an HRD assistance programme implemented by the JICA. As mentioned above, because the JICA was a governmental organisation, it was easier for the Japanese state to propose to Saudi Arabia technological cooperation implemented by the JICA. Thus, even before the signing of the bilateral economic and technological cooperation agreement, the JICA entered into cooperation with the Saudi state, in particular the Ministry of Education, for setting up a project for HRD in Saudi Arabia.

In December 1973, Saudi Arabia requested Japan to create a secondary-level industrial school in Riyadh specialising in electronics. Responding to the request, the OTCA, a precursor of the JICA, dispatched survey missions to Saudi Arabia in 1974.[458] Based on the findings of the survey, the OTCA proposed to Saudi Arabia the creation of "Riyadh Electronics Industrial High School" (リヤド電子工業高校) accommodating up to 660 students and assisted by Japanese technical experts. The opening of the school was

[457] Japan Saudi Arabia Methanol Company 1992: 183–184.
[458] Overseas Technical Cooperation Agency 1974.

proposed to take place in September 1977. Given that there was no electronics industry in Saudi Arabia at this time, the OTCA attempted to set the objective of developing a curriculum for the school as developing human resources capable of maintaining imported machinery. However, the Saudi side insisted that the school should aim to train engineers who would be able to manufacture electronics products, anticipating the emergence of an electronics industry in Saudi Arabia in the future.[459]

However, due to the beginning of the restructuring of Saudi governmental organisations under the new king Khalid in 1975, the project's Saudi counterpart became uncertain. The project was eventually taken over by the GOTEVOT (General Organisation for Technical Education and Vocational Training) created under the Ministry of Labour and Social Affairs in 1980.[460] The GOTEVOT reviewed the project and made new requests about its programmes to the JICA in January 1985. The re-planning, negotiation, and preparation for the project between the GOTEVOT and the JICA took another several years. Eventually, the construction of the building for the school was completed in 1991 and the school, named "Riyadh Technical Electronics Institute" (RTEI: リヤド電子技術学院) opened in September 1993 with 80 Saudi students.[461] To operate the school, the JICA sent 30 experts (14 long-term experts and 16 short-term experts) to the RTEI and received the school's four Saudi staffs for their training in Japan.

In the field of oil, the Japan Cooperation Centre for Petroleum (JCCP: 日本石油交流センター) was created in November 1981 through cooperation between private oil and

[459] Japan International Cooperation Agency 1977.
[460] Japan International Cooperation Agency 1987.
[461] Japan International Cooperation Agency 1996.

engineering firms and the MITI. The objective of the JCCP was to promote technical cooperation in the oil industry with oil-exporting states, particularly in oil refining and marketing.[462] For this purpose, the JCCP carried out various projects such as offering training in Japan to technologists from those countries, sending Japanese experts to those countries, and conducting joint research and seminars.[463] Saudis formed one of the largest groups among those visiting trainees: between 1981 and 2010, 824 Saudi oil technologists visited Japan to receive training.[464] The JCCP has also cooperated in research with Aramco, the KFUPM, the King Abdulaziz University, and the KACST.

Conclusion of Chapter 4

Japan and Saudi Arabia have developed industrial relations that are based on the principle of the technology-for-oil exchange. Dependence on the import of oil has been the Achilles heel in Japan's security. Japan's interest in Saudi oil first presented itself in 1939, when Japan was about to face an oil embargo imposed by the US. Japan's energy vulnerability, which was one of the reasons for Japan's war with the US, and also for its defeat in that war, remained strong in the minds of Japanese policymakers and industrialists in the post-war period. Thus, AOC's investment in the production of oil in Khafji was strongly supported by Japanese politicians. Through its contributions to the development of infrastructure and

[462] Japan Cooperation Centre for Petroleum 2012: 38–39.
[463] Ibid.: 42–44.
[464] Ibid.: 136–137.

HRD institutions in the city of Khafji, AOC became a private pioneer of Japan's techno-diplomacy towards Saudi Arabia.

Nevertheless, the Japanese state itself remained largely indifferent to the Saudi state's demand to cooperate in industrialisation in the 1960s, in spite of the Sultan–Kosaka Agreement for industrial cooperation signed in 1960. This was because Saudi oil was supplied to Japan by Aramco at that time and the supply of Saudi oil (except for oil produced by AOC) was, thus, seen as a matter of Japanese–American relations rather than of Japanese–Saudi relations. Tokyo's tokenist attitude, however, began to change in the early 1970s, when a structural shift in the global oil industry began to take place. Governments in oil-producing countries began to claim greater control over oil production and the pricing of oil, which had hitherto been controlled by Western IOCs.

As the balance of power between these governments and IOCs began to tip in favour of the former, Tokyo came to be aware of the fact that it could no longer solely rely on IOCs but also had to negotiate directly with these governments for the supply of oil. In this way, the concept of energy security emerged in Japanese policymaking for the first time in the period following the Second World War. In 1973, MITI and AOC created JCCME to promote the technology-for-oil exchange. This formula of exchange was further strengthened after the First Oil Crisis in which Japan was targeted by OAPEC for oil an embargo. After the First Oil Crisis, the idea of "strategic assistance" was employed by the Japanese state.

In this context, Tokyo and Riyadh signed a bilateral economic and technological cooperation agreement in 1975. The main projects of Japanese–Saudi industrial cooperation

were two petrochemical joint ventures between Japanese consortiums led by Mitsubishi Group and SABIC – Ar-Razi and SHARQ. Although Japanese firms had initially been hesitant about investing in Saudi Arabia, because of the absence of a previous record of industrial production in the kingdom, the Japanese state sponsored these investments, earmarking them as "national projects". The plants of the Ar-Razi and the SHARQ came on stream in the early 1980s. Through these projects, Saudi industrial workers of SABIC absorbed knowledge, skills, and technologies for petrochemical production from Japanese experts. By 1990, both projects had achieved the highest Saudisation rates among SABIC's first-generation joint venture projects. In addition to these projects, the JICA also entered negotiation with GOTEVOT to cooperate in HRD in Saudi Arabia by creating an industrial high school in Riyadh.

Chapter 5

Technology for Recognition: Taiwan, China and Saudi Arabia

"One country has strong financial power derived from abundant oil resources. The other country has many years' experience of building an economy and a myriad of advanced technologies. If the two countries cooperate with each other, the success of Saudi Arabia's five-year economic development plan and our country's six-year economic building plan will be ensured, and the people of both countries will produce progressive and prospering societies." – International Cooperation Department, Ministry of Economic Affairs, Taiwan (1976)[465]

"Saudi Arabia's policy of borrowing the help of foreign talent is not a new invention of the Saudis. They learned it from the policy of the Qing dynasty. By employing the Hans in every province, the Manchurians succeeded in ruling China for over two centuries…However, it will not be easy to apply the strategy of three hundred years ago in the twentieth century…Saudi Arabia today wishes to promote science and technology, but how?...It should draw on Taiwan." – Pan Wen-yuan, a chairman of the Technology Advisory Council, Taiwan (1978)[466]

[465] Ministry of Economic Affairs, Republic of China (ROC) 1976: 6.
[466] Pan 1978: 10–11.

While Japan's full implementation of techno-diplomacy towards Saudi Arabia only began after the First Oil Crisis in 1973, Taiwan had initiated its techno-diplomacy towards Saudi Arabia almost a decade earlier – in the mid-1960s. The difference in timing is attributable to the different political goals of Japan and Taiwan. While an oil-for-technology exchange existed between Tokyo and Riyadh, a "recognition-for-technology" exchange existed between Taipei and Riyadh. In return for transferring technology, Taipei expected Riyadh's maintenance of its diplomatic recognition of the Republic of China (ROC) which had been established in 1946 while "the other China" – the People's Republic of China (PRC) – sought to normalise with Saudi Arabia at the expense the ROC.

Historical Background

Interestingly, the origin of the Taiwanese–Saudi interstate exchange dates back to 1938, and to the Second Sino–Japanese War (1937–45) as well. However, in the case of Taiwan, Islam, rather than oil, was a catalyst that drew the two states closer in the beginning. In the war, in order to resist Japan's early attempt to form an alliance with Chinese Muslims and to isolate the Republic of China (ROC) government in Nanking led by Chiang Kai-shek (蔣介石) of the Chinese Nationalist Party, or the Kuomintang (國民黨) (as discussed in Chapter 4), the Kuomintang began mobilising Chinese Muslims by creating the Chinese Muslim National Salvation Association (中國回民救國協會) in the winter of 1937; in Chongqing (重慶) to which the Kuomintang had withdrawn from Nanking due to Japan's

offensive.[467] By doing so, the Kuomintang attempted to prevent Japanese imperialists from infiltrating into Muslim communities in China and to proactively rally their support against Japan.

In addition, the Kuomintang also attempted to extend its anti-Japanese campaign to among global Muslim states and communities using the association. Thus, in early 1938, the association formed a mission, composed of five Chinese Muslims, to be sent to Muslim-majority counties. The mission, named "A Friendship Delegation of China to the Islamic Near East" (中國回教近東友好訪問團),[468] visited Saudi Arabia, Egypt, Lebanon, Syria, Iraq, Iran, India, and Turkey over the course of ten months (see Table 5.1.).[469]

Table 5.1.: The Itinerary of China's Islamic Near East Friendship Delegation (1938)

From	Until	Country (Cities)	Days
05 Feb.	02 Mar.	Saudi Arabia (Mecca, Jeddah, Arafat, Medina)	26
10 Mar.	14 May	Egypt (Cairo, Suez, Alexandria, Port Said)	66
17 May	23 May	Lebanon (Beirut)	7
25 May	30 May	Syria (Damascus)	6
02 Jun.	08 Jun.	Iraq (Baghdad)	7
11 Jun.	25 Jun.	Iran (Tehran, Isfahan, Bushehr)	15
02 Jul.	10 Oct.	India (Mumbai, Lahore, Lucknow, Patna, Kolkata)	101
25 Oct.	17 Nov.	Turkey (Ankara, Istanbul)	24
23 Nov.	4 Dec.	Egypt (Alexandria, Port Said)	12

Source: *Chungkuo Huichiao* (2009)

[467] Kung 2009: 13.
[468] In response to this mission, the Japanese Empire also sponsored its own delegation of Chinese Muslims to those Muslim-majority countries in the following year (Mao 2011: 385–387).
[469] Editorial Board of the *Chungkuo Huichiao* journal 2009: 28.

Saudi Arabia was chosen by the association as the mission's first destination. The mission conducted the *hajj* (pilgrimage) to Mecca and stayed in the kingdom for almost a month. This pre-diplomatic contact resulted in the creation of a consulate of the ROC in Jeddah in October 1939. Although the exchanges between Nanking (Chongqing) and Riyadh were suspended by the outbreak of the Second World War, Saudi Arabia's participation to the Allied powers in March 1945 placed the two states in the same camp.[470] After the war, they stayed in the same Capitalist camp led by Washington in the emerging Global Cold War as well. Based on these developments, the ROC and Saudi Arabia eventually established full diplomatic relationship in November 1946.[471]

The ROC's Muslim mission was a pioneering case of what a French journalist Alain Gresh later called "hajj diplomacy", referring to China's diplomatic strategy for improving its ties with Saudi Arabia in the absence of formal diplomatic relationship by sending Chinese Muslims to the kingdom on the pretext of pilgrimage and utilising them as de facto political envoys.[472] This strategy was later used by the PRC before its normalisation with Saudi Arabia in 1990.

The Kuomintang, however, soon lost its control of the Chinese continent. The end of the Second Sino–Japanese War rekindled the civil war between the Kuomintang and the Chinese Communist Party (共产党) led by Mao Zedong (毛泽东) which had been suspended during the war for the sake of forming a united anti-Japanese front. In December

[470] Vassiliev 2000: 327.
[471] Su 2002: 12.
[472] Gresh 2011.

1949, the Communist Party eventually put the continent under its control and declared the creation of the People's Republic of China (PRC) with Beijing as its capital.

Chiang fled to the island of Taiwan and settled down in Taipei, which had been the capital of the island since the days of Japan's colonial rule. Thus, the Chinese nation was divided into two states: the PRC on the mainland and the ROC on Taiwan. Saudi Arabia, just as many other states in the Capitalist camp, decided to maintain its diplomatic recognition of the ROC in spite of the absence of its control of the vast majority of the territory it claimed.[473]

5.1. The Diplomatic Competition between the Two Chinese States in the Arab World

The two Chinese states – the ROC and the PRC – entered into fierce diplomatic competition over winning legitimacy as the only state to represent the Chinese nation in the international community.[474] Both states employed the one China policy (一個中國政策), claiming that there was only one legitimate Chinese state in the international community. They adopted a policy similar to West Germany's Hallstein Doctrine, the policy of not maintaining a diplomatic relationship with a state that recognised the other state (East Germany). This principle was also called by Taipei "a gentleman and a thief cannot stand

[473] The Kuomintang had been preparing to reoccupy the Chinese continent at least until 1964 when Beijing succeeded in developing nuclear weapons.
[474] On the ROC–PRC diplomatic competition in the international community, see Gu 1995: 93–132.

together" (漢賊不兩立). Following the Korean War (1950–53) and the subsequent intensification of the Cold War, the ROC–PRC diplomatic competition also became intensified. The ROC, having established diplomatic and semi-diplomatic relations with 47 states around the world before moving to the island of Taiwan, certainly had a great "first-mover advantage" in this competition. The ROC also maintained its seat at the UN Security Council. Nevertheless, the PRC began to practise active diplomacy beyond the Communist camp in the mid-1950s, particularly in order to initiate and deepen informal exchange with postcolonial developing states, with the hope of gaining recognition from them.

In particular, the Asia–Africa Conference that took place in April 1955 in Bandung, Indonesia, offered a window of opportunity to the PRC to strengthen its relations with major developing states. The PRC, and its Prime Minister Zhou Enlai (周恩来), played a leading role in the conference, emphasising anti-imperialist solidarity in the developing world: what Mao later referred to as the "Third World" (第三世界) in his Three Worlds Theory (三个世界的理论). 29 states, including the PRC, participated to the conference. Building upon the contacts made there, Beijing initiated active follow-up visits in Asia and Africa after the conference.[475]

From the Arab world, nine states participated to the Bandung Conference: Egypt, Sudan, Syria, Jordan, Lebanon, Libya, Iraq, Saudi Arabia, and North Yemen. Among them, the ROC had a diplomatic relationship with three: Egypt (since 1942), Iraq (since 1942), and Saudi Arabia (since 1946). Following the Bandung Conference, however, Egypt became the first Arab state to normalise relationships with the PRC: in May 1956, Egypt

[475] Gu 1995: 117.

put an end to its 14-year formal relationship with the ROC. Syria and North Yemen followed in recognising the PRC in the same year. In August 1958, following the overthrow of the Hashemite monarchy by Arab nationalist military officers, Iraq also severed its diplomatic relationship with the ROC and recognised the PRC. More Arab states followed suit, such as Morocco (1958), Sudan (1959), Tunisia (1964), Algeria (1965), and South Yemen (1968), bringing the number of Arab states normalising with the PRC to nine by the end of the 1960s (see Table 5.2.).

Table 5.2.: Arab States' Diplomatic Recognition of the PRC

1950s		1960s		1970s		1980s		1990s	
State	**Y**	**State**	**Y**	**State**	**Y**	**State**	**Y**	**State**	**Y**
Egypt*	56	Tunisia	64	Kuwait*	71	UAE	84	Saudi Arabia*	90
Syria	56	Algeria	65	Lebanon*	71	Qatar	88		
N. Yemen	56	S. Yemen	68	Jordan*	77	Palestine	88		
Iraq*	58			Oman	78	Bahrain	89		
Morocco	58			Libya*	78				
Sudan	59								

*These states had formal diplomatic relationships with the ROC previously
Source: Ministry of Foreign Affairs, the PRC; Bau (1987)

On the other hand, Saudi Arabia maintained their recognition of the ROC. In addition, four more Arab states now recognised Taipei: Lebanon (1954), Jordan (1957), Libya (1959), and Kuwait (1963). The divide in the Arab world over China largely overlapped with the fault lines of the "Arab Cold War".[476] While pro-West conservative monarchies (with the exception of Lebanon) maintained their formal relationships with the

[476] Kerr 1965.

ROC,[477] socialist-oriented revolutionary Arab republics (with the exception of Morocco) chose to normalise with the PRC.[478]

In approaching Arab states, the PRC used the strategy of hajj diplomacy which had been invented by the ROC during the Second Sino–Japanese War. Just like the ROC had established the Chinese Muslim Association established to mobilise Chinese Muslims and extend the anti-Japanese campaign to global Muslims, the PRC created the Islamic Association of China (IAC: 中国伊斯兰教协会) in May 1953 to administer Chinese Muslims in the territory under its control and to seek approval for the state's legitimacy in representing the Chinese nation in the Muslim world. The leaders of the IAC accompanied the Prime Minister Zhou to the Bandung Conference in 1955. In the following year, in 1956, the IAC's chairman, Burhan Shahidi (包尔汉·沙希迪), a Tatar Muslim from Xinjiang (新疆), visited several Arab states, such as Egypt, Sudan, Syria, Lebanon, Saudi Arabia, and Jordan as Beijing's special envoy.

For Saudi Arabia, which embraced a stringent Wahhabi school of Islam and maintained a close political alliance with the US, the PRC ruled by the Chinese Communist Party was not a favourable diplomatic partner. Thus, for the Kuomintang, the Saudi monarchy initially seemed one of its safest allies in the Arab world. However, Beijing's hajj diplomacy began changing the game. At the Bandung Conference, Crown Prince Faisal, a head of the Saudi delegation to the conference, met Prime Minister Zhou and the IAC's

[477] The PRC supported revolutionary forces in Lebanon. In August 1958, amid the political crisis in Lebanon, the PRC shelled Kimmen (金門), an island occupied by the ROC, in order to divert a part of the US's naval power away from the Middle East (Gu 1995: 119).
[478] Morocco's recognition of the PRC was in response to the ROC's support for the independence of Mauritania (Lin 1990: 147).

leaders. They agreed to initiate an informal bilateral exchange, in particular, the annual pilgrimage of 20 Chinese Muslims to Mecca. In July 1956, Shahidi led China's hajj mission to Mecca and also had a meeting with King Saud.[479]

In addition, Saudi Arabia, under the reign of King Saud, had begun to tilt towards making rapprochement with non-aligned socialist states. On one hand, it reconciled with revolutionary Arab republics such as Egypt and Syria (particularly following the outbreak of the Suez Crisis). On the other hand, it improved relationship with India, another leading state of the Bandung Conference, too, through the exchange of visits by the state leaders,[480] even at the risk of its existing cooperation with Pakistan, its major anti-Communist ally in South Asia.

By the late 1950s, Beijing's active diplomacy in the Arab world had become a great concern for Taipei. The fall of the Hashemite monarchy in Iraq and the ensuing political crises in Jordan and Lebanon in 1958, in particular, caused the ROC's President Chiang to worry that Saudi Arabia might be next in the line of revolutionary dominos in the Arab world – and normalisation with the PRC. Beijing cultivated friendly relations with the Saudi monarchy, however, through hajj diplomacy, rather than supporting the anti-monarchical opposition. The major achievement of the PRC's hajj diplomacy in Saudi Arabia was to bring Saudi Arabia to a position of neutrality about the Chinese representation affair at the UN General Assembly in the early 1960s. In spite of the presence of its formal diplomatic relationship with the ROC, Saudi Arabia repeatedly

[479] Bin Huwaidin 2002: 214–215.
[480] King Saud and Crown Prince Faisal visited New Delhi in 1955. In return, India's Prime Minister Jawaharlal Nehru visited Riyadh in 1956, where he was welcomed as a "Prophet of Peace" (Mekkawi 2006: 184).

abstained from voting regarding the PRC's attempts to replace the ROC as the only legitimate state representing the Chinese nation at the UN.[481] Thus, by the early 1960s, Saudi Arabia had changed from a safe Arab ally of the ROC to a fence-sitter. The PRC's control of the Chinese continent, home to around 20 million Chinese Muslims, was a decisive factor for the change, since Saudi Arabia, hosting the two Islamic sanctuaries, was attempting to establish its international legitimacy as the state responsible for the well-being of global Muslims – in order to counter Egypt's soft power founded upon Nasser's Arab nationalism.[482]

Operation Vanguard

The PRC's diplomatic offensive was evident not only in the Arab world but also in other parts of the developing world. After the Bandung Conference, the ROC's leaders, such as Prime Minister Zhou and the Vice Prime Ministers He Long (贺龙) and Chen Yi (陈毅), actively visited states in Asia and Africa, to initiate and strengthen bilateral exchanges with them.[483] Beijing's offensive was a menace to Taipei, not only in terms of the ROC's bilateral relations with other states but also in terms of the ROC's status in the international community – in particular, its membership of the UN. By winning the support of

[481] Chen 2011: 106–107.
[482] This led to the creation of the Organisation of the Islamic Conference (OIC: today's Organisation of Islamic Cooperation) in 1969, as a counterweight to the Egypt-led Arab League (Kerr 1965).
[483] Gu 1995: 117–188.

developing states, the PRC was attempting, through votes at the UN General Assembly, to replace the ROC as the only legitimate state representing the Chinese nation at the UN. In the early and mid-1950s, the ROC's diplomacy largely focused on its relations with major Western powers, primarily the US and secondarily France.[484] However, developments in the late 1950s created a great sense of crisis among Taiwanese policymakers about the future of the international legitimacy of the ROC, leading to their crafting a policy for countering the PRC's increasing presence in the developing world.

The ROC did not have a first-mover advantage as regarded those newly independent states in the developing world. The PRC's control of the Chinese continent was also a great disadvantage to the ROC. Thus, the ROC's countering policy had to be one which capitalised on the unique advantages possessed by the ROC which the PRC did not enjoy. In general, Taipei had three major comparative advantages vis-à-vis Beijing: (1) its more advanced economy, with a competitive agricultural sector supported by technologies transferred from Japan during its colonial rule; (2) the US's support, both in terms of politics and economy; and (3) its lack of political ambitions in the developing world, in contrast with Beijing whose support of Communist revolutionary forces generated distrust among the leaders of many developing states.[485]

Taipei combined all of these three advantages and launched an agricultural assistance programme targeting developing states. Supported by the US, the programme was first implemented in South Vietnam in December 1959 in an experimental manner.

[484] The UK recognised the PRC upon its creation (Lin 1990: 146).
[485] Beijing's proactive support of Communist revolutionary forces in the developing world in the early 1960s was primarily driven by the Sino–Soviet rupture and Beijing's attempt to counter Moscow's influence – rather than Taipei's influence – there (Lin 1990: 148).

Following this, the programme named "Operation Vanguard" (先鋒案) was officially launched in January 1961.[486] The main process of Operation Vanguard was to transfer knowledge, skills, and technologies to agricultural workers in developing countries. It was implemented in five steps: reclamation; experimentation; demonstration; training; and extension. While the US' and European states' agricultural assistance to developing states tended to be capital-intensive and infrastructure-based, the ROC's Operation Vanguard had a focus on HRD: assisting agricultural workers in a person-to-person manner at the grassroots level and enabling them to become more self-reliant and self-confident.[487] It also emphasised the anti-colonial tradition of the ROC, drawing upon the philosophy of Sun Yat-sen (孫逸仙), a founding father of the ROC, that the empowerment of the weak and the fallen must be pursued after national independence.[488] In this way, the technology-for-recognition exchange became a main principle of Taiwan's diplomacy in the developing world in the 1960s.

By 1968, Operation Vanguard was extended to 27 developing states, with 1,239 Taiwanese experts despatched to them in order to provide agro-techno assistance.[489] The vast majority of the targeted states were in Sub-Saharan Africa: in 1962, Taipei also established the Sino–African Technical Cooperation Committee (SATCC: 中非技術合作委員會) for this region in particular. In August 1962, in order to extend Operation

[486] Hsieh 1985: 171–229.
[487] Lin 1990: 151–152.
[488] Hsieh 1985.
[489] "Taiwan: Diplomacy through Aid", *TIME*, 18 October 1968.

Vanguard to the Arab world, Yang Hsi-kun (楊西崑), a head of the West Asia division of the Ministry of Foreign Affairs, visited Arab states.[490]

Among the Arab states, Libya, then ruled by King Idris, became the first state to sign an agricultural cooperation agreement with the ROC, which took place in February 1962.[491] The second state was Saudi Arabia, which reached an agreement with the ROC in May 1964: the negotiations had been delayed for two years due to the outbreak of the civil war in North Yemen in 1962, to which Saudi Arabia intervened and entered the proxy war with Nasser's Egypt.[492] In 1975, Jordan also signed an agricultural cooperation agreement with the ROC.[493]

5.2. Taiwan's Agro-Techno-Diplomacy in Saudi Arabia

In accordance with the agricultural cooperation agreement, Taiwan's five-member "agro-techno mission" (農技團) arrived at Saudi Arabia in March 1965. The mission, headed by Fu Hui-chen (傅輝琛) from Taiwan Sugar Corporation (Taisugar: 臺灣糖業公司), Taiwan's largest state-owned agro-business company,[494] was deployed in Al-Hufuf (الهفوف) in the Eastern Province.

[490] Chen 2011: 24.
[491] Pao 1987: 88; Before the development of an oil industry in the early 1960s, agriculture was a main source of income for Libyans (Vandewalle 2006: 51).
[492] Chen 2011: 27.
[493] Pao 1987: 77.
[494] Chen 2011: 29.

Al-Hufuf, being central to the Al-Ahsa (الأحساء) oasis area in the province, was one of the major focuses of Saudi Arabia's agricultural modernisation at that time. With over 30,000 acres of land under cultivation and a population of over 250,000 people, Al-Ahsa was the largest oasis cluster in the kingdom.[495] Because of the increasing economic importance of the Eastern Province, where Aramco's oil production was located after the 1950s, and the rise of the opposition movement in this region in the mid-1950s, Saudi policymakers took the stability of this region seriously. Thus, development in the Eastern Province was considered one of the priorities, to ensure the regime's stability.[496] Through agricultural development, Saudi policymakers attempted to improve employment and welfare in the region.

The US' Point IV mission in Saudi Arabia in the early 1950s had also attempted to modernise the agricultural sector. King Saud dismissed the Point IV mission in 1954 and directed the newly created Ministry of Agriculture to form the kingdom's own agricultural policy. Due to its harsh ecology, Saudi Arabia was not in an advantageous position for agricultural development, with only around 2% of its territory (4.5 million hectares out of 220 million) was considered arable.[497] However, before oil rents resulted in the expansion of the public sector, the agricultural sector had absorbed the largest portion of the national workforce: even in 1975, 40% of the workforce (695,000) was still in the agricultural sector.[498] In other words, before the implementation of industrial projects in the late 1970s and the early 1980s, agriculture was the flagship sector of economic diversification in Saudi

[495] Vidal 1980: 91.
[496] Jones 2010: 91–92.
[497] Tuncalp and Yavas 1983: 333.
[498] Ibid.: 337.

Arabia. Modernisation of the agricultural sector was also the Saudi state's first attempt to practise techno-nationalism. Just like many other developing states at that time, Saudi policymakers wished to generate the country's own Green Revolution by importing advanced agricultural technologies and implementing national projects for agricultural modernisation. In the 1950s, most of the country's agricultural activities still consisted of subsistence farming – the maintaining of self-sufficiency in the countryside. The potential for commercialisation had not yet been fully exploited.

Nevertheless, the Saudi state's initial attempt at agricultural modernisation turned out to be a failure. Multiple reasons have been given for this failure. One reason was the country's inadequate infrastructure, particularly the under-development of irrigation systems and of transport networks to link production areas and markets. In addition, water scarcity also created a large bottleneck as regarded an increase of production. However, the critical factor was the shortage of human resources who were prepared to put imported technologies to use for development in an effective manner.[499] In this sense, the rise of the oil industry in the Eastern Province, in fact, had a negative impact on the agricultural sector: it caused a drain of gifted workers from the agricultural sector. Many farmers left their lands to find jobs in oil and oil-related industries, which were better-paying, had a higher social status, and provided better access to education and various kinds of social services.[500] Thus, the rise of productivity in the agricultural sector stagnated and the country's heavy dependence on food imports, at over 90%, was aggravated.[501] Thus, when

[499] Fabietti 2000: 85.
[500] Tuncalp and Yavas 1983: 340.
[501] Jones 2010: 58–59.

Faisal, returning to power in 1962, attempted to reinvigorate the country's agricultural modernisation, HRD in the agricultural sector was considered to be a necessity.[502] It was against this backdrop that Taiwan's agro-techno mission, which had a focus on the "grassroots" support of Saudi agricultural workers, was accepted by the Saudi state.

The objective of the two-year Taiwanese agro-techno mission was to develop rice cropping in Al-Hufuf. In the first year, the team experimented with 16 kinds of rice, to see which ones fit the soil and climate of the Al-Ahsa oasis. The team identified four kinds of rice that were appropriate. In the second year, it used two of these kinds of rice – one from Taiwan and the other from Iraq – and succeeded in harvesting twice a year.[503] In addition, it also began experimenting with cropping of sugar cane in Jazan (جازان), the southwest region in Saudi Arabia bordering Yemen, which has a tropical climate similar to that in Taiwan. [504] The team's two-year work was appreciated by the Saudi Ministry of Agriculture. At the request of the ministry, the Taiwanese agro-techno-mission in the kingdom was extended for another two years. The second term began in 1967, with a new team headed by Lin Yan-chuan (林岩泉) from Taisugar.[505] The new team established the dual cropping of rice in Al-Hufuf, as experimented with by the first team, achieving high productivity and

[502] One of Faisal's major agricultural policies was the creation of the Saudi Arabian Agricultural Bank in 1963, to finance the development of agricultural infrastructure (Ministry of Finance, Saudi Arabia, "Agricultural Development Fund", http://www.mof.gov.sa/english/Pages/saudiagriculture.aspx [accessed 1 October 2014]). In order to develop irrigation systems in the Al-Ahsa oasis, the Ministry of Agriculture employed Swiss and German engineering firms (Vidal 1980: 92–97); the construction began in 1967 and was completed in 1971 (Jones 2010: 120).
[503] Chen 2011: 30-31.
[504] Ibid.: 32.
[505] Ibid.: 33–36.

harvesting 14.4 tonnes of rice annually. It also succeeded in cropping sugar cane in a ten hectare field in Jazan. In addition, it also began cropping rice in Jazan.

With these outcomes, the four-year mission was completed in May 1969. Following the completion of the mission, Taiwan and Saudi Arabia began to discuss institutionalising the bilateral agricultural cooperation. After two years of planning, the Taiwanese–Saudi Agricultural Technology Cooperation Agreement was signed in December 1971. Under the agreement the kinds of crops Taiwanese experts developed in the kingdom were extended from rice and sugar cane to wheat, corn, beans and other vegetables.[506] In the 1970s, with its increasing oil rents, Saudi Arabia's agricultural modernisation progressed rapidly. Taiwan's agricultural assistance to Saudi Arabia has continued until today, under different administrative frameworks: the Committee of International Technical Cooperation (海外技術合作委員會: 1972–1989); the International Economic Cooperation Development Fund (海外經濟合作發展基金管理委員會: 1989–1996); and the International Cooperation and Development Fund (國際合作發展基金會: 1996–present).[507] So too has the rice cropping in Al-Hufuf.[508]

While the agro-techno missions put forwards Saudi–Taiwanese relations in the late-1960s, Saudi Arabia's relations with the PRC deteriorated in the same period. In the PRC,

[506] Ministry of Economic Affairs, ROC 1976: 3–6.
[507] International Cooperation and Development Fund, "History", http://www.icdf.org.tw/ [accessed 1 December 2014].
[508] However, rice cropping in Al-Hufuf today faces a shortage of young workers (blog: Desert Enlightenment, "Hisawi Rice Farming in Saudi Arabia", 29 August 2013, http://desertenlightenment.wordpress.com/2013/08/29/hasawi-rice-farming/ [accessed 1 October 2014]).

the Cultural Revolution (文化大革命) began in 1966. In this nation-wide reactionary political movement that aimed to re-establish Mao's authority (Mao was on the defensive vis-à-vis reformists in the Communist Party after the failure of the collectivist industrialisation policy he had implemented since 1958), a great number of young Chinese people were mobilised as "Red Guards" (红卫兵). These Red Guards assaulted those they saw as revisionists who eroded the Marxist foundations of the country. Red Guards also targeted the country's religious groups and minorities, viewing them as anti-Marxists.[509] Thus, mosques were destroyed and Muslim schools were closed. The IAC stopped functioning and its chairman Shahidi was imprisoned.[510]

The political chaos brought about by the Cultural Revolution also led to the paralysis of the PRC's diplomacy. Its hajj diplomacy towards Saudi Arabia was suspended after being practised for a decade. In addition, as Maoists returned to power, their ideology came to be reflected in the PRC's diplomacy as well. The PRC's diplomacy underwent radicalisation in the late 1960s, under the slogan "Beijing is the capital for the world's revolutionary people" (北京是世界革命人民的首都). The PRC supported Marxist revolutionary groups in the developing world. This "Red Guard diplomacy" of the PRC provoked anger among leaders of many developing states, resulting in Beijing's international isolation.[511] In the Arabian Peninsula, Beijing began to support the Popular Front for the Liberation of the Occupied Arabian Gulf (PFLOAG: الجبهة الشعبية لتحرير الخليج العربي المحتلّ), an anti-monarchical Marxist rebel group organised in Dhufar (ظفار), Oman, in

[509] Kraus 2012.
[510] Bin Huwaidin 2002: 215.
[511] Gu 1995: 120.

1968.[512] Likewise, Beijing supported the People's Democratic Republic of Yemen (PDRY: جمهورية اليمن الديمقراطية الشعبية), a Communist state established in South Yemen in 1970.[513] This support caused King Faisal to perceive of Beijing as a great threat to stability in the Arabian Peninsula.[514]

The increasing mutual trust between Riyadh and Taipei, and Riyadh's strong disapproval of Beijing's Red Guard diplomacy, shifted the equilibrium in favour of Taipei. In 1966, Riyadh abandoned its previous policy of remaining neutral regarding the China representation affair at the UN, and began supporting Taipei.[515] King Faisal, pursuing industrial planning with Petromin and the CPO in the late 1960s (as discussed in Chapter 3), came to consider Taiwan as a reliable partner for development. At this time Saudi Arabia's relations with the US had become awkward, following the Six-Day War in 1967, and its relations with the UK and France had not been positive since the Suez Crisis. Furthermore, Saudi policymakers were frustrated with Japan's tokenism regarding bilateral industrial cooperation (as discussed in Chapter 4). Thus, Taiwan was seen by Saudi policymakers as an invaluable partner for development, although its degree of industrialisation in the late 1960s was still not sufficiently high to allow it to transfer industrial technology to the kingdom. In May 1971, King Faisal visited Taipei and met Chiang. It was the first visit of a Saudi king to the capital of an East Asian state and the visit was scheduled in advance of the king's his visit to Tokyo. In their meeting, Faisal and Chiang confirmed the Islamic and

[512] For details of the PFLOAG and Beijing's support for it, see Takriti 2013.
[513] Bin Huwaidin 2002: 215.
[514] Halliday 1975: 506–508; Shichor 1989: 1–2.
[515] Chen 2011: 118.

anti-Communist bond existing between the two states, and called for the planning of further bilateral economic cooperation.[516]

Nevertheless, global politics at this time were moving against Taipei. The US Nixon administration (1969–1974) abandoned the US's previous diplomatic approach of simultaneously confronting Moscow and Beijing, and decided to reconcile with Beijing in order to capitalise on the Sino–Soviet confrontation. Many other states followed. Thus, the equilibrium between the PRC and the ROC in the international community was broken. In the late 1960s, Taipei had repeatedly blocked Beijing's attempt to replace it at the UN, but, in October 1971, UN General Assembly Resolution 2758, ordering the ostracism of Taipei from the UN, was eventually passed, with 76 states supporting the resolution, 35 opposing, and 17 abstaining.[517] This significantly alleviated the PRC's international isolation, and the political chaos of the Cultural Revolution began also to subside (the Cultural Revolution eventually ended in 1976, when Mao died in September of that year).

Among the Arab states, Saudi Arabia was the only state to cast a vote against the resolution, while four states (Jordan, Lebanon, Qatar, and Bahrain) abstained from voting (see Table 5.3.). Kuwait and Lebanon – the ROC's two former allies – normalised relations with the PRC in March and November 1971, respectively. Two other allies – Jordan and Libya – (both recipients of Taipei's agricultural assistance) followed in April 1977 and May 1978, respectively, as the PRC, led by the reformist Deng Xiaoping (邓小平), in the aftermath of the end of the Cultural Revolution significantly changed its diplomatic

[516] Lin Kang-sheng. "King Faisal Meets President Chiang", *Taiwan Review*, 1 June 1971.
[517] United Nations Bibliographic Information System, "A/RES/2758(XXVI)", http://unbisnet.un.org/ [accessed 1 December 2014].

approach to one of economy-first pragmatism.[518] Thus, by the end of 1978, Saudi Arabia had become the only state in the Arab world to recognise the ROC.[519]

Table 5.3.: Major Arab States' Responses to UNGA Resolution 2758 in October 1971

For	Against	Abstained
Egypt, Sudan, Syria, Libya, Morocco, Algeria, Tunisia, Iraq, Kuwait, Yemen	Saudi Arabia	Jordan, Lebanon, Qatar, Bahrain

Source: United Nations Bibliographic Information System

By this time, the number of states in the world still recognising Taipei had fallen dramatically to only 21, from 71 in 1969, while 112 states recognised Beijing. These developments further increased Saudi Arabia's strategic importance to Taipei in the 1970s and the 1980s. Indeed, the Saudi–Taiwanese relationship, an exceptional success for Taipei, was to develop as a poster child of Taiwan's techno-diplomacy in the developing world in the 1970s.

[518] Among the 35 states which voted for Taipei in the UN General Assembly Resolution 2758, 15 were Sub-Saharan Africa states that were receiving Taiwan's agricultural assistance (Lin 1990: 152).

[519] Dubai had hosted an "honorary consulate general" (名譽総領事館) of the ROC until the UAE – which had remained a fence-sitter for a while, after its independence in December 1971 – recognised the PRC in 1984 (Pao 1987: 98–99).

5.3. The Heyday of the Bilateral Relationship

The following two decades, the 1970s and the 1980s, were the heyday of the Saudi–Taiwanese relationship. The two states consolidated their cooperative relations by developing industrial and technological ties. One Taiwanese diplomat later recalled this honeymoon as the "golden age of the bilateral relationship", while another Chinese scholar described the relationship as "giving a plum in return for a peach" (投桃報李).[520]

As this Chinese expression suggests, it was a period marked by a high degree of reciprocity. The reciprocity was based on the simultaneous development of the Saudi and Taiwanese industries. On one hand, Saudi Arabia began to implement industrial plans, with the launch of the five-year development plan in 1970. The oil boom after 1973 significantly enlarged the state's financial capacity for implementing its industrial policy, leading to the creation of two industrial cities in Jubail and Yanbu. On the other hand, in 1973 Taiwan also initiated nation-wide industrial infrastructure-building projects, called the Ten Major Construction Projects (十大建設), developing highways, railways, airports, seaports, oil refineries, nuclear power plants, and industrial parks. The project was an extension of the earlier development in the 1960s, but industrial policymaking was greatly empowered in the early 1970s because of the Taiwanese leadership's acute sense of crisis due to the growing international isolation of the country following its ostracism from the UN.[521] Building upon these infrastructure projects, Taiwan developed export-oriented

[520] An official of the Ministry of Foreign Affairs, the ROC, interviewed by author, Taipei, April 2012; Cao 2006: 24.
[521] Greene 2008.

manufacturing industries and entered a period of high growth. Taiwan's average annual growth rate was 10.1% in the 1970s, and 7.5% in the 1980s.[522]

In their concomitant industrialisations, Taiwan and Saudi Arabia found many ways to complement each other. In addition to the agricultural cooperation, the two states established cooperative relations in diverse fields, such as infrastructure-building, industrial joint venture, R&D, and energy. The cooperative relationship was institutionalised through the Sino–Saudi Economic and Technological Cooperation Agreement, signed in May 1975. Based on the agreement, an annual Sino–Saudi economic and technological cooperation conference began to take place in March 1976. The location for the conference rotated between the capitals of each state; and the conference began being co-chaired by the Minister of Economic Affairs of Taiwan and the Minister of Finance of Saudi Arabia in 1979. The conference served as a forum, in which stakeholders from both states evaluated the progress of existing projects and discussed future ones. [523]

Infrastructure-Building

Infrastructure-building was the first field of bilateral industrial cooperation. Saudi Arabia, with abundant oil rents after 1973, provided Taiwan with loans for infrastructure projects.

[522] The author's calculation, from the data of the Directorate-General of Budget, Accounting, and Statistics, the Executive Yuan, the ROC, entitled "Kuomin Sote Tungchi chi Kuonei Chingchi Chingshih Fachan" [National Income Statistics and the Prospects of the Domestic Economy].
[523] Su 2002: 50.

Taiwanese engineering and construction firms, which had grown through infrastructure projects in the 1970s, then began to be involved in infrastructure projects in Saudi Arabia, from the late 1970s.

Saudi Arabia offered loans to Taiwan through its Saudi Development Fund (SDF: الصندوق السعودي للتنمية), which it had created in September 1974 with the purpose of funding development projects in other developing countries. Between 1974 and 1984, the SDF provided Taiwan with loans worth $263 million for implementing various infrastructure projects, such as the construction of a highway, the development of electricity and communication infrastructure, and building a subway in the capital (see Table 5.4.).[524]

Table 5.4.: Loans Provided by SDF

No.	Year	Value	Project
1	1974	$30 million	National Highway No. 1 (中山高速公路)
2	1976	$50 million	National Highway No. 1 (中山高速公路)
3	1976	$30 million	Electrification of national railways
4	1978	$30 million	Development of national telegraphic communication
5	1980	$45 million	Development of transmission/distribution of electricity
6	1984	$78 million	Underground railway in Taipei

Source: Su (2002)

When most of the infrastructure projects under the Ten Major Construction Projects were completed in the late 1970s, Taiwanese engineering and construction firms began to seek opportunities abroad. Saudi Arabia offered lucrative opportunities to these Taiwanese firms. Taiwanese firms enjoyed great cost advantages – they were 40% cheaper than their Western competitors on average – and won contracts for building a variety of infrastructure

[524] Ibid.: 19.

items, such as roads, seaports, airports, petrochemical plants, water facilities, and public buildings (including the headquarters of the Ministry of Industry and Electricity).[525] In particular, Taiwan played a major role in the development of electricity infrastructure in Saudi Arabia. Rapid modernisation of the kingdom in the 1970s increased the demand for electricity. For instance, within the five years between 1975 and 1980, consumption of electricity in Saudi Arabia increased 4.6 times, from 3.8 TW to 17.5 TW.[526] Between 1980 and 1985, it increased 2.3 times, to 40.3 TW. The kingdom's electricity policy was administered by the General Organisation for Electricity (GOE: المؤسسة العامة لكهرباء).[527] In 1976 Taiwan's state-owned Taiwan Power Company (Taipower: 台灣電力公司) began to support the GOE by despatching experts to Saudi Arabia. The GOE projects in which Taipower was involved were the electrification of rural areas, the construction a power plant in Al-Baha (الباحة), the southern region of the kingdom, and the supervision of the expansion of another power plant in Jazan.[528] In addition, Taipower advised the GOE on its electricity policy in general. Between 1976 and 1985, Taipower completed over 900 engineering projects in Saudi Arabia, deploying over 6,000 staff members.[529]

[525] Yan 1977: 6–11.
[526] Al-Ajlan, Al-Ibrahim, Abdulkhaleq, and Alghamdi 2006: 1557.
[527] Under the GOE, region-based Saudi Consolidated Electricity Companies (SCECOs) administered each region's electricity supply. In April 2000, all SCECOs were merged into the Saudi Electricity Company, a joint stock company 80% owned by the state, with 20% of its shares floated in the Saudi stock market ("Saudi Electricity Company", *Arabian Business*, http://www.arabianbusiness.com/companies/saudi-electricity-company-66578.html [accessed 1 October 2014].).
[528] Su 2002: 23–24.
[529] Wei 1985: 3.

Industrial Joint Ventures

Since the launch of the first five-year development plan, Saudi Arabia counted Taiwan as a potential industrial partner. In November 1973, when the Taiwanese economy minister Sun Yun-suan (孫運璿) visited Riyadh, Petromin proposed to Sun to create a Saudi–Taiwanese petrochemical joint venture. Upon his return to Taipei, Sun, thus, directed Taiwan Fertiliser (臺灣肥料), an SOE producing 1 million tpa of fertilisers then, to make a plan for setting up a joint venture with Petromin in Saudi Arabia.[530]

Negotiations were launched in June 1975, when Jamal Hassan Jawa (جمال بن حسن جاوه), the vice secretary general of Petromin, visited Taipei,[531] which were then taken over by SABIC from Petromin upon its creation in 1976. The several years of negotiations at last resulted in the creation of an equally-owned joint venture in December 1979: Jubail Fertiliser Company (朱拜爾肥料公司 / شركة الجبيل للأسمدة).[532] After SAFCO, Jubail Fertiliser became the second fertiliser project in Saudi Arabia. It was one of the 12 first-generations projects of SABIC. Its plant, with the initial production capacity of 650,000 tpa of urea and 391,000 tpa of ammonia, was constructed in the Jubail industrial city and came on stream in February 1983.[533]

[530] Fan 1983: 10–15.
[531] Taiwan Fertiliser Company 1976: 194.
[532] The project was initially nicknamed "Samad" (سماد), literally meaning "fertiliser", but later began to be called "Al-Bayroni" referring to Abu Al-Rayhan Al-Biruni (أبو الريحان البيروني), a Muslim polymath in the tenth and eleventh centuries.
[533] Saudi Arabian Basic Industries Corporation 1985: 41.

Just like other SABIC projects, Saudisation of the operation was stipulated in the joint venture agreement. Thus, prior to the operation, Taiwan Fertiliser received in Taiwan 160 engineers from SABIC for training, which lasted for six to nine months.[534] Taiwan Fertiliser also sent 150 staff members to Jubail Fertiliser between 1983 and 1993. These Taiwanese workers, mostly technological specialists, transferred knowledge, skills, and technologies to Saudi workers. Saudisation of the plant progressed well: the proportion of Saudi workers in the plant was 52% in 1984, and the figure increased to 70% by the end of 1990.[535] This was above the average for SABIC's projects, which had a Saudisation rate of 61.8%.[536] Today, no less than 98.6% of the plant's over 360 staff members are Saudi national workers.[537] Like the Saudi–Japanese petrochemical joint ventures, Jubail Fertiliser was operated as a national project of Taiwan in Saudi Arabia. Wu Cheng-chuan (吳澄泉), the first president of Jubail Fertiliser (1984-87), later recalled: [538]

> "Through the years of cooperation, our personnel, mostly technological specialists, have worked harmoniously with SABIC's people…By honouring the contract, Taiwan Fertiliser employees helped do their part to strengthen ROC–Saudi Arabia friendship."

[534] Fan 1983: 10–15.
[535] Saudi Arabian Basic Industries Corporation 1985; Saudi Arabian Basic Industries Corporation 1991.
[536] Saudi Arabian Basic Industries Corporation 1990: 25.
[537] Joyce Huang "Looking East" *Taiwan Review*, 1 July 2013.
[538] "Saudi Enterprise Teaming up Again with Taiwan Fertilizer" *Taiwan Info*, 9 August 1991.

R&D

In the late 1970s, as Saudi Arabia began to invest in scientific activities, Taiwan and Saudi Arabia entered into cooperation in this field as well. The two states signed a bilateral Cultural Cooperation Agreement in May 1975 (along with the Economic and Technological Cooperation Agreement) which called for the exchange of scholars, students, teachers and education administration officials.[539] Saudi Arabia's first R&D institution, the Saudi Arabian National Centre for Science and Technology (SANCST), a precursor of KACST, created in 1977, requested Taiwan's cooperation in building a scientific foundation in the kingdom.

Responding to the request by SANCST, Taiwan's National Science Council (NSC: 行政院國家科學委員會), a precursor of the Ministry of Science and Technology, created a working group in 1978 for promoting cooperation with SANCST. The NSC and SANCST signed a Science and Technology Cooperation Agreement in January 1982.[540] SANCST expected that NSC would transfer not only technology itself but also its trial-and-error experience in building up R&D institutions in the context of a non-Western developing economy. Taiwanese experts also pointed out the high complementarity existing between the two states: advanced human resources in Taiwan and abundant capital in Saudi Arabia.[541]

[539] Su 2002: 22.
[540] Chang 1981: 3–5.
[541] Pan 1978: 14–19.

One of the fields where Saudi–Taiwanese scientific cooperation progressed well was aqua-farming, particularly the culturing of freshwater fish.[542] Although fish had been an integral part of the Saudi culinary culture, particularly in regions by the sea, inland cities had traditionally poor access to fish. However, the improvement of transport infrastructure, and the introduction of freezing facilities to the kingdom in the 1970s resulted in the emergence of fish markets in inland cities, in particular the capital Riyadh.

SANCST attempted to culture freshwater fish in Riyadh to meet the rising demand for fish in the capital. Thus, following the agreement, a Taiwanese construction firm created an aqua-farming laboratory at the King Saud University in 1980, to which a Taiwanese "fish-techno mission" (漁技團), consisting of three Taiwanese experts and over 1,000 fish, was despatched to assist Saudi scientists in cultivating fish. The laboratory succeeded in culturing around 100,000 fish two years later.[543]

Energy

Finally, energy became a field of bilateral cooperation in the 1970s too. Because Taiwan, just like Japan, is a resource-scarce island, its import of oil began to increase as its economy took off. Indeed, the construction of oil refineries and petrochemical plants was targeted in

[542] For cooperation in this field, the two states had signed a separate agreement, the Freshwater Fish Cooperation Agreement, in 1979 (Liu 1984: 21–24).
[543] Huang 1986: 29–30.

the Ten Major Construction Projects.[544] In June 1973, Taiwan's state-owned oil company, Chinese Petroleum Corporation (CPC: 中國石油), began purchasing 10,000 barrels per day (bpd) of crude oil from Petromin.[545] Taiwan could avoid the shock of the First Oil Crisis in 1973 because it was not targeted by OAPEC's embargo, owing to the already-established economic cooperation with Saudi Arabia – while the embargo was used against Japan to compel it to be more committed to development in Saudi Arabia (as discussed in Chapter 4). The increase in oil prices did not much affect people's lives in Taiwan either because the prices of oil products sold by CPC were fixed by the state (although the increase certainly placed a constraint on the state budget).[546] Taiwan's oil imports from Saudi Arabia soon grew, in an exponential manner. In January 1976, CPC doubled the amount of oil imports from Saudi Arabia to 20,000 bpd.[547] As European states began to diversify their source of energy away from Middle Eastern oil following the Oil Crisis, Taiwan came to be a major export market for Saudi Aramco. In 1984, Taiwan was the fourth largest export partner of Saudi Arabia, after Japan, the US, and Singapore – importing more oil from Saudi Arabia than major European countries such as Italy, France, and the Netherlands.[548]

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[544] Chu 1994.

[545] CPC was established in Shanghai in 1946. It took over oil-related infrastructure left in Taiwan by the Japanese following the departure of the Japanese after the Second World War. In 2007, under the DPP Chen administration's Name Rectification/Taiwanisation campaign (台灣正名運動), CPC changed its Chinese name from 中國石油 (Chinese Petroleum) to 台灣中油 (Taiwan Chinese Petroleum). CPC is active in the Middle East and North Africa, with investments in the energy industry in Qatar and Libya (CPC Corporation. http://new.cpc.com.tw/ [accessed 1 October 2014].).

[546] Lin Shih-mo, Professor in International Business, Chung Yuan Christian University, interviewed by author, Chungli, March 2012.

[547] Hsia 1978: 18.

[548] Saudi Arabian Monetary Agency, various years.

Conclusion of Chapter 5

Taiwan and Saudi Arabia have developed industrial relations that are based on the principle of a technology-for-recognition exchange. The ROC established a diplomatic relationship with Saudi Arabia in 1946 following the mission of Chinese Muslims to the kingdom at the early stage of the Sino–Japanese War (1937–1945). As the Chinese nation split into the PRC and the ROC in 1949, a diplomatic competition between the two Chinese states in the international community began. Although Taipei maintained its recognition by Saudi Arabia, Beijing began informal exchanges with Riyadh through the practice of "hajj diplomacy", sending Chinese Muslim pilgrims to Saudi Arabia as de facto political messengers. In the early 1960s, in spite of the existing formal diplomatic relationship between Taipei and Riyadh, Beijing succeeded in securing Riyadh's neutrality in the Chinese representation affair at the UN General Assembly.

In order to counter Beijing's increasing influence on Riyadh, Taiwan extended Operation Vanguard, a technological assistance scheme in the developing world, to Saudi Arabia. Between 1965 and 1969, Taipei deployed an agro-techno mission in Saudi Arabia, assisting Saudi farmers in agricultural modernisation in Al-Hufuf and Jazan. While Taipei's techno-diplomacy towards Saudi Arabia succeeded in winning the trust of Saudi policymakers, the outbreak of the Cultural Revolution in China, followed by the suppression of Chinese Muslims, the suspension of hajj diplomacy, and Beijing's support of Marxist forces in the southern Arabian Peninsula, rapidly aggravated Saudi–Chinese relations. Thus, Riyadh began to support Taipei against Beijing at the UN General

Assembly in the late 1960s. When UN General Assembly Resolution 2758 of 1971 ordered the ostracism of Taiwan from the UN, Saudi Arabia was the only Arab state which voted for Taiwan.

Riyadh considered Taipei as a partner for the industrialisation which it launched in 1970 with its first five-year development plan. In the 1970s, Taiwan and Saudi Arabia entered the heyday of their bilateral relationship, which was supported by industrial cooperation in diverse fields, such as infrastructure, industrial joint venture, and R&D. Taipower, a Taiwanese SOE, assisted in the development of an electricity system in Saudi Arabia. Taiwan Fertiliser, another SOE, created a joint venture with SABIC – Jubail Fertiliser, which was one of SABIC's nine first-generation joint venture projects. Taiwan's NSC also supported SANCST in developing aquaculture in Riyadh. In the 1970s, Taiwan began importing Saudi oil as well. While Saudi oil fuelled Taiwan's growth into an "Asian Tiger" economy in the 1980s, Taiwan became a major market for Saudi oil as European states began diversifying their sources of energy away from Middle Eastern oil.

Thus, in spite of the deepening international isolation of Taiwan after 1971, the Taiwanese–Saudi cooperative relationship significantly developed through the creation of a "co-development nexus", as both Taiwan and Saudi Arabia began implementing substantial industrial projects in the 1970s. Because of the high reciprocity between the two economies, Riyadh did not replace its recognition of Taipei with recognition of Beijing even after the end of the Cultural Revolution and the beginning of economic reforms in China in the late 1970s. By the end of 1978, Saudi Arabia had become the only Arab state to continue to recognise the ROC on Taiwan.

ii. 1983–2013

Chapter 6

Reforming the Rentier Society:

Industrial Diversification in Saudi Arabia

"[T]he Arab world is at a turning point. We have gone through the phases of oil, money and early technological development. The new generation is looking forward to joining the rest of the world by obtaining the most important things in that turnaround: opportunity and education." – Prince Sultan bin Salman bin Abdulaziz, a pilot and the first Arab astronaut in outer space (1985)[549]

"SABIC's scope goes well beyond large-scale production or paving the way for downstream and supporting industries. One of its primary missions has been to create a dynamic technological society and train talented young Saudis to run it." – Andrea Pampanini, a management consultant (1997)[550]

"The period of boom has gone and will not come back. We must get used to a different way of life, which does not stand on total dependence on the state." – King Abdullah (1998) [551]

[549] Lawton and Moody 1986.
[550] Pampanini 1997: 63.
[551] "Saudi Budget: Optimistic or Calculating?", *OPEC Overview*, 28 December 2014.

It should be possible to identify the year 1983 as a watershed in the history of industrialisation in Saudi Arabia. On one hand, the collapse of the price of oil which had already taken place since 1980 came to be seen as a prolonged phenomenon. The price of oil peaked at over $39 per barrel ($112 in 2014) in April 1980 and rapidly fell thereafter.[552] In March 1983, OPEC decided to cut the price of oil for the first time in the organisation's history to $29 per barrel ($68 in 2014) and also to lower the production ceiling by one million bpd to 17.5 million bpd.[553] OPEC's decisions heralded the age of oil glut which would continue for nearly two decades. The price of oil recovered to the level of 1983 only in 2000 (except for the time of the Gulf War in 1991). With the plummeting oil prices, Saudi Arabia entered a budget deficit in 1983. The budget deficit also continued until 2000, and the level of expenditure did not exceed that of 1983 until then, except for three years between 1990 and 1992 when Gulf War-related expenditures had to be made.[554] The kingdom began to be squeezed financially and the spending spree came to an end.

On the other hand, the year 1983 was when SABIC's first three projects – SAMAD for the production of fertilisers, Ar-Razi for the production of methanol, and Hadeed for the production of steel – came on stream. By 2000, to these were added ten more petrochemical projects. The wealth created by manufacturing activities leaped almost threefold, from SR 18 billion in 1983 to SR 47 billion in 2000.[555] Knowledge, skills, and technologies were transferred from foreign investors to Saudi workers in these projects. During the two

[552] Jad Mouawad, "Oil Prices Pass Record Set in '80s, but Then Recede", *The New York Times*, 3 March 2008.
[553] Barnaby J. Feder, "OPEC States Agree to Cut Oil Prices for the First Time", *The New York Times*, 15 March 1983.
[554] Saudi Arabian Monetary Agency, various years.
[555] Saudi Arabian Monetary Agency, various years.

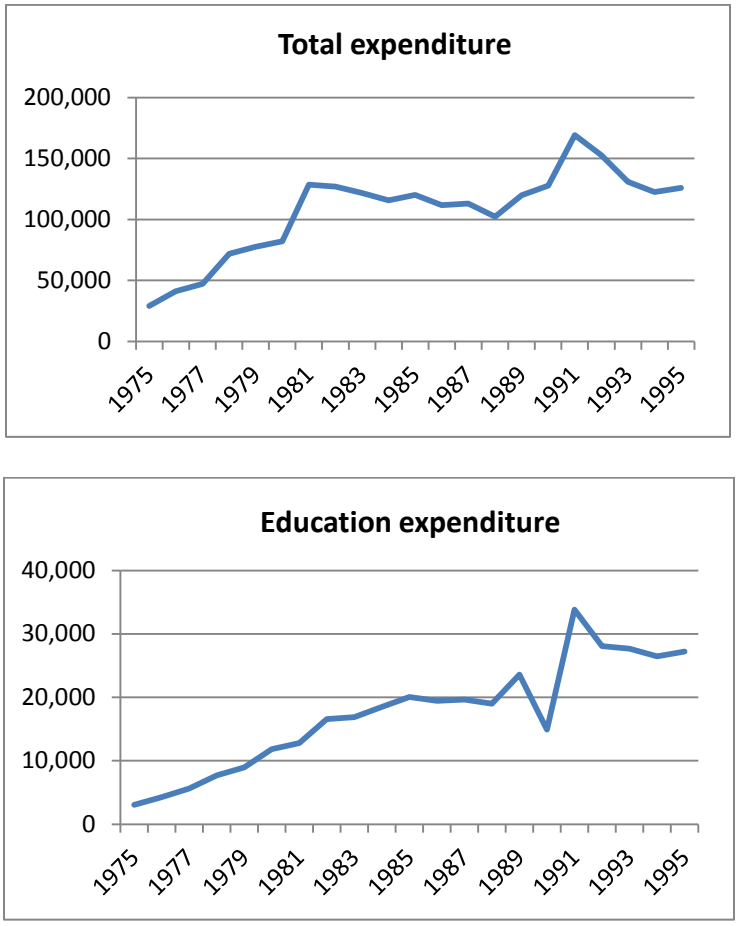
decades of oil glut, the kingdom, in fact, quietly laid the foundation for an industrial nation based on the infrastructure it had built in the period of the oil boom. Although the overall development was constrained by lower oil revenues, it was a period of progress, rather than regress, in terms of techno-sovereignty.

6.1. Improvement in HRD and Rentierisation of the Saudi Society

Another positive development in terms of techno-sovereignty in Saudi Arabia was the development of HRD institutions. In spite of the reduction of the state expenditure, King Fahd (r. 1982–2005), who had been an education minister in the 1950s, increased the expenditure on education (see Graphs 6.1.). The education expenditure reached around SR 20 billion in the late 1980s and increased again after the drop during the period of the Gulf War. The literacy rate markedly improved, reaching 66.9% in 1990: the youth literacy rate was even higher at 85.4%.[556] In 1990, the literacy rate of Saudi Arabia was already higher than other major Arab countries such as Syria (64.8%), Egypt (47.1%), Morocco (38.7%), and Iraq (35.7%). In 2000, there were 12,415 primary schools, 6,107 intermediate schools, and 3,292 high schools in the kingdom, accommodating 2.28 million pupils, 1.07 million students, and 755,977 students respectively.[557]

[556] Dagher and BouJaoude 2011: 75.
[557] Saudi Arabian Monetary Agency, various years.

Graphs 6.1.: The Saudi States' Total Annual Expenditure and Education Expenditure, 1975–1995, (million Saudi riyals)



Source: Saudi Arabian Monetary Agency

As the country's literacy rate improved, there arose a greater demand for higher education institutions. To administer the country's higher education, the Ministry of Higher Education was created as an independent ministry in 1975. Its first minister, Hassan bin Abdullah Al al-Sheikh (حسن بن عبد الله آل الشيخ) (1975–1987), a former education minister, was from the Al

al-Sheikh family, the Wahhabist authority.[558] However, he was succeeded by those with a modern education background: Abdulaziz bin Abdullah Al-Khowaiter (عبد العزيز بن عبد الله الخويطر) (1987–1991), a former rector of the King Saud University and Saudi Arabia's first PhD holder in the UK (History, the University of London, 1938); Khalid bin Muhammad Al-Anqari (خالد بن محمد العنقري) (1991–2014), also a former scholar at the King Saud University who had obtained a PhD in the US (Geography, the University of Florida, 1981).[559] (Al-Anqari was succeeded by Khalid Al-Sabti (خالد السبتي), a former vice education minister, in December 2014.[560] However, the existence of the Ministry of Higher Education came to end in January 2015 as it was merged into the Ministry of Education after 40 years.[561]) In 2000, there were eight universities in Saudi Arabia (Umm Al-Qura, Imam Muhammad, Islam, King Saud, KFUPM, King Abdulaziz, King Faisal, and King Khalid), accommodating 371,463 students, of whom 202,156 (54%) wee female.[562]

In addition, the administration of technical and vocation training was also detached from the Ministry of Education and transferred to the newly-created General Organisation for Technical Education and Vocational Training (GOTEVOT: المؤسسة العامة للتدريب التقني والمهني), an organisation placed under the Ministry of Labour and Social Affairs, in 1980. The major initial activities of GOTEVOT were to unify the country's curriculum, qualifications, training requirements and skills standards for technical and vocational

[558] Marks 1980: 78.
[559] SAMIRAD, "Minister of Higher Education, Dr Khalid bin Muhammad Al-Anqari", http://www.saudinf.com/main/c5115.htm [accessed 1 October 2014].
[560] "Cabinet Shake-up Puts 9 New Ministers at the Helm", *Arab News*, 9 December 2014.
[561] "King Salman Merges Ministries to Boost Educational Standards", *Arab News*, 2 February 2015.
[562] Saudi Arabian Monetary Agency, various years.

training.[563] In 2000, there were 77 technical and vocational training colleges and institutes supervised by GOTEVOT, which accommodated 50,004 students.[564]

In total, there were over 4.5 million Saudis at schools at all levels in 2000 which were almost 30% of the national population. While the kingdom had been significantly labour-scarce since its creation, it was eventually becoming labour-abundant. One retired foreign businessman told the author that, while it had been extremely hard to recruit qualified national workers in the 1960s and the 1970s because most of qualified graduates (many of whom had been foreign-educated) had found jobs either in the government, Saudi Aramco, or SABIC, domestic HRD institutions eventually began to supply qualified human resources to the labour market in a collective manner in the 1980s.[565]

Development of R&D Institutions

In addition to education, the foundations of the country's R&D activities were also laid in this period. Saudi policymakers in the late 1970s were aware of the importance of making progress in science and technology for long-term industrial diversification. For instance, Fouad Abd al-Salam Al-Farsy (فؤاد بن عبد السلام الفارسي), an assistant deputy minister of information, stated in 1980: [566]

[563] Technical and Vocational Training Corporation, various years.
[564] Saudi Arabian Monetary Agency, various years.
[565] Former staff members of Arabian Oil Company, interviewed by author, Tokyo, June 2012.
[566] Al-Farsy 1980: 66.

> "The point is clear. Unless Saudi Arabia can begin to institutionalise innovative knowledge in the form of research and development and the creation of new marketable innovations, all her eggs will be left in a potentially vulnerable basket – no matter how large the basket may seem."

Saudi Arabia's first state-sponsored research institute, the Saudi Arabian National Centre for Science and Technology (SANCST: المركز الوطني العربي السعودي للعلوم والتقنية), was created in 1977 – a precursor of today's King Abdulaziz City for Science and Technology (KACST: مدينة الملك عبد العزيز للعلوم والتقنية). SANCST promoted collaborative research projects with foreign institutions such as the US Department of Energy to develop solar energy, the Canadian National Research Council to create a national observatory, and Taiwan's National Science Council to establish aquafarming in Riyadh (as discussed in Chapter 8). SANCST also assisted R&D activities at Saudi universities through the provision of grants.[567] One of the major R&D hubs in Saudi universities was the Research Institute of KFUPM, which promoted research in the field of oil refining in particular. In addition, SABIC also developed its own research centre, SABIC Research and Technology, to promote R&D activities in the field of petrochemicals and other industry-related fields.[568] Today, based on its technological foundation, the company attempts to develop its innovative capacity by acquiring European and American petrochemical firms – such as

[567] Hobson and Lawton 1982.
[568] Saudi Arabian Basic Industries Corporation 2001: 88.

DSM (2002), Huntsman (2006), and GE Plastics (2007) – and running 18 R&D centres around the world.[569]

Saudi policymakers in the 1970s and the 1980s were eager to demonstrate the kingdom's scientific and technological progress to the international community. One of the scientific and technological fields in which they heavily invested for that purpose was space technology.[570] In 1976, Saudi Arabia led the creation of the Arab Satellite Communications Organisation (Arabsat), a Riyadh-based inter-Arab organisation for administering satellite communications. Its first satellite, Arabsat-A, was launched by a French rocket in February 1985. For the deployment of the second satellite, Arabsat-B, Prince Sultan bin Salman (the second son of the current king Salman and currently the Secretary General of the Saudi Commission for Tourism and Antiquities), a 28 year-old pilot, joined NASA's Mission 51-G and travelled into outer space on the space shuttle *Discovery* in June 1985. Prince Sultan became the first Arab astronaut, reciting the Qur'an outside the earth.[571]

The backdrop of the beginning of Saudi Arabia's science and technology policy was the rise of Arab interstate cooperation, as well as rivalry, in this field in the 1970s. In July 1970, the Arab League created the Educational, Cultural and Scientific Organisation (ALECSO: المنظمة العربية للتربية والثقافة والعلوم), an organisation to coordinate educational and scientific activities among Arab states. While Egypt and Lebanon had led scientific and

[569] "SABIC to Open 4 New Technology and Innovation Facilities in 2013", *Saudi Gazette*, 6 February 2013.
[570] Together with nuclear technology, states tend to develop space technology considering it as symbolising its national technological prowess. For instance, when China launched the manned spacecraft *Shenzhou 6* to outer space in October 2005, the state-owned Xinhua News Agency reported: "At this moment, history is returning dignity and sanctity to the Chinese nation" (Wilsdon and Keeley 2007: 11).
[571] Lawton and Moody 1986.

technological progress in the Arab world before the 1970s, the oil-exporting states in the Gulf began investing in R&D institutions during the oil boom period. For instance, Baghdad hosted a conference in 1974 inviting ministers and top officials of Arab states responsible for national science and technology policy.[572] Drawing foreign scientists with high salaries, these oil-exporting Arab states rapidly eroded Egypt's dominant position in the Arab research community. The share of Egyptian authors in all publications in the Arab world was over 80% in the 1950s, but the figure declined to 55% by 1976.[573]

Saudi Arabia was a relative latecomer in this field. Just as in its political strategy, Riyadh attempted to assume leadership in inter-Arab scientific cooperation, using the Organisation of the Islamic Conference (OIC) and the GCC, and competing with the Arab League-led initiatives. Riyadh hosted the Islamic Solidarity Conference on Science and Technology at the University of Riyadh in March 1976.[574] Accordingly, in 1978 the OIC formed the Islamic Foundation for Science, Technology and Development (IFSTAD: المؤسسة الإسلامية للعلوم والتكنولوجيا والتنمية), an organisation for promoting scientific and technological cooperation among Muslim countries. The headquarters of IFSTAD was established in Jeddah in 1981.[575] Likewise, the scientific and technological cooperation committee was created within the GCC as well.[576] Saudi Arabia and Gulf states enjoyed an advantage of abundant oil rents which enabled them to establish the finest R&D institutions in the developing world and to invite foreign scientists to them. However, they also faced

[572] Spurgeon 1975: 10.
[573] Zahlan 1980: 240.
[574] Chodkiewicz 1976: 663.
[575] Kettani 1984: 88.
[576] Shihab-Eldin 1986: 80.

major challenges. According to Adnan Shihab al-Din (عدنان شهاب الدين), a former director general of the Kuwait Institute for Scientific Research, there were three common challenges facing Gulf science and technology development: (1) the absolute shortage of national human resources for staffing newly-created R&D institutions; (2) the lack of a national consensus on the importance of science and technology; and (3) the weak connectivity between R&D and industry.[577] Overall, scientific and technological careers were still not highly appreciated in Gulf societies or seen as favourable professions by their citizens.

Rentierisation of the Saudi Society

In this manner, through the growth of SABIC's production and the development of HRD and R&D institutions, the level of techno-sovereignty in Saudi Arabia certainly increased in the last two decades of the twentieth century. Nevertheless, the extent of these changes was still very small and achievements were confined to what Steffen Hertog referred to as the "islands of efficiency".[578] Outside those islands, changes that were negative to further industrial diversification took place. As discussed in Chapter 2, this thesis describes those changes as the "rentierisation" of Saudi society – that the presence of abundant oil rents made Saudi society underproductive and dependent upon the state and on foreign labour.

Although the county's literacy rate significantly improved in the 1970s onward, the number of qualified workers was absolutely insufficient to support the country's

[577] Ibid.: 78.
[578] Hertog 2010.

modernisation and industrialisation. In 1980, the Ministry of Higher Education gave a pessimistic prediction about the capacity of the country's HRD institutions to fulfil the demand in the labour market, saying: "the qualified manpower needs of the Kingdom seem insatiable at least for the foreseeable future."[579] Only a handful of qualified Saudi workers, who were sufficiently educated and had enough social adaptability (including mobility, as many Saudis prefer to stay in their home region rather than to work in cities that are alien to them), seized the newly-created work opportunities in the private sector.[580] In addition, many of those national workers had only minimum and basic knowledge and skills to use imported foreign technologies. While they came to familiarise themselves with foreign technologies, their operation of such technologies were often done in a "turnkey" manner: *controlling* those technologies, such as carrying out maintenance work and repairs, was beyond their capacity in many cases.[581]

Here, Saudi policymakers faced a dilemma. On one hand, abundant oil rents enabled them to bring in foreign workers, both skilled and unskilled, from neighbouring Arab countries and South Asian countries (such as India and Pakistan) to compensate for the scarcity of qualified national workers and to keep pace with the modernisation and industrialisation they were pursuing. On the other hand, doing so would compromise the social cohesion of the country, risking fragmentation of the Saudi society. In the end, Saudi policymakers prioritised development over social cohesion. By allowing an influx of

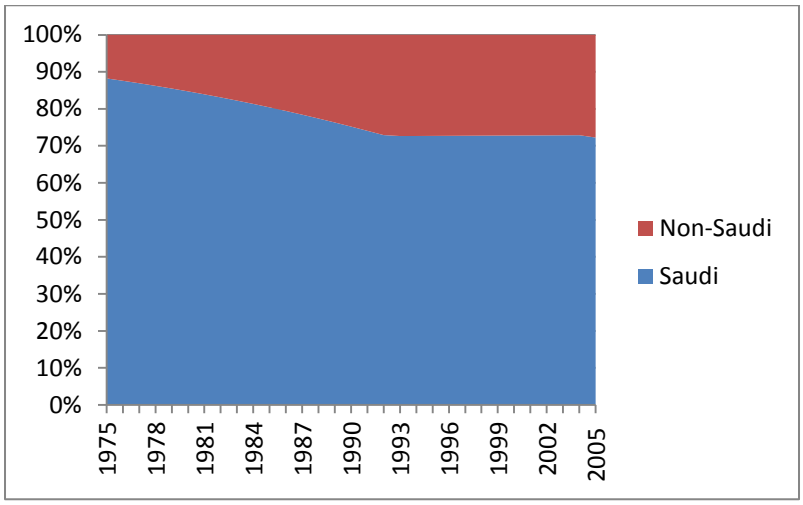
[579] Saleh 1986: 21.
[580] Knauerhase 1977: 9.
[581] Sayigh 1971: 43.

foreign workers, they avoided the slowdown of the country's development and pursued a swift modernisation which was incommensurate with the level of HRD among nationals.[582]

Thus, Saudi society rapidly became reliant upon "expat" foreign workers (see Graph 6.2.). In 1975, the number of expats in Saudi Arabia was only 857,831, or 11% of the total population of 7.28 million. Within two decades, the number of expats increased more than five times, reaching 4.95 million, or 27% of the total population of 18.13 million in 1995.[583] Already in 1982, the value of the remittances outflow from Saudi Arabia was the greatest in the world, at $5.34 billion, outweighing that from the US ($5.14 billion), West Germany ($4.48 billion), and France ($4.34 billion).[584] These expat workers carried out a variety of sorts of jobs, ranging from engineers and construction workers to accountants to school teachers, sustaining the pace of Saudi Arabia's modern transformation. Positively put, the extent of the expat population was testimony to the country's "techno-globalism" – openness to foreign technologists as well as to foreign technologies. In the words of one Jordanian consultant in the kingdom, Saudi Arabia became a "house of global experts".[585] Some Saudis are even proud of offering foreign talent the opportunity to work in the kingdom, which they regard as a virtue of tolerance that is encouraged by the teachings of Islam.[586] However, negatively put, the growing presence of expats meant Saudi Arabia's continuing and worsening dependence on foreign technologists.

[582] Braibanti and Al-Farsy 1977: 17.
[583] Saudi Arabian Monetary Agency, various years.
[584] World Bank, Migration and Remittance Data 2013.
[585] Kaizen Institute Saudi Arabia, interviewed by author, Riyadh, May 2014.
[586] A former official of the Saudi Arabian General Investment Authority, interviewed by author, London, July 2012.

Graph 6.2.: Population of Saudi Arabia, 1975–2005



Source: Saudi Arabian Monetary Agency

The presence of abundant oil rents resulted in the segmentation of the Saudi labour market. Oil rents enabled the Saudi state to absorb into the public sector nationals who were not educated enough to gain jobs in the private sector, thereby keeping the national unemployment rate low. However, that absorption, with generous entitlements, institutionalised the job preference of nationals, making them eschew lower-paid private sector works, particularly technical works. In 1979, Joseph Szyliowicz addressed the emerging mentality of the Saudis that they believed that "anything can be bought" and tended to "let foreigners do jobs rather than doing by themselves".[587] Employing foreign technologists was considered to be an easy and rational solution to the problems arising from the country's modernisation and industrialisation. Thus, self-development of

[587] Szyliowicz 1979: 366–367.

technological expertise, which is a painstaking, time-consuming, and a trial-and-error process, was eschewed by Saudi nationals.

In fact, Saudi policymakers were concerned with the country's growing dependence on expats. The second five-year development plan (1975–79) already addressed the concern: [588]

> "The kingdom will find that Saudis are becoming second-class citizens in their own land – engaged in dead-end jobs and earning below-average incomes – because of the failure to provide the means to develop their potential and capabilities."

This prediction has yet to come true. Until today, owing to oil rents, Saudis have been earning much more than expats on average. In fact, the opposite became true: Saudis came to consider themselves as a privileged class in their society, believing that they "own" – rather than work as – technologists. Some authors refer to this phenomenon as the "mudir syndrome": many Saudis believe that they only deserve the position of *mudir* (مدير), or a manager, leaving low-paid technical work to expats.[589] Accordingly, the choice of job became a matter of social status, too. Many Saudis came to eschew private sector work not only because of the lower payments but also for fear of being put in a disadvantaged position in terms of social relations, including marriage.[590]

[588] Nabti 1980: 39–40.
[589] Champion 1999: 6–7.
[590] Ramady 2013: 485.

Such institutionalisation of job preference arguably negatively affected the development of HRD institutions too. As the public sector absorbed most national graduates, the mismatch between the knowledge and skills taught in schools and that required in the labour market was not considered to be a great problem. Education at primary and secondary levels continued to be heavily oriented to religious teachings, and the vast majority of university students majored in humanity subjects.[591] In general, the concept of *employability* in the private sector was only present in a small degree in the country's HRD. Even in technical and vocational training schools administered by GOTEVOT, many students considered completion of the degree as a "stepping-stone" to government jobs rather than in order to get jobs in the private sector and to stay in them.[592] In fact, the majority of the graduates of technical and vocational training schools have reportedly ended up in the military.[593] The compromised employability of Saudi nationals inevitably made the kingdom dependent upon expats in the long run. In 1980 Tim Niblock rightly predicted:[594]

> "The important point…is that, under current directions of economic development, migrant labour is no transitory aspect of the situation. Although governments may reassure their peoples that once the industrial infrastructure is installed migrant labour will no longer be necessary, the economic projects currently underway…could simply not be operated on the basis of indigenous workforces. Further widespread industrial or

[591] Szyliowicz 1979: 366–367.
[592] Palmer, Alghofaily and Alnimir 1984: 24.
[593] "TVTC 'Ensure' 75,000 Graduates in 5 Years", *Arab News*, 2 March 2014.
[594] Niblock 1980: 11.

infrastructural expansion would, naturally, further aggravate the long-term dependence upon migrant labour."

In this way, the rentierisation of the Saudi society became an enduring and self-reproductive phenomenon in the decades following the oil boom period.

6.2. The Beginning of the Reform

Between 1983 and 1989, Saudi Arabia sustained deficit budgeting, running down the reserves of capital it had accumulated during the oil boom period and stomaching the deficit.[595] During those seven years, the state's average annual expenditure was SR 178 billion while the average annual revenue was SR 127 billion, making the average annual deficit SR 51 billion – which was around 14% of the country's GDP.[596] However, during the three years between 1990 and 1992, in the period of the outbreak of the Gulf War and its aftermath, the state's average annual expenditure increased by 35% to SR 242 billion, making the average annual deficit SR 80 billion. After 1992, Saudi Arabia returned to austerity budgeting with average annual expenditure between 1993 and 1999 at SR 188 billion. However, the price of oil continued to plummet, not recovering to the pre-1986 level. In December 1998, the price of West Texas Intermediate (WTI), a grade of oil traded on the New York Mercantile Exchange (NYMEX) and serving as a benchmark for global

[595] Robins 1989: 136.
[596] Saudi Arabian Monetary Agency, various years.

pricing of oil, slumped to below $12 per barrel ($17 in 2014) due to the decline in global demand for oil caused by the Asian Financial Crisis (1997–98).[597] Between 1993 and 1999, Saudi Arabia's average annual revenue was SR 155 billion, further adding an average annual deficit of SR 33 billion to the Saudi state coffers. By 1999, the Saudi state's debt (which had begun in 1987 and was mostly to domestic creditors) amounted to 120% of GDP.[598] The state coffers were badly squeezed.

The increasing financial constraints on the Saudi state significantly slowed down public sector employment. For instance, between 1980 and 1989, the number of workers in the government sector administered by the Ministry of Civil Service increased by 105% from 252,898 to 519,209; between 1990 and 1999, the increase slowed down to by 26%, from 534,698 to 674,554.[599] The state's weaker absorptive capacity, combined with the continuing national population growth – doubling from 7.8 million in 1980 to 14.5 million in 1999 – began to make the unemployment problem more visible. In 1999, the Saudi government disclosed the unemployment rate which stood at 8.1% among Saudi nationals.[600] The figure continued to increase and peaked in 2006 at 12.0%. However, the youth unemployment rate, among those below the age of 30, has been much higher – it was already estimated to be 32% in 2004.[601]

Crown Prince Abdullah, who became the de facto leader of the kingdom on behalf of the ailing King Fahd in 1995, was aware of the unsustainability of the Saudi state's

[597] Smith 2009: 145.
[598] US Department of State, Bureau of Economic and Business Affairs, "2001 Country Reports on Economic Policy and Trade Practices: Saudi Arabia", February 2002.
[599] Saudi Arabian Monetary Agency, various years.
[600] Saudi Arabian Monetary Agency, various years.
[601] Looney 2004.

rentier welfare umbrella. Thus, he attempted to change the course of national employment by (re)invigorating the private sector and making it absorb new generations of Saudi nationals. For the time being, the rise of youth unemployment is unlikely to turn into a poverty problem – at least, on a large scale – because the generous entitlement to the public sector employees enables them to support their family members. (On average, one Saudi worker fed 3.2 other nationals in 2014.)[602] Nevertheless, the rise of Al-Qaeda and its cell in the kingdom in the late 1990s and the early 2000s, impressed on Saudi policymakers that the increase of jobless young nationals could be a security problem: a sense of deprivation among educated jobless young people may make them vulnerable to political radicalism, particularly violent Islamism that might give those frustrated youngsters a mission and a meaning of the life.[603] In addition, the rise of mass opposition movements in the Arab world in 2011, referred to as the "Arab Spring", and their repercussions in the kingdom, further imprinted on the minds of Saudi policymakers that the national youth unemployment problem might form a formidable threat to the regime's security.[604] As Michael Willis points out, high graduate unemployment and growing gaps among citizens were among the major components of political changes in the Arab Spring.[605] According to a Saudi scholar Mai Yamani (a daughter of the former oil minister Zaki Yamani), new generations of Saudi nationals, educated and aware of the world beyond Saudi Arabia are more vocal, if not outspoken, about questioning norms and social rules than their parents.[606]

[602] "Every Saudi Worker Feeds Three Others", *Arab News*, 25 September 2014.
[603] Gambetta and Hertog 2009.
[604] "Saudi Arabia: Out of the Comfort Zone", *The Economist*, 3 March 2012.
[605] Willis 2012: 337.
[606] Yamani 2000: 67–69.

Thus, in order to establish a new state–society equilibrium, Crown Prince Abdullah (King between August 2005 and January 2015) initiated reforms. Abdullah's reforms have been three-pronged: (1) reinvigorating industrial diversification to create job opportunities for Saudi nationals by inviting FDI and empowering the private sector, particularly SMEs; (2) enhancing the employability of Saudi school graduates in the private sector through investing in HRD institutions; and (3) reforming the labour market, especially promoting labour nationalisation in the private sector by legal means. Abdullah's reforms were financially supported by new oil windfalls in the 2000s. Due to the rise in the global demand for oil caused by the rapid growth of China, India, and other emerging economies, the price of oil began to pick up in the early 2000s. In addition, the rise of liquidity in the financial markets transformed WTI into a financial commodity, to which speculative money was drawn.[607] As a result, the price of WTI shot up, surpassing the 1980 record in March 2008 and peaking at $145 per barrel ($159 in 2014) in July 2008. Due to the global financial crisis in 2008, the price of oil dipped thereafter, but it recovered fairly rapidly, hovering above $100 per barrel in most of the period between 2011 and 2013. This significantly improved the financial situation of the Saudi state. The state budget entered a surplus in 2003. While the average annual revenue in the 1990s was SR 157 billion, that in the 2000s increased more than three-fold to SR 487 billion.[608] Accordingly, the average annual expenditure rose by 75%, from SR 204 billion in the 1990s to SR 358 billion in the 2000s, creating an average annual surplus of SR 129 billion. Importantly, these new oil rents accelerated, rather than slowed down, the reforms: from the experience in the

[607] Smith 2009: 156–160.
[608] Saudi Arabian Monetary Agency, various years.

previous three decades, Saudi policymakers had learned of the volatile nature of a rentier economy and, thus, did not abandon their sense of crisis in spite of the high oil prices.[609]

Reform 1: Further Industrial Diversification to Downstream Manufacturing Sectors

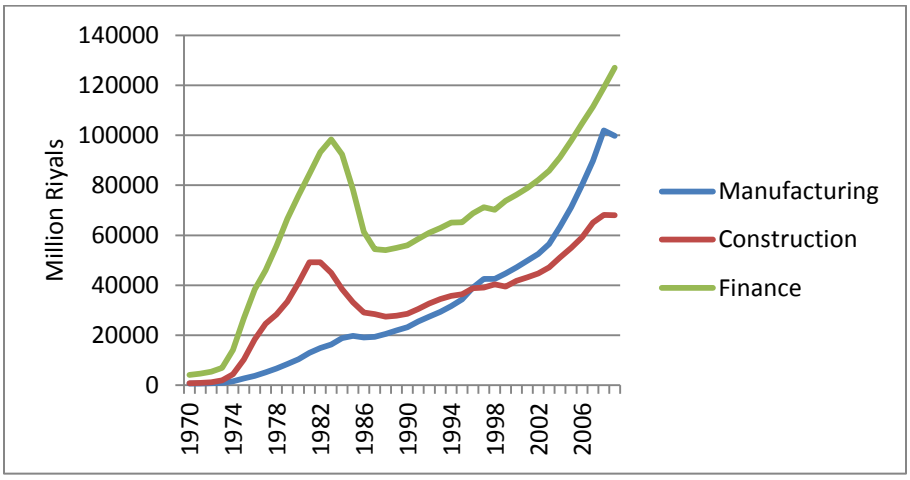
The first reform was the reinvigoration of industrial diversification to create job opportunities for national workers. Industrial production in Saudi Arabia recorded a steady growth during the oil glut period. The wealth created by manufacturing activities quadrupled from SR 20 billion in the mid-1980s to over SR 80 billion in the mid-2000s (see Graph 6.3.). A distinctive characteristic of the manufacturing sector was that it had not been affected by the change in oil revenues. In contrast, finance and construction – two other major diversification sectors – were dependent upon the injection of capital, and, thus, their growth followed the boom and bust cycle of the oil industry.

SABIC, having absorbed knowledge, skills and technologies from its joint venture partners, grew capable of launching some project independently in the 1990s. By 1995, SABIC's petrochemical production reached 15 million tpa in total.[610] In the 2000s, SABIC continued to expand its production, launching three projects without forming a joint venture: United (2000), Yansab (2005) and Saudi Kayan (2005). These projects produce a variety of basic petrochemical products, such as ethylene, propylene, EG, HDPE, LLDPE,

[609] Niblock 2007: 176.
[610] Sa'adoun 2006.

PET and PP.[611] It also formed joint ventures with foreign firms including Japan's Mitsubishi Rayon and Asahi Kasei (discussed in Chapter 7) to acquire technologies to produce advanced petrochemical and plastic products.

Graph 6.3.: Growth by Sector, 1970-2009



Source: Saudi Arabian Monetary Agency

Witnessing the success of SABIC, Abdullah authorised the opening of the petrochemical industry to private investors in 1995.[612] This decision led to the emergence of two major private petrochemical producers: Saudi International Petrochemical (Sipchem: سبكيم), an affiliate of Zamil Group, and National Industrialisation Company (Tasnee: التصنيع), a private holding company. Sipchem and Tasnee followed the strategy of SABIC and formed joint ventures with foreign firms. Sipchem launched its first project in Jubail in December 2004 to produce one million tpa of methanol through a joint venture with a

[611] Jūkagaku Kōgyō Tsūshin-sha 2009.
[612] Sa'adoun 2006: 53.

Japanese consortium led by Mitsui and Co. In the same year, Tasnee also launched a plant in Jubail with a production capacity of 450,000 tpa of polypropylene (PP): the production technology was provided by Basell, a Dutch-based petrochemicals firm. These projects of Sipchem and Tasnee were followed by more joint venture projects with the participation of American, German, Korean, and other foreign and multinational enterprises.[613]

Another major development of the 2000s was the entry of Saudi Aramco into the petrochemical industry. Its first project was a joint venture with Japan's Sumitomo Chemical. The project, named Petro Rabigh (بترو رابغ), was agreed in August 2005 and came on stream in April 2009, with a production capacity of 1.3 million tpa of ethylene, 900,000 tpa of propylene, and other basic and derivative petrochemical products. It is one of the world's largest refinery-integrated petrochemical complexes (discussed in more detail in Chapter 7). Saudi Aramco also entered into a joint venture with the US's Dow Chemical in October 2011 to create another world-class petrochemical complex in Jubail, which was named Sadara (صدارة) and is planned to come on stream in 2015.[614]

Through these developments, Saudi Arabia has established itself as the leading petrochemical-producing country in the developing world, together with China. The country's petrochemical production reached 86.4 million tpa in 2012 and is expected to surpass 100 million tpa by 2016.[615] The country is on the way to being the world's third

[613] Jūkagaku Kōgyō Tsūshin-sha 2009.
[614] Dow Chemical, "Main Project Financing Completed for Sadara," 17 June 2013.
[615] "Petrochemicals Production in Kingdom Hit 86.4m Tons in 2012", *Arab News*, 17 June 2013; "KSA Petrochemical Exports to Reach 100m Tons by 2016", *Arab News*, 24 February 2014.

largest petrochemical exporter, with a global share that is about to reach 10%.[616] The two state-owned petrochemical producers, SABIC and Saudi Aramco, are transforming themselves from domestic oligopolies to MNEs by investing in China and considering investments in other parts of the world.[617] Internally, the petrochemical industry now contributes to around 15% of Saudi Arabia's GDP.[618] The industry is today facing some major challenges, such as the limited availability of gas feedstock and a potential rise of shale gas-based American competitors.[619] However, the industry is doubtless a case of competitive industrial development where Saudi policymakers' pursuit of techno-sovereignty has achieved its goal.

In some senses, the petrochemical industry has been a positive case of "production with rentier characteristics". The industry's capital-intensive nature, a great feedstock advantage endowed by the country, and the use of "incentive oil" as a bargaining chip for drawing FDI were all conducive to the development of the petrochemical industry. In addition, the industry's machine-oriented nature, which does not require a great number of workers, has been advantageous for labour-scarce Saudi Arabia. In spite of its world-class production size today, the industry employs only around 30,000 Saudi nationals.[620] Since the industry's key workers have been recruited from a pool of a handful of talented and well-educated nationals, the rentier nature of the Saudi society itself has not placed as much constraint on its development.

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[616] "Saudi Arabia to be World's 3rd Largest Exporter of Petrochemicals by '15", *Saudi Gazette*, 18 November 2013.
[617] Yamada 2011.
[618] "Petrochemical Companies Need Advanced Products", *Arab News*, 3 January 2013.
[619] "Saudi Petrochem Sector Facing Major Challenges", *Saudi Gazette*, 6 August 2014.
[620] "Saudi Arabia Dominates Gulf Petchem Industry", *Saudi Gazette*, 3 January 2013.

Nevertheless, due to its machine-oriented nature, the petrochemical industry does not provide a solution to the country's youth unemployment problem. Thus, what Saudi policymakers are attempting to do now is to use it as an "industrialising industry" and to extend the production chain from petrochemical products to plastic products, and further downstream to labour-intensive manufacturing industries that process those petrochemical and plastics products. For this purpose, the National Industrial Strategy (NIS: الاستراتيجية الوطنية للصناعة) was announced in 2010. The NIS set the following targets for the decade between 2010 and 2020:[621]

- Double manufacturing from 11% to 20% of GDP
- Double national industrial employment from 15% to 30%
- Double industrial exports from 18% to 35%
- Double technology-based manufactured products from 30% to 60%

Responsibility for the implementation of these goals was given to the National Industrial Clusters Development Programme (NICDP: البرنامج الوطني لتطويرالتجمعات الصناعية), a programme jointly run by the Ministry of Commerce and Industry and the Ministry of Petroleum and Mineral Resources. The NICDP targets five industrial sectors in particular: (1) automotive; (2) minerals and metals processing; (3) solar energy; (4) plastics and

[621] National Industrial Clusters Development Programme, "Objectives", http://www.ic.gov.sa/ [accessed 1 December 2014].

packaging; and (5) home appliances.[622] For the development of these industrial sectors, the NICDP follows the strategy practised by SABIC: to invite FDI first and then to Saudise the production over the years through the transfer of knowledge, skills and technologies from the foreign investors to Saudi workers.

Thus, the NICDP currently coordinates with the Saudi Arabian General Investment Authority (SAGIA: الهيئة العامة للإستثمار), a governmental organisation created in April 2000 for the purpose of promoting FDI into the kingdom by serving as a "one-stop shop" for foreign investors for clearing licences, permits and other administrative procedures,[623] for attracting FDI into those emerging industrial sectors in the kingdom. SAGIA's activities have been supported by two factors. One is Saudi Arabia's eventual accession to the World Trade Organisation (WTO) in December 2005, which was greenlit after some 12 years of negotiations. The resultant liberalisation of trade and investment regimes in Saudi Arabia made it easier for foreign investors to invest in the country. In addition, the country's business climate markedly improved due to the reforms stipulated by the accession: Abdullah took a lead in locking Saudi technocrats into those reforms against vested interests by effectively using the target of the accession as an external pressure.[624]

The other factor that has supported SAGIA's activities are new oil windfalls, which have enabled the Saudi state to expand industrial infrastructure and create a new industrial base. In addition to the two existing industrial cities in Jubail and Yanbu and 20 other

[622] Ibid., "Organisation"; The development of home appliances industry was recently dropped as a target (National Industrial Clusters Development Programme, interviewed by author, Riyadh, May 2014).
[623] Niblock 2007: 187.
[624] Hertog 2008b.

existing smaller industrial districts, the creation of several mega industrial cities and smaller industrial districts has been planned and implemented. The largest project is the construction of the King Abdullah Economic City (KAEC: مدينة الملك عبد الله الاقتصادية) in Jeddah, which was announced in 2005 and is planned to be fully completed in 2020. The KAEC hosts the "Industrial Valley" (previously called the "Plastic Valley") and offers over 300 investment opportunities for industrial, educational, real estate and other business projects.[625] In addition to the KAEC, three other mega industrial cities have been planned to be built in Madinah (the Knowledge Economic City), Ha'il (the Prince Abdulaziz bin Musa'id Economic City), and Jazan (the Jazan Economic City).[626] In addition to these, an industrial city specialising in the mining industry (the Wa'ad Al-Shamal Mining City) is currently being developed in the Northern Borders Province as well.[627] As for smaller industrial districts, which are administered by the Saudi Industrial Property Authority (MODON: الهيئة السعودية للمدن الصناعية ومناطق التقنية), MODON announced in December 2011 that the number of industrial districts would be doubled to 44.[628] One of the objectives of the creation of those multiple industrial hubs is to seek a balanced development in the kingdom's regions.[629] However, there are also signs that those development plans were

[625] "70 Firms Invest SR10 Billion in KAEC Industrial City", *Arab News*, 12 June 2014.
[626] Camilla Hall, "New Champion for Saudi's Economic Cities", *Financial Times*, 4 June 2012.
[627] "New Mining City Gets Big Investment", *Arab News*, 22 February 2012.
[628] "Saudi Industrial Cities Making Rapid Progress Despite Challenges", *Arab News*, 13 December 2011.
[629] "New Mining City Gets Big Investment", *Arab News*, 22 February 2012.

overambitious. The construction of economic cities has reportedly been behind schedule, and whether they all can attract enough investment and people has been questioned.[630]

So far, Saudi Arabia has been quite successful in attracting global FDI. Since the country's accession to the WTO in December 2005, Saudi Arabia has drawn FDI worth over $200 billion.[631] In 2010, the country received FDI worth $28 billion, being tenth in the world in terms of the value of FDI inflows: it received more FDI than other major emerging economies such as India, Mexico, and Indonesia.[632] However, large parts of this FDI have been in the energy sector, and for a number of small investments it is unclear whether they are contributing to the Saudi economy or causing more of a capital-drain in the end. Thus, in 2014, SAGIA overhauled the licensed foreign investors in the kingdom, assessing if they add value to the Saudi economy by employing Saudi nationals and transferring technology to them.[633] The overhaul resulted in the cancellation of around 3,000 licences, reducing the number of licensed foreign investors from over 9,000 to around 6,000.[634] In this manner, not only attracting FDI, but attracting *quality* FDI that helps Saudi industrialists develop a productive base remains a task for NICDP and SAGIA.

[630] "Work on Economic Cities 'Too Slow'", *Arab News*, 25 November 2014; Camilla Hall, "New Champion for Saudi's Economic Cities", *Financial Times*, 4 June 2012.
[631] "Foreign Direct Investment", *Arab News*, 20 April 2012.
[632] United National Conference on Trade and Development 2011: 4.
[633] "SAGIA Warning: Shape up or Ship out!", *Arab News*, 30 April 2014.
[634] "Investors Upset as SAGIA Cancels 374 Licences", *Arab News*, 18 June 2014.

Reform 2: HRD

One of the indispensable factors for attracting industrial FDI and ensuring the transfer of knowledge, skills and technologies takes place is HRD. In order to develop labour-intensive manufacturing sectors, HRD institutions in the kingdom must become able to supply the labour market with a sufficient number of national human resources that are prepared for industrial activities. Abdullah allocated a large portion of the state budget to HRD. During the 15 years between 1980 and 1994, the average proportion of HRD in the state annual budget was 16%: it was much lower than defence expenditure, for instance, which occupied 39% of the annual budget in the same period on average.[635] Abdullah significantly increased the HRD expenditure. During 15 years between 1995 and 2009, the average proportion of HRD in the state annual budget was 25%, while that of defence was reduced to 28%. Today, Saudi Arabia's HRD expenditure amounts to almost 10% of the country's GDP, double the global average.[636]

By 2013, the literacy rate in Saudi Arabia had reached 96%.[637] As almost all young Saudis came to receive a basic education, the country needed to further increase the number of higher education institutions. In the decade between 2001 and 2011, the number of universities quadrupled from eight to 32, comprising 24 public universities and eight private ones. The university attendance rate increased from 18% in 2001 to 43% in 2011,

[635] Saudi Arabian Monetary Agency, various years.
[636] "Kingdom Tops World in Education Spending", *Arab News*, 23 January 2013.
[637] "Kingdom Achieves 96% Literacy Rate", *Arab News*, 10 September 2013.

above the global average of 33%.[638] In 2013, 337,000 students, or no less than 86% of 337,000 high school graduates, were enrolled at universities.[639] Currently, there are 1.2 million university students in the country, 60% of whom are female.[640]

One of those newly established universities is the King Abdullah University for Science and Technology (KAUST), the country's first co-ed university specialising in R&D. KAUST was created in Thwal in 2008 (opened in 2009) by the initiative of King Abdullah. Being funded by Saudi Aramco, the university operates outside the administrative turf of the Ministry of Higher Education. KAUST employs what Waleed Al-Shobakky refers to as a "non-exclusive partnership model". [641] Since its inception, it has entered into research collaboration with around 40 advanced foreign university laboratories across the world, including Stanford, Cornell, and Oxford. Under its "Global Research Partnership" programmes, KAUST funds the research of those laboratories in return for their cooperation in developing research programmes at KAUST in the same field. The KAUST model is contrasted with the "branch campus model" employed by other GCC states, such as Qatar and the UAE, which invite branch campuses of well-established Western universities to the country rather than building up new home-grown universities. (The Ministry of Higher Education once studied and created a plan to allow foreign universities to open their branch campus in the kingdom under certain conditions.[642] However, the

[638] "Education Expo a Meeting Point for Teachers, Students: Al-Anqari", *Arab News*, 19 April 2011.
[639] "Most High School Grads Enrolled in Universities", *Arab News*, 20 September 2013
[640] Al-Ankari 2013: v.
[641] Al-Shobakky 2008.
[642] "Ministry Studying Plan to Allow Foreign Universities", *Arab News*, 26 December 2013; "Foreign Investment Sought in Education", *Arab News*, 30 January 2014.

proposal was rejected by the Shoura Council in May 2015 because of "concerns over breaching Saudi cultural traditions and gender segregation" and "the failure of the branches of universities in surrounding countries to transfer the latest technologies and the best professors").[643] In order to retain its competitiveness and its international character, the vast majority of faculty members of KAUST and nearly 60% of its students are foreign citizens – although the university is targeting an increase in the proportion of Saudi students to 50% in the near future.[644]

In addition to KAUST, established universities under the administration of the Ministry of Higher Education have been reinforcing their R&D capacity as well. They have created Centres of Excellence specialising in certain scientific and technological fields which they consider to be of particular need in Saudi society (see Table 6.1.). Some universities have also set up "techno-valleys" (وادي للتقنية) to commercialise the outcomes of R&D activities. Four techno-valleys are currently under development: the Riyadh Techno-Valley at the King Saudi University; the Dhahran Techno-Valley at KFUPM; the Jeddah Techno-Valley at the King Abdulaziz University; and the Mecca Techno-Valley at the Umm Al-Qura University. Modelled after Silicon Valley and science and technology industrial parks (STIPs) in emerging economies, these techno-valleys attract foreign investors, and, in cooperation with them, seek to turn scientific and technological progress into industrial power.

[643] "Shoura Says No to Foreign Universities in Kingdom", *Arab News*, 21 May 2015.
[644] Amin Shibani, Vice President of Economic Development, KAUST, interviewed by author, Thwal, May 2014.

Table 6.1.: Centres of Excellences in Saudi Arabia

No.	Field	University	Year
1	Materials engineering	King Saud University	2007
2	Genomic medicine research	King Abdulaziz University	2007
3	Environmental studies	King Abdulaziz University	2007
4	Petroleum refining and petrochemicals	KFUPM	2007
5	Renewable energy	KFUPM	2007
6	Biotechnology	King Saud University	2007
7	Date palm research	King Faisal University	2007
8	Research in Hajj and Umrah	Umm Al-Qura University	2007
9	Science and mathematics education	King Saud University	2008
10	Desalination technology	King Abdulaziz University	2008
11	Osteoporosis research	King Abdulaziz University	2008
12	Corrosion research	KFUPM	2008
13	Islamic law for current affairs	Imam Muhammad University	2008
14	Information assurance	King Saud University	2009

Source: Saudi Arabian Cultural Attaché in Tokyo (2010)

In fact, some of these universities are already emerging as launching pads of manufacturing activities. A team from the King Saud University assembled the first "Made in Saudi Arabia" automobile, named *Ghazal-1*, in June 2010 through a collaboration with several Western firms, such as Mercedes-Benz and Motorola.[645] Likewise, KFUPM unveiled the FABLAB Dhahran in January 2014, a special fabrication laboratory modelled after the original FABLAB at MIT. The lab is open to students and businesspeople interested in high-tech manufacturing.[646] In addition to these universities, KACST also began running the Badir Programme to support technological entrepreneurs in 2012.[647] In addition, Hayat Sindi (حياة سندي), a Mecca-born female scientist who obtained PhD in

[645] "King Unveils First Saudi-Made Car", *Arab News*, 14 June 2010.
[646] "Aramco, KFUPM Set up Design and Manufacturing Laboratory", *Arab News*, 25 January 2014.
[647] "KACST to Support Technical Incubators, Entrepreneurs", *Arab News*, 20 December 2012.

biotechnology from the University of Cambridge (2001) and who has been a member of the Shoura Council since 2013, has run the i2 Institute to support Saudi inventors since 2011.[648] Sindi is a role model for a new generation of female Saudi scientists today.[649]

Alongside the development of universities and R&D institutions, the King Abdullah Scholarship Programme (KASP: renamed to the Custodian of the Two Holy Mosques Scholarship Programme after the death of Abdullah in 2015) has been offering full scholarships to Saudi students studying at foreign universities since 2005. By 2013, more than 150,000 Saudi students (around 20% of whom are female) have received a scholarship and 55,000 have already completed a degree and returned to the kingdom.[650] Regarding the destination of KASP students, four English-speaking countries accounted for 63% of 130,397 Saudi students abroad in 2011: the US (30%); the UK (15%); Canada (10%); and Australia (8%).[651] Other students were enrolled at universities in European countries (such as France, Germany, Italy, the Netherlands, and Spain) as well as Asian countries (such as China, Japan, India, South Korea, Malaysia, and Singapore). The number of countries where KASP students study totals 46. KASP is set to last until 2020.[652] When he launched KASP, King Abdullah stated: "For them to know the world and for the world to know them". These KASP students, called the "dispatched" (مبتعثون), are expected to add value to the Saudi economy in the near future, with the knowledge, skills, and technologies they

[648] "Young Arab Inventors 'Will Transform Entire Society'", *Arab News*, 12 February 2014.
[649] Saudi doctoral student (anonymous), interviewed by author, Oxford, February 2014.
[650] "Most High School Grads Enrolled in Universities", *Arab News*, 20 September 2013.
[651] Matthew Knott, "Saudi Scholarships", *Study Travel Magazine*, January 2014, http://www.hothousemedia.com/ltm/ltmbackissues/jan14web/jan14direction.html [accessed 1 December 2014].
[652] "Scholarship Schemes Widen Prospects for Talented Youngsters", *Arab News*, 15 April 2014.

have acquired abroad, and by connecting the kingdom with the international knowledge community.

These positive developments notwithstanding, there remains, in general, a problem of mismatch of the knowledge and skills taught at universities and those required in the private sector. Indeed, the unemployment rate among the national university graduates is currently 48.2%, meaning that almost one in two university graduates is jobless.[653] This is because the number of university students studying subjects related to industry is still low. Out of 101,700 university graduates in 2010, only 4,800 (5%) graduated in engineering and 4,200 (4%) in maths, in comparison with 19,600 (19%) in humanities, 18,000 (18%) in Islamic studies, and 12,800 (13%) in business management. [654] In addition, the exceptionally high university enrolment means that technical and vocational training is quite unpopular among young Saudi nationals. While 41% of high school graduates in the OECD countries attend technical and vocational training schools, the figure is only 9% in Saudi Arabia.[655]

In order to empower the country's technical and vocational training, GOTEVOT was reorganised into the Technical and Vocational Training Corporation (TVTC) in 2007. The TVTC aims to quadruple the number of students at technical and vocational training schools from the current 110,000 to over 450,000 by 2020.[656] In addition, to attract more talented high school graduates, the TVTC launched ten "colleges of excellence" (CoEs) in

[653] "Long Work Hours, Low Salaries Keep Saudis Away from Private Sector Jobs", *Arab News*, 1 March 2014.
[654] "Only 5 percent Saudis Study Engineering", *Arab News*, 6 April 2014.
[655] "Why Technical and Vocational Training is an Urgent Need for KSA's Future", *Arab News*, 19 June 2014
[656] "New Concept in Job Training", *Arab News*, 16 August 2013.

2013. The CoEs differ from previous colleges in that they are all run by foreign operators and their curricula are conducted in English. In addition, the length of their courses is three years, a year longer than the courses at standard technical colleges. By emphasising their international character and raising high expectations about the employability of their graduates, the TVTC is attempting to make the CoEs a game-changer that will change the image of technical jobs so that more young nationals will find those jobs acceptable – or even attractive.[657] The TVTC plans to open 100 CoEs by 2020.[658]

Nevertheless, what is needed to ensure that more high school graduates graduate in industry-related courses from university and study at technical and vocational training schools is the reform of primary and secondary education: a love of science and technology must be nurtured in the hearts and minds of Saudi children and teenagers. The reform of the primary and secondary education curriculum and retraining of teachers are impending tasks in the educational reform in Saudi Arabia today.[659]

Reform 3: Saudisation of Labour Forces

The third pillar of the reform has been the reform of the labour market. In spite of the Saudi government's efforts since 1995 to Saudise private sector employment, the number of expats in the kingdom continued to increase. It was a great paradox for Saudi policymakers

[657] A TVTC official, interviewed by author, Riyadh, March 2013
[658] "27 More Technical Colleges Planned", *Arab News*, 12 April 2014
[659] Yamada 2015b.

that, while the national unemployment rate increased by 50%, from 8.1% in 1999 to 12.0% in 2006, the number of expats in the country increased in the same period by 25%, from 5.44 million to 6.85 million.[660] By the end of 2013, the number of expats in the country had reached 9.2 million, or nearly one-third of the total population of 30.2 million.[661] Expats came to account for 42% of all working-age people in the country and 76.9% of all workers currently in employment.[662] (While the official unemployment rate among the Saudi nationals has been around 10%, the actual labour force participation of working-age Saudi nationals was only 32% (3.8 million out of 11.8 million) in 2011, according to the Central Statistics and Information Department. This means that the other 68%, the majority of whom were considered to be female, were jobless. However, many of them did not meet the criteria to be classified as "unemployed" as they were supported by their family/relatives.[663]) Saudi Arabia today hosts the fourth largest number of foreign workers in the world after the US (45.8 million), Russia (11 million), and Germany (9.8 million). The majority of expats work in the private sector: they accounted for 86.6% of the all private sector workers in 2012.[664] While industrial diversification creates job opportunities and HRD reforms attempt to enhance the employability of young Saudi nationals in the private sector, the domination of low-cost expat workers keeps the employment of nationals

[660] Saudi Arabian Monetary Agency, various years.
[661] "KSA Has 9.2 Million Expatriates, Says Study", *Arab News*, 11 October 2013; "Population of Country 30 Million", *Arab News*, 18 February 2014.
[662] "Long Work Hours, Low Salaries Keep Saudis Away from Private Sector Jobs", *Arab News*, 1 March 2014.
[663] "Have We Become a Nation of Idlers?", *Arab News*, 1 January 2012.
[664] "Expat Workers Hold 86% of Private Sector Jobs", *Arab News*, 9 September 2013.

unattractive for private firms. Thus, in order for Saudi nationals to capture opportunities in emerging industries, the labour market must be reformed.

In some sense, the reform of the labour market is a "leftover" of the decision made by Saudi policymakers in the oil boom period: the prioritisation of the swift modernisation of the country over the preservation of national homogeneity in Saudi society. Given the strong cost advantages of expat workers vis-à-vis national workers, it is somewhat inevitable that this labour market reform will involve some uneconomic measures, which can only be pursued by dint of political will and at the expense of short-term growth. King Abdullah gave this task to Ghazi Abdulrahman Al-Gosaibi, a former industry and electricity minister and the first chairman of SABIC.[665] In April 2004, Al-Gosaibi was appointed the Minister of Labour. Al-Gosaibi attempted to increase the proportion of Saudi nationals in the private sector by setting various sectoral quotas for national employment and by mandating that the Human Resources Development Fund (HRDF: صندوق تنمية الموارد البشرية), created in 2000, reward firms employing Saudi nationals. However, the quotas were not met in many cases, and the proportion of Saudi nationals in the private sector was almost unchanged, at around 10%, when Al-Gosaibi died while still an incumbent minister in August 2010.[666]

The labour ministership went to Adel Fakeih (عادل فقيه), a former chairman of the Savola Group (1993–2003) and the Jeddah Chamber of Commerce and Industry (2003–05)

[665] Al-Gosaibi had been ousted from the cabinet by King Fahd in 1984 because of his criticism of the regime and had served as a diplomat until September 2002 when he came back to the cabinet as a water and electricity minister ("The Godfather of Renovation Dies: Dr. Ghazi Al-Gosaibi", *The Majalla*, 17 August 2010).
[666] Hertog 2012: 92–93.

and a former mayor of Jeddah (2005–10). In 2011, Fakeih announced the introduction of the Nitaqat programme, a legally-binding Saudisation scheme. The Nitaqat programme set four zones, or *nitaqat* (نطاقات), into which private firms would be classified in accordance with their level of achievement in Saudisation of workers. Those four zones are: premium (Saudisation rate of over 27%), green (10–27%), yellow (4–10%), and red (below 4%). Firms classified into the yellow and red zones would face certain penalties that would make continuation of their businesses difficult, while those in the premium and green zones would be rewarded.[667] In addition to the implementation of the Nitaqat, the Ministry of Labour announced a campaign in 2013 to expel undocumented expat workers who failed to correct their status within a half year moratorium period. While 4.7 million expat workers corrected their status, nearly 900,000 undocumented workers were deported from the country by the end of 2013.[668]

These coercive policies changed the business landscape in Saudi Arabia to a certain degree. On one hand, nearly 200,000 private firms, or 10% of all private firms in the country, were closed down between 2011 and 2013.[669] However, on the other hand, the private sector added around 600,000 Saudi workers, achieving a 15% rate of labour nationalisation, or 1.5 million Saudi workers in total, by the end of 2013.[670] The number of firms in the premium and green zones doubled from 40% in 2011 to over 87% in 2013.[671]

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[667] Ramady 2013.
[668] "Over 900,000 Undocumented Expats Deported since Beginning of Amnesty", *Arab News*, 14 December 2013.
[669] "Nitaqat: 200,000 Firms Closed Down", *Arab News*, 5 August 2014.
[670] "Nitaqat Opens Chance to Develop Local Resources", *Arab News*, 23 September 2013; "1.5 Million Saudis Now Work in Private Sector", *Arab News*, 11 August 2014.
[671] "Fakeih: Nitaqat Leads to Hike in Salaries of Saudis", *Arab News*, 26 December 2013.

In particular, the number of female national workers in the private sector quadrupled in two years, from around 100,000 in 2011 to 400,000 in 2013.[672] Many private firms have, however, been unhappy with the coercive Saudisation policy, fearing the expected decline of productivity it would cause. They often complain that Saudi workers tend to demand higher pay although they are less experienced and harder to fire than expat workers.[673] Abdulrahman Al-Zamil (عبد الرحمن الزامل), the president of the Riyadh Chamber of Commerce and Industry, categorically stated in September 2013 that "Saudi Arabia cannot survive it [Saudisation]".[674] In fact, many firms are involved in the act of *tasattur* (تستر), or "cover-up", registering the names of Saudi workers on paper who never actually show up to the workplace.[675] Some firms also recruit expat workers from the underground labour market where "visa mafias" set up ghost firms to import them and make a profit by selling them to other firms.[676]

On the supply side, one of the reasons why young Saudi nationals do not want to take private sector jobs is their lower pay compared with public sector jobs. There is no set minimum wage in the kingdom, and 86% of expat workers receive a salary of less than SR 2,000 (around $500) per month.[677] The Nitaqat programme tackles this problem by imposing on firms a high wage standard for Saudi nationals. In the wage calculation system currently being prepared, firms will have to pay SR 4,000 Saudi riyals (around $1,000) per

[672] "Companies Fire 70,000 Expats in Two Years", *Arab News*, 2 April 2014.
[673] "Saudi Arabia to Blacklist Uncommitted Job-Seekers", *Emirates 24|7*, 15 May 2012.
[674] "'Saudization Is Not the Solution'", *Arab News*, 30 September 2013.
[675] "Cover-Up Businesses Cost Economy Dearly", *Arab News*, 18 February 2012.
[676] Hertog 2012; "Expat Visa Trader Arrested", *Arab News*, 1 May 2014.
[677] "Expat Workers Seek SR5,000 Minimum Wage", *Arab News*, 21 November 2013; "KSA Has 9.2 Million Expatriates, Says Study", *Arab News*, 11 October 2013.

month to a Saudi employee in order to be evaluated as hiring a Saudi worker.[678] If they pay less, they will be evaluated as only hiring 0.5 workers, and if they pay less than SR 2,000 per month, that employment would not be counted.

Nevertheless, young Saudi nationals' avoidance of private sector jobs is also caused by their fear of being looked down upon by their national peers.[679] Due to the gradual increase of Saudi workers in the private sector in the past decade and its "signalling effect", more young Saudi nationals are accepting private sector jobs today. Many of these jobs are not managerial positions: thus, the "mudir syndrome" is becoming increasingly an outdated concept today. However, those Saudi workers in the private sector tend to concentrate on services and administrative works, eschewing technical jobs. For instance, 53% of all service sector works in the kingdom (3.9 million out of 7.4 million) have already been Saudised. However, the figure is only 22% in the manufacturing sector (696,000 out of 3.19 million).[680] Likewise, 97.8% of all clerical positions in the private sector in Saudi Arabia have already been Saudised. However, less than 10% of engineering jobs have been Saudised: there are only 149,000 Saudi national engineers, in comparison with over three million expat engineers.[681]

Indeed, Saudis tend to prefer jobs in which they wear *thawb* (ثوب), a traditional Arab garment, and eschew jobs in which they have to wear a uniform since uniform jobs are considered to be of a lower social status and it is thought that they should be taken by

[678] "New Rule to Raise Private Sector Wages", *Arab News*, 15 January 2014.
[679] "Saudi Youth Need to Expand Career Options", *Arab News*, 31 January 2014.
[680] "Manufacturing Sector Has Few Saudi Workers", *Arab News*, 23 August 2013.
[681] "Expat Workers Hold 86% of Private Sector Jobs", *Arab News*, 9 September 2013.

expat workers (except for security apparatus jobs).[682] Other exceptions are industrial jobs in SOEs such as Saudi Aramco and SABIC: a recent survey revealed that, while 33% of Saudi job seekers favoured jobs in the public sector, 29% expressed their desire to be employed in the oil and petrochemical industry.[683] However, for private industrial jobs, in particular jobs at SMEs which Saudi policymakers are currently promoting among young job seekers, the social perceptions towards them are still in need of a change. While the mudir syndrome is gone, the "thawb syndrome" still remains strong in Saudi society today. The image of technological work held by young nationals must be improved through HRD reforms so that these uniform jobs will be given sufficient respect by new generations of Saudi nationals.

6.3. Towards the Future of Industrialisation: An Auto Industry in Saudi Arabia

With the launch of the NIS, the Saudi state's pursuit of techno-sovereignty entered a new stage. For Saudi policymakers, this is a new stage of industrialisation in the rentier economy. Seen in the larger picture, it is a new stage towards global convergence, in which the fruits of the Industrial Revolution may finally reach even a barren desert in the Arabian Peninsula that lacks the heritage of a pre-modern civilisation. Nevertheless, this new transformation does not seem to be an easy one. While the previous industrialisation in Saudi Arabia, oriented towards the development of capital-intensive heavy industries, has

[682] Sultan A. Al-Mahdi (a Saudi journalist), interviewed by author, London, January 2013.
[683] "Saudi Graduates Still Prefer Government Jobs", *Arab News*, 17 January 2014.

shown the positive features of "production with rentier characteristics", the current and upcoming development of labour-intensive manufacturing industries is likely to show more of its negative features.

Among the five industrial sectors targeted by the NIS and the NICDP, the one Saudi policymakers are focusing on the most is the auto industry. The idea of developing an auto industry in Saudi Arabia already existed in the period of the first five-year development (1970–74). The Saudi government disclosed in February 1974 that it had been in negotiation with some foreign auto firms, such as General Motors (GM) from the US and Nissan Motor from Japan, for building assembly plants in the country.[684] However, at that time the country was not yet prepared for these ambitious projects, in terms of infrastructure and human resources. Nearly four decades later, the idea of producing "Made in Saudi Arabia" cars has resurfaced today due to the need for job creation. Because automobiles are made of thousands of components, establishing an auto industry will lead to the creation of a number of manufacturing SMEs that supply those components to the assembler (the process termed by economists "backward linkage"). In addition, the presence of auto manufacturing would also help develop aftermarket businesses such as the production of spare parts, accessories, and tools, and workshops for repair (a process called "forward linkage").

While the production of autos required a high level of industrial and technological standards in the twentieth century, it has become relatively easier today. Auto producers in the past tended to obtain components mostly from domestic manufacturing producers.

[684] Tracy 1974.

However, owing to the evolution of global supply-chains in the past 15 years, auto producers today can rely for high-tech components (such as engines and complex electronic components) more on imports from advanced countries.[685] Thus, even emerging economies without sophisticated technologies are able to produce vehicles by focusing on assemblage. In addition, emerging economies are where rising demand for autos exist today. In 2000, 76% of global auto sales were made in advanced countries. In 2005, the figure was still 66%. However, the global financial crisis in 2008 hit the advanced economies leading to a significant shrinkage of the demand in them. In 2010, emerging countries accounted for 54% of global auto sales. In 2015, the figure is expected to rise to 58%.[686] Accordingly, competitive auto firms in advanced economies, in their global strategy, place more emphasis on investment in emerging markets and on employing local workers. In some sense, China represents the new way of auto manufacturing. China developed an auto industry without its own technologies to produce high-tech components. Chinese auto firms have obtained basic components from domestic suppliers, but have imported high-tech components from abroad.[687] China is also the largest auto market today, accounting for over 40% of the demand in emerging economies. In 2011, 18.5 million vehicles were sold in China.[688]

Although not comparable to China, Saudi Arabia today has some promising advantages for developing an auto industry too. The country increasingly has competitive

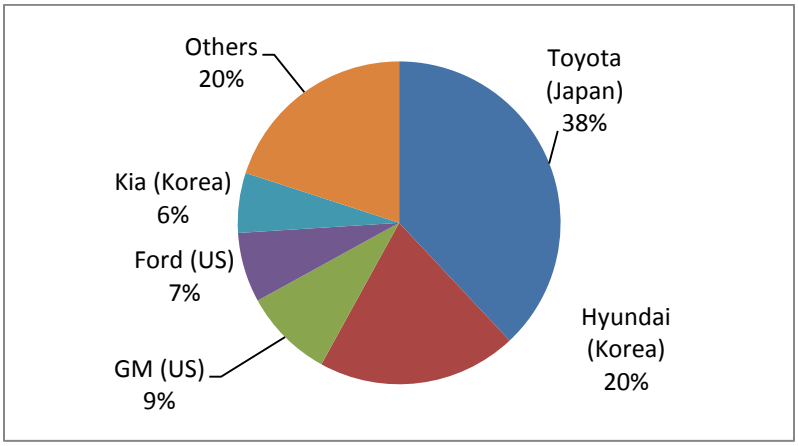
[685] Sturgeon and Van Biesebroeck 2010.
[686] Shinji Watanabe, "Seichō Tsuzuku Sekai no Jidōsha Sangyō: Syusenjō ha Senshin-koku kara Shinkō-koku he", SBI Shōken, 7 April 2014.
[687] Isa 2010: 164–165.
[688] "Still in the Second Gear", *The Economist*, 5 May 2012.

petrochemical and plastic industries, as well as steel and aluminium industries, which are conducive to competitive basic component production. In addition, it has a domestic market of 30 million people, 20 million of whom are affluent nationals; other GCC countries offer markets with an additional 20 million people; and there are also markets in other Arab countries, with an additional 300 million people. There are currently nearly 8 million vehicles in Saudi Arabia: the figure is expected to reach 14 million by 2020.[689] Saudis bought 750,000 auto units in 2013, and the sales are expected to reach 1 million by 2020. In Saudi Arabia's and other Gulf/Arab countries, the "youth bulge" population structure makes markets in those countries promising for auto producers. Indeed, Saudi Arabia is the top market for Toyota in the Middle East, accounting for nearly 40% of the company's total sales of 650,000 auto units in the Middle East (2012).[690] In the Saudi auto market, Toyota had the largest share, at 38%, in 2013, almost double the second largest auto seller, Hyundai (see Graph 6.4.).[691]

[689] "250 Jobs for Young Saudis in Auto Industry", *Arab News*, 19 May 2013.
[690] For Toyota, the Middle Eastern markets accounted for 7% of the company's global sales of 8.7 million units in 2012 which was nearly half the company's domestic sales in Japan ("Toyota Sales in the Middle East Grows 30%", *Gulf News*, 12 January 2013).
[691] "Saudis 'Bought 750,000 Cars in 2013'", *Arab News*, 10 January 2014.

Graph 6.4.: Auto Sales in Saudi Arabia in 2013,

(by Company; total 750,000 units)



Source: Arab News

To launch the production of "made in Saudi Arabia" autos, the NICDP is following the strategy adopted by SABIC for developing petrochemical industry in the previous decades: inviting FDI from foreign auto firms to set up assembly plants in the country first, and then gradually getting knowledge, skills, and technologies transferred from them to Saudi national workers. At the same time, the NICDP encourages the development of components production businesses, with the goal of replacing imported components with "made in Saudi Arabia" components. In 2011, the NICDP announced some ambitious targets: to establish the self-production of components by 2014 and that of autos by 2021.[692] It further aims to increase the production to 600,000 units per year by 2025.[693]

[692] "Saudi Arabia Gets Closer to Building Own Cars", *Arab News*, 16 July 2012.
[693] "Auto Giants 'in Talks to Set up KSA Manufacturing Ventures'", *Arab News*, 19 April 2013.

In terms of employment, there were estimated to be around 27,000 workers in auto and related industries in Saudi Arabia at the end of 2013.[694] The NICDP assumes that the full development of auto and related industries will add 77,000 jobs, making the number of total workers over 100,000 (over three times the number of workers in the petrochemical industry).[695] Industrial cities and districts currently existing and under development will host production. In addition, the city of Makkah announced in March 2013 that it would launch an "automobile city" (مدينة للسيارات) in two years, attracting spare parts businesses and workshops.[696] Elsewhere, the production of spare parts has already been projected. For instance, Al-Muwakaba for Industrial Development, Research & Overseas Commerce (Midroc: ميدروك), a holding company affiliated to the Al-Amoudi Group (مجموعة العمودي), announced in May 2012 that it would create the first tyre factory in Saudi Arabia. It is planned that the plant located in Yanbu will come on stream in 2015, with the employment of 600 workers.[697]

To invite FDI to create assembly plants, the NICDP has been in negotiations with auto firms around the world. So far, some Asian auto firms have shown an interest in setting up a plant in Saudi Arabia. In 2012, the Tata Group in India, the owner of the British luxury auto brand Jaguar Land Rover (JLR), entered into negotiations with the NICDP for setting up an assembly plant in Yanbu.[698] The NICDP expects that JLR would

[694] "Saudi Car Imports Hit SR77bn", *Arab News*, 19 June 2014.
[695] "Auto Industry 'Can Create 77,000 Jobs'", *Arab News*, 7 August 2013.
[696] "Makkah Automobile City to be Ready Soon", *Arab News*, 25 March 2013.
[697] "Al-Amoudi to Set up First Tire Factory in Kingdom", *Arab News*, 2 May 2012.
[698] "Global Auto Giant Plans Assembly Plant in Kingdom", *Arab News*, 1 September 2012.

begin producing 50,000 unit autos by 2017, with the employment of 4,500 workers.[699] In May 2013, the NICDP expressed its prediction that the agreement would be made by the end of 2013.[700] However, the deal was still up in the air as at the end of 2014. In addition to JLR, Daewoo (대우), one of the *chaebol* conglomerates in South Korea, and BYD (比亚迪), a Chinese private auto firm based in Shenzhen (深圳), have reportedly been conducting feasibility studies regarding establishing an assembly plant in Saudi Arabia.[701] Another firm reportedly showing an interest in setting up a plant in Saudi Arabia is Eagles Auto from Egypt.[702]

The NICDP has also attempted to attract American and European investments. In June 2013, Azzam Shalabi (عزام شلبي), the president of the NICDP, travelled to Detroit and called for American investments in the Saudi auto industry at a meeting of the US–Saudi Arabian Business Council, a platform for American investments in Saudi Arabia. The "Big Three" (GM, Ford, and Chrysler) reportedly accepted the NICDP's proposal and would study the creation of an assembly plant in Saudi Arabia.[703] In addition, in November 2013 the EU–GCC Invest Project, a joint initiative for promoting European investments in GCC countries (launched in 2012 by German business associations in Saudi Arabia and the UAE,

[699] "KSA Jaguar Land Rover Project Gathering Pace", *Arab News*, 4 May 2013.
[700] "Saudi Arabia in Talks on Car Manufacturing", *The National*, 14 May 2013.
[701] "Korean Firm to Build Car Assembly Plant in KSA", *Saudi Gazette*, 19 June 2014; "Chinese Firm to Set up Saudi Car Assembly Plant", *Arab News*, 18 June 2014.
[702] "New Auto Hub: KSA 'Must Target Top Producer Status'", *Arab News*, 8 April 2013.
[703] "Ford Moves Closer to Saudi Auto Plant", *Arab News*, 30 June 2013.

the Eurochambres, and the Federation of GCC Chambers) held its first automotive conference in Riyadh.[704]

While the NICDP has been communicating with auto producers around the world, Saudi engineers and technologists have also attempted to produce some prototype "Made in Saudi Arabia" autos. As mentioned above, a team from the King Saud University assembled a SUV named *Ghazal-1*, in June 2010. *Ghazal-1* was designed using the Mercedes-Benz G500 as a base model and assembled in collaboration with foreign firms, such as Mercedes-Benz, Motorola, and Magna Canada.[705] In order to produce *Ghazal-1* and other autos on a commercial basis, the Riyadh Techno-Valley at the King Saud University (KSU–RTV) signed an agreement to set up a joint venture with Digm Automotive Technology (다임오토) from South Korea in December 2010.[706] They created Ghazal Car Technology and Spare Parts Company (شركة غزال لصناعة السيارات وقطع الغيار) which was 15% owned by the KSU-RTV and 30% by Digm Automotive, with the remaining 55% invested by Midroc. The company announced that 70% of its activities would be the production of spare parts while the remaining 30% would be preparing to manufacture autos targeting Gulf and North African markets. [707] In addition, KACST also launched the National Programme for Automobile Technology in cooperation with the National Academy of

[704] "EU–GCC Automotive Conference Focuses", *Arab News*, 19 November 2013.
[705] "King Unveils First Saudi-Made Car", *Arab News*, 14 June 2010.
[706] "Kingdom to Make Cars for Gulf and N. Africa", *Arab News*, 26 December 2010.
[707] "KSU Mobilises $500 Million for New Car Company", *Arab News*, 30 December 2010.

Sciences of Belarus, and unveiled a passenger auto it assembled, named *Aseela*, in December 2010.[708]

Nevertheless, many Saudi industrialists are concerned that the country is not yet ready for the production of passenger autos. For instance, Ali Alireza, a managing director of Haji Husein Alireza & Co. (HHA: الحاج حسين علي رضا وشركاه المحدودة), an auto agent in Jeddah, claims that the production of trucks should be developed first as trucks have a less complex structure and require fewer components than passenger autos. Alireza proposes that, through the production of trucks, Saudi producers can absorb basic knowledge, skills and technologies for auto production from foreign investors while waiting for the full development of component industries, which will prepare them for moving on to the production of passenger autos in the future.[709] His company HHA formed a joint venture with MAN, a German auto firm, in 2006 for assembling trucks.[710] The joint venture company, Saudi Automotive Manufacturing Co. (SAMCO), opened an assembly plant in Jeddah in January 2009, with its production capacity today reaching 3,000 units per year.[711]

SAMCO became the second case of a Saudi–German joint venture for the production of trucks: the first one was National Automobile Industry (NAI), a joint venture created in 1977 by E.A. Juffali & Brothers (شركة إبراهيم الجفالي وإخوانه), an auto agent in

[708] "KACST Launches a Car Named Aseela", *Saudi Gazette*, 8 December 2010; King Abdulaziz City for Science and Technology, "'Science and Technology' Launches Its Car (Aseela) in the Riyadh Motor Show 2010", http://www.kacst.edu.sa/en/about/media/news/Pages/news186.aspx [accessed 1 December 2014].
[709] "KSA Need 'Friendlier Business Environment'", *Arab News*, 8 April 2013.
[710] "MAN Trucks to be Assembled in Jeddah", *Arab News*, 12 November 2006.
[711] AHK Saudi Arabia, "MAN Trucks", *German-Saudi Business Magazine*, October 2011; "HHA to Build 3 New MAN Service Centers as Demand for Trucks Rises", *Saudi Gazette*, 23 July 2013.

Jeddah, and Daimler AG from West Germany (then).[712] Between 1977 and 2010, NAI's plant in Jeddah assembled over 75,000 units of Mercedes-Benz trucks. It currently produces 4,000–5,000 units per year, with the employment of 196 workers – among whom 64 (32%) are Saudi nationals.[713] In addition, the NICDP succeeded in inviting Isuzu Motors from Japan to open a truck assembly plant in Dammam in December 2012 (discussed in detail in Chapter 7).[714] In November 2013, Zahid Tractor and Heavy Machinery Company, an affiliate of the Zahid Group (مجموعة شركات الزاهد), also announced its plan to assemble Volvo (Swedish) and Renault (French) trucks in the Industrial Valley of the KAEC, with a production capacity of 4,000 units per year and with the employment of 400 workers.[715]

Saudi policymakers themselves, in fact, acknowledge too that the development of an auto industry is a Herculean task. For instance, the Saudi Industrial Development Fund (SIDF: صندوق التنمية الصناعية السعودي) states in its annual report from 2013: "Prospects for the success of auto manufacturing in the Kingdom are favorable. However, there are formidable challenges".[716] For one thing, Saudi auto producers will face severe competition both in the Saudi and MENA markets from exports from other emerging economies such as China and India. In the MENA region, Turkey is already emerging as a competitive auto

[712] AHK Saudi Arabia, "National Automobile Industry" *German-Saudi Business Magazine*, October 2011.
[713] "Juffali Rolls out 75,000 Units of Mercedes Truck", *Saudi Gazette*, 26 November 2010.
[714] "'Made in Saudi Arabia' Isuzu Truck Makes History", *Arab News*, 13 December 2012.
[715] "Zahid to Build Assembly Plant for Volvo, Renault Trucks in KAEC", *Arab News*, 23 November 2013.
[716] Saudi Industrial Development Fund, "In Its Annual Report for the Fiscal Year 1434/1435H (2013G), the Saudi Industrial Development Fund Reviewed the Prospects of the Automotive Industry in the Kingdom and its Implications for the Domestic Economy", 20 June 2014, http://sidf.gov.sa/En/MediaCenter/news/Pages/Cars_Report.aspx [accessed 1 October 2014].

production hub, producing over one million units of vehicles per year.[717] Morocco is also emerging as a hub of the auto industry in North Africa, producing 120,000 units in 2012.[718] Egypt, Jordan, Iraq, and Algeria have also begun developing an auto industry in recent years. Saudi auto producers will have to compete with these Arab producers not only for their market but also for FDI.

In terms of the competitiveness of the emerging Saudi auto industry, the largest concern is that the pool of qualified human resources for the industry still remains insufficient. At this moment, most technical workers deployed on the factory floor of truck assembly plants are expats: most Saudi national workers are in the administrative section.[719] Due to the tightening Saudisation requirements for private firms mentioned above, it would be hard for Saudi truck producers to increase the size of production while maintaining a high Saudisation rate – to do so more Saudi workers must be deployable on the factory floor. The above SIDF report states:

> "The prospects of success for the auto industry in the Kingdom depends [sic] on the continuity and effectiveness of the recent educational initiatives adopted in the Kingdom, particularly those related to the scientific, engineering and vocational areas. It also requires the establishment of specialized training centers in collaboration with international motor car manufacturing companies."

[717] International Organisation for Motor Vehicle Manufacturers, "2013 Production Statistics", http://www.oica.net/category/production-statistics/2013-statistics/ [accessed 1 October 2014].
[718] "Skills Crunch Threatens Auto Hub Ambitions", *Arab News*, 18 April 2013.
[719] A foreign truck company investing in Saudi Arabia (anonymous), interviewed by author.

There are some technical colleges in the kingdom specialising in the training of auto technicians. The Saudi–Japanese Automobile High Institute (SJAHI) in Jeddah (discussed in detail in Chapter 7) opened in 2002, with over 2,000 graduates to date.[720] The SJAHI was created by Abdul Latif Jameel (عبد اللطيف جميل), an auto agent for Toyota, and run in cooperation with Toyota and other Japanese auto firms exporting autos to Saudi Arabia. Likewise, E.A. Juffali & Brothers has run its own Juffali Vocational Training Centre to train Saudi workers for its plant assembling Mercedes-Benz trucks. In 2008, Juffali signed a memorandum of understanding with the TVTC to set up a technical college similar to the SJAHI in Jeddah, in cooperation with Mercedes-Benz and other German auto firms.[721] In addition, other auto agents in the kingdom have also launched programmes for Saudi students of technical training schools to receive on-the-job training implemented by foreign auto firms in recent years. For instance, Mohamed Yousuf Naghi Motors (MYNM: محمد يوسف ناغي للسيارات), an agent for Hyundai, agreed with the TVTC in April 2012 to employ 400 graduates of schools administered by the TVTC and to offer them on-the-job training.[722] Likewise, Al-Jazirah Vehicles Agency (شركة توكيلات الجزيرة للسيارات), an agent for Ford, signed a similar agreement with the TVTC in the same month to train 500 Saudis.[723]

These initiatives by auto agents are primarily designed to meet the Saudisation

[720] "250 Jobs for Young Saudis in Auto Industry", *Arab News*, 19 May 2013.
[721] "TVTC and Juffali to Set up New Institute for High Technical Skills", *Arab News*, 13 November 2008; "Saudi-German Automotive Institute to Rise in Jeddah", *Saudi Gazette*, 3 June 2011.
[722] "Mohamed Yousuf Naghi Motors to Train 400 Saudi Youths", *Saudi Gazette*, 11 April 2012.
[723] "Al-Jazirah, TVTC Sign MoU to Train 500 Saudis", *Arab News*, 15 April 2012.

requirements by replacing expat technicians employed for maintenance work with national ones. However, since they employ the country's finest national auto technicians, they can possibly enter into components production and auto assembly businesses in the future – like the cases of HHA and E.A. Juffali & Brothers. The development of the auto industry in Saudi Arabia will ultimately depend upon the capacity of Saudi HRD institutions to supply national auto technicians to the industry. Some economists argue that 2018 or 2019 would be a realistic target for fully developing a components production industry, rather than 2014 as initially targeted by the NICDP.[724] Even these later targets can be achieved only if the country's HRD institutions adopt an appropriate curriculum. Thus, in the coming years, the Saudi state is likely to request more foreign auto investors to enter into cooperation with HRD institutions.

Conclusion of Chapter 6

The beginning of petrochemical productions by SABIC in the 1980s and the progress in the Saudisation of these productions attested to the rising techno-sovereignty in Saudi Arabia. In addition, higher education institutions in the kingdom eventually began supplying qualified national human resources to the labour market in the 1980s. Nevertheless, SABIC was an island in the Saudi economy. In Saudi society as a whole, a "rentier society" began to emerge – a society which was, and continues to be, underproductive and dependent on

[724] "Saudi Arabia Gets Closer to Building Own Cars", *Arab News*, 16 July 2012.

the state and on foreign labour. In order to implement modernisation and industrialisation in spite of the labour scarcity, the kingdom accepted a large number of expat workers, who account for nearly one-third of the population of Saudi Arabia today. These expat workers came to dominate technological works in the private sector, leaving most Saudi nationals to take only "thawb-wearing" managerial and administrative positions.

Due to this segmentation of the labour market, reliance on expat workers became not a transitory but an enduring phenomenon. In the 1990s, as the population increase made Saudi Arabia no longer labour-scarce, the problem of youth unemployment began to rise. In order to cope with the paradox of the simultaneous increase of unemployment among young nationals and of the number of expat workers in the kingdom, Abdullah, who ruled the kingdom between 1995 and 2015, initiated three reforms. The first was job creation by reinvigorating industrial diversification, extending the production chain from petrochemicals to downstream manufacturing sectors targeted by the NIS. The second was the empowerment of HRD institutions to enhance the employability of young nationals. The third was labour market reforms to promote Saudisation of labour in the private sector through legally-binding means. The implementation of these reforms was financially supported by a new oil boom in the mid-2000s.

In order to accelerate industrial diversification, Saudi Arabia began to invite FDI in manufacturing industries. Just as SABIC did in the petrochemical industry, Saudi policymakers intended to establish production in those industries by inviting FDI first, and then Saudising the production over the years. However, as the experience of an emerging auto industry in the kingdom suggests, the development of labour-intensive industries has

been constrained by the insufficiency of qualified national industrial workers and the tightening Saudisation requirements. Although higher education in the kingdom experienced a quantitative leap in the past 15 years, industry-related studies and technical training are still highly unpopular among young nationals.

Therefore, whether further industrial diversification in Saudi Arabia will succeed or not ultimately depends upon further reforms of the HRD institutions, especially their *qualitative* reforms conducive to supply qualified national industrial workers to the labour market. On one hand, those require reforms in primary and secondary educations which (should) prepare young nationals for technical and industry-related studies at a tertiary level. On the other hands, tertiary education in the kingdom must be empowered to close the gaps between knowledge and skills taught in schools and those required in industry. Currently, more firms, both domestic private firms and foreign investors, are required by the Saudi authorities to make contributions to the development of HRD institutions in this regard.

How fast and effective such reforms will be implemented will determine whether the Saudi society will remain a rentier society and at a compromised level of techno-sovereignty, or begin transforming itself to an industrial society and break the mould of "production with rentier characteristics". A separate study must be required, however, to assess the prospect of such reforms.

Chapter 7

From Gulfophobia to "Made in Saudi Arabia":

Japan and Saudi Arabia

"The Saudis criticise Japan, saying that it only sells cars and televisions and does not provide technology and capital to them, but this criticism…indicates their expectation." – Hiroshi Ōta, the Japanese ambassador to the Kingdom of Saudi Arabia (1996)[725]

"For one, it [Petro Rabigh] brings added value to our hydrocarbon resources by producing refined products of high-quality. It will also produce a series of petrochemical products, which will support downstream projects. Thirdly, Petro Rabigh is seen as a precedent for constructive operations between countries." – Ali Al-Nuaimi, the oil and mineral resources minister of Saudi Arabia (2009)[726]

"I feel very happy and proud to have driven today a vehicle that is made in Saudi Arabia…This is a proud moment for all of us, and it marks the beginning of a new era in the history of the Kingdom's industrialisation and diversification processes." – Tawfiq Al-Rabiah, the commerce and industry minister of Saudi Arabia (2012)[727]

[725] Ōta 1996: 53–54.
[726] "PetroRabigh Complex to Help Boost Economy", *Arab News*, 9 November 2009.
[727] "'Made in Saudi Arabia' Isuzu Truck Makes History", *Arab News*, 13 December 2012.

In response to the changes in and surrounding Saudi Arabia, Japan's relations with Saudi Arabia have significantly changed in the past three decades. While the 1970s saw the rapid development of bilateral industrial relations, the development markedly slowed down in the 1980s. This stagnation was prolonged, lasting into the 1990s. It took nearly two decades for the two states to reinvigorate their industrial and technological ties. In the 2000s, a new current in Japan's industrial investment in Saudi Arabia began to appear. The new investments have been occurring in both petrochemical and new downstream manufacturing industries. In addition, the Saudi state began to request from Japanese investors greater contributions to the development of HRD institutions in Saudi Arabia.

7.1. The 1980s: The Beginning of the Long Stagnation

The development of Saudi–Japanese industrial ties, which reached their apex in the early 1980s with the opening of two joint-venture petrochemical plants, the Ar-Razi and the SHARQ, began to lose their momentum thereafter. As discussed in Chapter 6, this slowdown partly owed to the halt of industrial expansion in Saudi Arabia due to the collapse of oil prices and the Saudi state's prioritisation of security over development because of the rising regional insecurity caused by the Iran-Iraq War.

Those two changes, nevertheless, significantly affected Japan's behaviour as well. On one hand, the oil glut enabled Japanese downstream oil companies to buy low-cost crude in international markets, making them less reliant on the purchase contract with Gulf

NOCs. This declined the priority of energy security in Japanese politics. On the other hand, the rising insecurity in the Gulf region, and the damage caused by it to some Japanese investors, created what can be called "Gulfophobia" among Japanese industrialists who came to avoid the Gulf region in their global investment strategy and invest elsewhere.

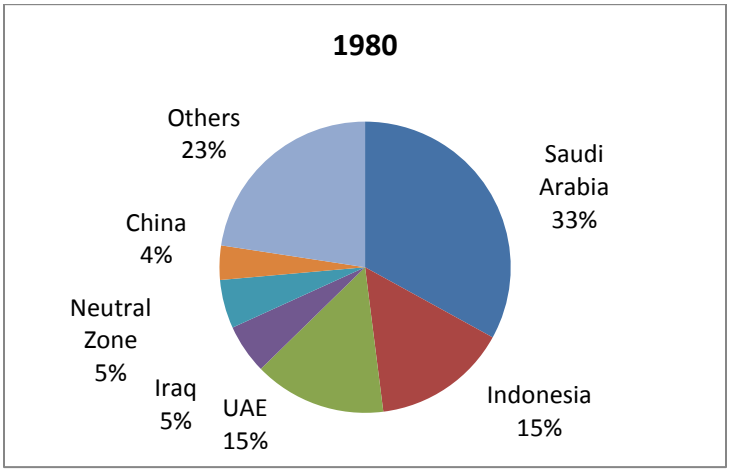
The Oil Glut

The availability of more oil in the world resulted in diversification of the sources of Japan's oil imports, clearly reducing an incentive for Tokyo to practise techno-diplomacy towards Gulf states aimed at securing the supply of oil in return. Non-OPEC sources, which accounted for only 13.8% of Japan's total oil imports in 1980, almost doubled in a decade to 22.0% in 1990. In particular, Japan increased the import of oil from China and Mexico, which accounted for 6.5% and 3.7% of its total oil imports respectively in 1990. In addition, diversification occurred within the OPEC sources as well. The share of Saudi Arabia in Japan's total oil imports declined from 33.0% to 19.5% between 1980 and 1990, while that of the UAE and Qatar increased from 14.7% to 21.4% and from 3.5% to 6.0% respectively in the same period. The share of Oman also rose from 3.5% to 6.4% (See Graph 7.1.).

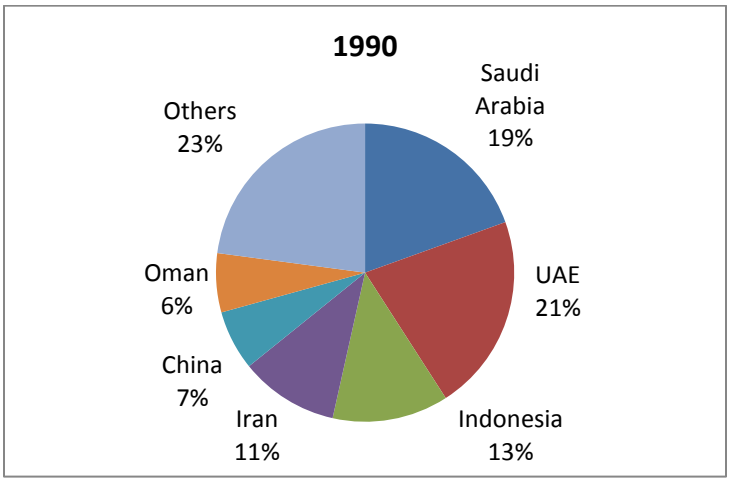
In addition, Japan's energy mix itself began being diversified away from oil as well. In the 1980s, Japan began to rely more on nuclear energy. Before the First Oil Crisis in 1973 when oil was cheap, nuclear energy was not considered as an economical means of power generation. There were only five nuclear plants in Japan in 1970 whose power

generation capacity was only 4.5 gigawatts (GW), or 1.5% of Japan's total power supply. However, the high oil prices in the 1970s made nuclear energy attractive for Japanese policymakers. Thus, substantial investments in the construction of nuclear plants followed in the 1980s and the 1990s. The number of nuclear plants in Japan increased ten-fold to 50 in 1999 which supplied 315.9GW, or 34.3% of Japan's total power supply.[728] Accordingly, the focus of Japan's resource diplomacy shifted to from the import of oil to that of uranium.[729] Even AOC launched a project for exploring uranium in Sub-Saharan Africa in addition to its oil production in Khafji – although the project came to be halted due to the fall of uranium prices following the Three Mile Island Incident in the US.[730]

Graph 7.1.: The Sources of Japan's Oil Imports, 1980 and 1990



[728] Denki jigyō rengōkai tōkei iinkai 2005: 42–43.
[729] Yamaoka 2013.
[730] Shoji 2007: 69–86.



Source: Ministry of Economy, Trade and Industry, Japan

The Insecurity in the Gulf Region

In addition, the rising insecurity in the Gulf region caused by a series of events, such as Iran's Islamic Revolution (1979), the Iran–Iraq War (1980–88), and the Gulf Crisis/War (1990–91) increased the perceived political risk in Gulf countries and made Japanese private firms more hesitant about making investments in this region. In particular, the incident involving the Iran–Japan Petrochemical Company (IJPC: イラン日本石油化学) had a decisive impact on the minds of Japanese industrialists who had been considering extending their businesses to the Gulf region. The IJPC was a petrochemical joint venture equally owned by Iran's state-owned National Petrochemical Company and a Japanese consortium led by Mitsui & Co. (三井物産), one of the major *zaibatsu* conglomerates. The IJPC was created in 1973 when Iran was still under the rule of a pro-Western Shah.

However, when the construction of the plant was near completion, the Islamic Revolution took place. Due to the uncertainty caused by the revolution, the Japanese consortium was reluctant to continue its investment in the IJPC. Nevertheless, Tokyo, hoping to maintain a friendly relationship with Tehran for the supply of oil, persuaded the consortium to continue the investment by offering the project funding and earmarking it as a "national project" (just as in the case of SHARQ and Ar-Razi in Saudi Arabia). Nevertheless, in the ensuing Iran–Iraq War, the plant became a target for the Iraqi army as a way for Baghdad to put diplomatic pressure on Tokyo. Being unable to continue the construction, the Japanese consortium finally withdrew from the project in 1981, being subject to a settlement fee worth ¥130 billion ($900 million) imposed by the Iranian government.[731]

Certainly, industrial activities in Saudi Arabia, including the two Japanese petrochemical projects, continued safe regardless of the conflicts. Nevertheless, many firms, having witnessed the swift deterioration of security in the region after 1979, did not rule out the possibility of spill-over of the conflicts to the kingdom. In addition, the delay in payments in many infrastructure projects caused by the decline in oil prices created financial troubles to Japanese construction and engineering companies involved in those projects, giving a bad impression of the Saudi economy to the Japanese business circle.[732]

In addition, the Gulf Crisis/War in 1990 and 1991 further intimidated Japanese industrialists. Following the Iraqi invasion of Kuwait, over 400 Japanese working in Iraq and Kuwait were taken hostage by Iraq. They were deployed as a "human shield" at military and governmental facilities in Iraq in order to prevent possible attacks by the

[731] Takahashi 1995.
[732] Roundtable 1998: 29; Ōta 1996; Niblock 2007: 94.

coalition forces on those facilities (those hostages were finally released in December 1990).[733] In January 1991, the Iraqi army also attacked the city of Khafji where AOC was producing oil. AOC's staffs had evacuated the city before the attack, but the city became a battlefield between the Iraqi army and the coalition forces which led to the destruction of the city's infrastructure.[734] These incidents caused a "Gulfophobia" among Japanese industrialists, imprinting on their minds the high security risk of the Gulf region.[735] The rising insecurity in the Gulf region offered opportunities for arms-exporting states such as the UK, France, and China (as discussed in Chapter 8) to improve relations with Saudi Arabia through arms transfer.[736] However, Japan, being a "merchant state" which self-prohibited arms-exports, did not have that option in its diplomacy.[737]

7.2. The 1990s: The AOC Affair

As the Gulf War ended, Saudi policymakers began to turn their attention back to development. In order to reinvigorate the country's industrial diversification, Saudi Arabia again began actively seeking industrial FDI. However, the memories of the IJPC incident and the Gulf Crisis/War still haunted Japanese industrialists' perceptions of the Gulf region. In addition, Japan's economy entered a long downturn following the collapse of its

[733] Katakura 1994.
[734] Shoji 2007: 170–171.
[735] Roundtable 1998: 29.
[736] Nonneman 2001.
[737] Amaya 1989; Takahashi 1995: 107.

investment bubble collapsed in February 1991. As a result, a number of Japanese firms began restructuring their business. Many readjusted their global strategy, investing their limited capital intensively in Southeast Asian markets which were experiencing high growths at that time. This led to the further marginalisation of the Gulf region in the global strategy of many Japanese firms.

Saudi policymakers grew frustrated with Japanese firms' indifference to the Saudi market. They felt that the level of Japanese investments in Saudi Arabia were not commensurate with the size of the world's second largest economy. Because of the two mega petrochemical projects, Japan's FDI stock in Saudi Arabia at the end of 1991 – at $1.36 billion – was, in fact, the second largest after that of the US ($1.51 billion). However, in terms of the number of projects Japan lagged far behind Western countries. There were only five Japanese projects in Saudi Arabia in 1991, in comparison to 62 American projects, 30 British projects, and 25 German projects. Accordingly, the number of Saudi nationals employed by Japanese firms in Saudi Arabia was only 2,032. This was larger than the UK's 931, but smaller than Germany's 2,464, and was dwarfed by the US's 8,800.[738] In addition to petrochemical projects, Western firms had invested in a number of small and medium-sized projects as well. Saudi policymakers came to criticise Japanese businesses as only selling their products such as cars and TVs in the Saudi markets and not being willing to transfer capital and technology to Saudi industrialists.[739]

In November 1994, ministers of the GCC headed by the Saudi minister of industry and electricity Abdulaziz Al-Zamil visited Tokyo to attend an economic cooperation

[738] Kandil 2006: 48.
[739] Ōta 1996: 53.

conference. The ministers urged Japanese policymakers to take appropriate actions to promote Japanese FDI in the GCC markets.[740] Al-Zamil expressed his deep frustration with the paucity of Japanese FDI in Saudi Arabia:[741]

> "Although our [Saudi–Japanese] business dialogue meetings lasted for ten years, no new joint ventures with Japan were established. It is not 'crazy' for Saudis to be angry by this fact. There are many new joint projects with Europeans and Americans. It is only the Japanese who do not invest in our country."

In fact, Japanese policymakers were keen on reinvigorating Japan's industrial ties with Saudi Arabia in the 1990s. Their enthusiasm was driven by the AOC affair: the oil concession granted to AOC four decades before was to expire in 2000, and Japanese policymakers wished to renew the concession for another few decades. As discussed in Chapter 4, AOC's oil production in the city of Khafji survived nationalisation in the 1970s, and the amount of oil produced by AOC had reached around 300,000 bpd, or 5% of Japan's total oil imports.[742] The MITI–AOC coalition was reinforced again for this purpose. In 1991, Keiichi Konaga (小長啓一), a former vice minister of the MITI, became a CEO of AOC. In cooperation with his old office, Konaga created a working group for negotiating with the Saudi state.[743]

[740] Saudi Cultural Attaché Tokyo 2010: 171.
[741] Kandil 2006: 48.
[742] Ministry of International Trade and Industry, Japan, various years.
[743] Shoji 2007: 182–183.

On the other hand, Riyadh used this affair as an instrument for demanding Japanese industrial FDI in the kingdom. It implied that the renewal of AOC's concession would be a quid pro quo for Japan's greater industrial and technological cooperation.[744] Responding to the demand by Riyadh, Tokyo supported AOC's negotiations by developing institutional frameworks for enhancing communication between Japanese and Saudi industrialists. In April 1993, the Japan International Development Organisation (JAIDO: 日本国際協力機構) opened an office in Jeddah (it moved to Riyadh in October 1996). JAIDO, which existed between 1989 and 2002, was an organisation co-funded by the Japanese state and private firms for the purpose of contributing to industrialisation in developing countries by promoting Japanese FDI to them.[745] Likewise, in October 1994, the Japan External Trade Organisation (JETRO: 日本貿易振興機構), a governmental organisation for promoting Japanese firms' business activities in foreign markets, opened its office in Riyadh. Moreover, in May 1995, the Organisation for the Promotion of Japanese Investment in Saudi Arabia (OPJI: サウディアラビア投資促進機構) was created by a joint initiative of JCCME and the Keidanren, the largest business lobby in Japan.[746] Through these new institutional frameworks, Japanese policymakers expected that more Japanese firms would find investment opportunities in Saudi Arabia.

JAIDO itself created a company to encourage investment in GCC countries as well. The company, the GCC–Japan Industrial Investment Company (GCC–J: GCC 日本産業投

[744] Shoji 2007: 179; Endo 2001: 272–273.
[745] A former JAIDO official, interviewed by author, Tokyo, June 2012.
[746] Muto n.d.

資株式会社), was established in February 1996, responding to GCC ministers' request that Japan sets up a fund supporting Japanese FDI in GCC countries. The GCC–J recruited Japanese firms willing to invest in the GCC countries and provided them with financial assistance.[747] Its efforts resulted in two projects in Saudi Arabia: one in the pharmaceutical sector and the other in textile industry.[748] However, this number was still far behind the expectations of Saudi policymakers. As the time limit for the expiration of AOC's concession drew closer, Japanese policymakers further increased the level of political support to AOC. In November 1997, the Prime Minister Ryutaro Hashimoto (橋本龍太郎) visited Saudi Arabia with a delegation of 110 Japanese business-people.[749] In Riyadh, Hashimoto proclaimed the "Comprehensive Partnership towards the Twenty-First Century" (21 世紀に向けた包括的パートナーシップ) with Saudi Arabia, emphasising the need for a greater level of cooperation in HRD, investment and joint ventures, science and technology, and other fields. In return, Crown Prince Abdullah paid a visit to Tokyo in return in October 1998 and signed the "Saudi–Japanese Cooperation Agenda" (日サ協力アジェンダ) to put these cooperation items into action. Nevertheless, these political efforts did not lead to an immediate increase of Japanese FDI in Saudi Arabia. In spite of the Japanese state's efforts to promote Japanese FDI in Saudi Arabia, Japanese private firms

[747] Keidanren. "JAIDO suishin anken wo nintei", 22 February 1996, http://www.keidanren.or.jp/japanese/journal/CLIP/clip0028/cli008.html [accessed 1 October 2014].
[748] Hiroomi Makimura, a former JAIDO official, interviewed by author, Tokyo, June 2012.
[749] Saudi Cultural Attaché Tokyo 2010: 172.

were not greatly interested in investing in the Saudi market at that time, preferring growing ASEAN markets and the emerging Chinese market.

Witnessing Japanese firms' reluctance to invest in Saudi Arabia, Riyadh finally limited its demand in the negotiations to a single issue. It requested AOC the construction and operation of a railway which would link the phosphate mine in the Northern Borders Province and Jubail as a condition for renewing the concession. It was estimated that the construction of this proposed 1,400 km-long railway would cost $2 billion. Since the size of the investment was beyond the financial capacity of AOC, the company sought governmental assistance.[750] Tokyo instead suggested to Riyadh the provision of loans for the construction of a proposed railway which was combined with further promotion of Japanese investment in Saudi Arabia. [751] However, Saudi policymakers, already dissatisfied with the record of limited Japanese FDI throughout the 1990s, refused that proposal, and AOC's concession was lost in February 2000.[752]

The reason why Japanese policymakers could not gain public support for the construction and operation of the railway proposed by Riyadh was mainly attributable to the situation in the global oil industry at that time. In the 1990s, the global oil industry was still in the two decades-long oil glut. In fact, the negotiations took place at a very bad time for Japanese policymakers. In June 1998, the price of WTI hit the bottom at below $12 per barrel due to the recession caused by the Asian Financial Crisis (1997-98). In addition, as crude oil is traded globally in US dollars, the strong Japanese yen against US dollars at that

[750] Shoji 2007: 184–185.
[751] Endo 2001: 268–269.
[752] Kandil 2006: 48–49.

time further reduced the cost of Japan's oil imports. In such a situation, a slogan "a drop of oil was as essential as a drop of blood" which had been repeatedly spoken in the 1950s and the 1970s in the Japanese society was no longer present. Oil was considered by most of Japanese industrialists as having ceased to be a strategic commodity and become a normal commodity that could be easily purchased in the market. In August 1999, the MITI itself decided to abandon its 1.2 million bpd target of "self-developed crude oil" (自主開発原油), crude oil produced by Japanese firms abroad.[753] Against such a backdrop, energy nationalists' insistence on the renewal of AOC's concession even at the expense of large public spending appeared irrational, both within the government and to the public.[754] In addition, although AOC's oil production accounted for 5% of Japan's total oil imports, the loss of the concession was highly unlikely to trigger an immediate energy crisis in Japan. The loss of AOC's concession would only mean a change in the supplier of oil from AOC to Saudi Aramco. In such a situation, the Japanese state's logic of relating AOC's concession to the country's energy security did not sound highly persuasive. Many private firms perceived the affair only to be a matter involving one private firm, AOC, rather than the national economy.[755]

After all, the AOC affair revealed that Japan's techno-diplomacy towards Saudi Arabia is powerless without the participation of private firms. In hindsight, AOC was quite unlucky in terms of the bad timing of the negotiation. As discussed in the following section,

[753] Shoji 2007: 186; Agency for Natural Resources and Energy 2005.
[754] Waki 2002: 286–289.
[755] Anonymous, interviewed by author.

Japanese industrial FDIs in Saudi Arabia began to increase in the 2000s, only few years after the expiration of AOC's concession. Indeed, Konaga later recalled:[756]

> "It may not be appropriate to talk about 'if', but…the deal [for renewing the concession] could have been made at once, if there had been a project of Sumitomo Chemical at the time of our negotiation."

What Konaga refers to as "a project of Sumitomo Chemical" is a mega petrochemical joint venture agreed between Saudi Aramco and Japan's Sumitomo Chemical in August 2005 (discussed in the following section). If the deal existed in the late 1990s, the MITI–AOC coalition could possibly have used it in a strategic manner as a quid pro quo for the renewal of the concession, Konaga regrets.

7.3. The 2000s: New Currents of Japanese FDI in Saudi Arabia

Although Tokyo was not able to achieve the goal of renewing the AOC concession, the institutional frameworks for promoting Japanese FDI in Saudi Arabia developed for that purpose remained and came to be utilised in the 2000s. In the 2000s, as market fundamentals surrounding Japan and Saudi Arabia significantly changed, many Japanese firms began investing in Saudi Arabia, making use of those frameworks. As discussed in

[756] Yamaoka 2013: 360.

Chapter 6, Saudi Arabia's investment climate began to improve due to its accession to the WTO in December 2005. In addition, new oil windfalls in the 2000s supported the second industrial expansion in Saudi Arabia, creating investment opportunities for Japanese firms in both the petrochemical industry and newly-emerging manufacturing industries.

On the other hand, Tokyo's commitment to techno-diplomacy towards Saudi Arabia was maintained at a high level. In the 2000s, the global oil industry underwent another shift. The shift placed energy security on the front-burner of Japanese policymaking again. In the early 2000s, the two decades-long oil glut finally came to an end. Due to the rise of emerging economies, particularly China, the global demand for oil began to rapidly rise, and the supply–demand gap again became narrow. Japanese oil firms now found themselves facing competition in securing a stable supply of oil, not only with Western IOCs, but also with Asian NOCs, such as China's Sinopec and Petro China, India's ONGC, and South Korea's KNOC. In addition, the simultaneous increase in fluidity in the Western capital market resulted in the influx of speculative money into the future market. This resulted in the skyrocketing price of WTI, which reached over $142 per barrel in July 2008. These changes put Japan's resource nationalists under the spotlight again. In 2006, the Ministry of Economy, Trade and Industry (METI: 経済産業省; renamed from the former MITI in 2001) reversed its previous policy of abandoning the target of "self-developed crude oil", resetting the target of achieving "self-developed crude oil" at 40% of the country's total oil imports (around 1.6 million bpd) by 2030.[757] Although it was unlikely that Saudi Arabia would grant foreign firms concessions for oil production again, Saudi

[757] Ministry of Economy, Trade and Industry, Japan 2006.

Arabia which was supplying nearly one-third of Japan's total oil imports came to increase its strategic importance to Tokyo again.

Market-Driven Japanese Investments in the Saudi Petrochemical Industry

In the 2000s, Japanese investments in the Saudi petrochemical industry began to take place again. The main feature of these new investments was that, unlike the previous projects in the late 1970s and the early 1980s (Ar-Razi and SHARQ), they were primarily market-driven and not directly supported by the Japanese state. This was because of two changes. First, by the 2000s, the Saudi petrochemical industry had proved its competitiveness so that the perceived risk for Japanese firms of investing in the Saudi petrochemical industry was significantly reduced from the period of the first industrial expansion. Second, the landscape of the global petrochemical industry had changed, and Japanese producers had come to face stronger competition from emerging Asian producers. Thus, relocation of production from Japan to places with a cost advantage became a favourable strategy for Japanese producers. In this regard, Saudi Arabia which had an overwhelming feedstock advantage in the time of high oil prices emerged as one of the most attractive destinations for relocation.

SABIC continued to be a recipient for Japanese petrochemical investments in the kingdom. Having established technologies to produce basic petrochemical products, the company began to seek more sophisticated technologies for the production of advanced

chemicals through further joint ventures and acquisitions. In recent years, two new joint venture projects were agreed between SABIC and Japanese firms. First, SABIC, Asahi Kasei Chemicals (旭化成ケミカルズ), and Mitsubishi Corporation agreed in April 2011 on the creation of a joint venture for producing 200,000 tpa of acrylonitrile (AN) and 40,000 tpa of Sodium Cyanide (NaCN). The joint venture, named Saudi Japanese Acrylonitrile Company (SHROUQ), is 50% owned by SABIC and the remaining 50% by the Japanese firms.[758] Second, SABIC agreed with Mitsubishi Rayon (三菱レイヨン), an affiliate of Mitsubishi Chemical, in May 2011 to set up an equally-owned joint venture for producing 250,000 tpa of Methyl Methacrylate (MMA) Monomer and 40,000 tpa of Poly Methyl Methacrylate (PMMA).[759] The plant will be built in Jubail by Taiwan's CTCI and is planned to come on stream in 2017.[760] In addition, SABIC took over a R&D centre in Mooka (真岡) in Tochigi Prefecture in Japan from GE Plastics upon the acquisition of that company in 2007.

In addition to SABIC, new entrants in the Saudi petrochemical industry have attracted Japanese investments too. In 2003, Sipchem, a private firm affiliated to Zamil Group, and Japan–Arabia Methanol Company (JAMC: 日本アラビアメタノール), a consortium led by Mitsui, created a joint venture for setting up a plant in Jubail with the capacity of producing 1 million tpa of methanol. The project was 65% owned by Sipchem

[758] Saudi Arabian Basic Industries Corporation, "SABIC, Asahi and Mitsubishi Form a Strategic Partnership for First Acrylonitrile and Sodium Cyanide Projects in the Middle East", 27 April 2011.
[759] Saudi Arabian Basic Industries Corporation, "SABIC and Mitsubishi Rayon Announce New Joint Venture to Build MMA and PMMA Plant in Saudi Arabia", 31 May 2011.
[760] "SABIC, Mitsubishi Rayon Sign SR4.5bn Deal for 2 Plants", *Arab News*, 28 June 2014.

and 35% by JAMC. This investment was a symbolic move in the Japanese petrochemical industry since Mitsui had suffered from the IJPC incident two decades before. Before the investment took place, there had still been a lingering scepticism within the company about making a return to the Gulf region. However, facing hard competition in Asia, the management of Mitsui made the decision, considering that the profits would outweigh the risks.[761] IMC has shown a high rate of Saudisation, which currently stands at 79%.[762] Although the Japanese investors have not been directly involved in the process of training, the experiences of SABIC in training have been well-imported to Sipchem as the company is chaired by a former industry minister Abdulaziz Al-Zamil, who had been a vice chairman of SABIC between 1976 and 1983 and directly supervised the development of SABIC's several first-generation projects including the Ar-Razi.[763] Some of IMC's workers were former members of SABIC, with which the company now competes in recruiting qualified national workers graduating from technical colleges in the kingdom.

Following Sipchem, Saudi Aramco agreed with Sumitomo Chemical (住友化学) in August 2005 to set up an equally-owned petrochemical joint venture in Rabigh. The project was named Rabigh Refining and Petrochemical Company, known as Petro Rabigh (بترو رابغ). The plant came on stream in November 2009 with a production capacity of 1.3 million tpa of ethylene, 900,000 tpa of propylene, and other petrochemical products. It is one of the world's largest refinery-integrated petrochemical complexes. Saudi Aramco, running oil and gas businesses in the kingdom, directly supplies the feedstock to its

[761] Japan–Arabia Methanol Company, interviewed by author, Tokyo, June 2014.
[762] JAMC, interviewed by author, Tokyo, June 2014.
[763] Abdulaziz Al-Zamil, a chairman of Sipchem, interviewed by author, Riyadh, May 2014.

petrochemical productions (while SABIC and other private producers buy the feedstock from Saudi Aramco). Currently, Phase II of the project, for producing a variety of derivative products, is under development, being planned to come on stream in 2016. Petro Rabigh was the very first petrochemical project of Saudi Aramco. Saudi Aramco first negotiated with Dow Chemical from the US for a joint venture project. However, the aggravated Saudi–American relations following the 9/11 incident caused Dow to finally withdraw from the negotiation.[764]

Petro Rabigh has already achieved an 85% Saudisation rate among its 2,200 employees.[765] Some of its workers were former workers of SABIC. The company runs the Rabigh Plastic Technical Centre which offers training to its employees. Due to the inexperience of national workers, some difficulties occurred in the first few years, making the operation unstable. However, the operation seems to be eventually stabilised and the project's profitability began to improve in 2014.[766]

Through Petro Rabigh, Saudi Aramco aims to develop downstream industries as well. For this purpose, an industrial park called Rabigh PlusTech Park (previously called Rabigh Conversion Industrial Park) is currently under development in the area adjacent to the site of the petrochemical production. The park currently invites private plastic firms both from Saudi Arabia and abroad to engage in the production of plastic products by processing petrochemical products supplied by Petro Rabigh at discounted prices. It will be the first industrial park in the kingdom developed by a firm, not by the government.

[764] Petro Rabigh, interviewed by author, Jeddah, May 2014.
[765] Ibid.
[766] "Higan tassei ni muke 'shokō': Sumitomo Kagaku no 'Rābigu mondai'", *Diamond*, 26 August 2014.

Together with Yanbu in the Madinah Province (which is 200 km north of Rabigh) and the King Abdullah Economic City (which is located 60 km south of Rabigh) the park is to form an extended industrial zone on the Red Sea coast.[767]

Sumitomo Chemical's investment in Saudi Arabia was considered by many Japanese industrialists as giving a new direction to the Japanese economy. In the 2000s, due to the development of IT and global supply-chains, the relocation of production from OECD economies to cost-advantaged emerging economies became a new norm of the global economy. However, because of the long economic downturn, many Japanese firms had become risk-averse and inward-looking. By the late 2000s, there emerged a self-criticism that Japan had failed in fully exploiting the fruit of globalisation as its private firms had failed to capture opportunities in emerging economies outside East Asia and Southeast Asia. Thus, Petro Rabigh was seen by many as a model case of a Japanese firm's forward-looking investment in the new market. Praise of Petro Rabigh led to the selection of Hiromasa Yonekura (米倉弘昌), a chairman of Sumitomo Chemical, as chairman of the Keidanren, the largest business lobby in Japan, in January 2010. This was an impressive incident given the size of Sumitomo Chemical, which was much smaller than the firms who had previously sent chairmen to the Keidanren.[768] In addition, although Petro Rabigh was a market-driven investment rather than the outcome of Tokyo's techno-diplomacy, it became a new symbol of Saudi–Japanese relationship.[769]

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[767] Ibid.
[768] "Keidanren Kaichō ni Yonekura-shi: Gurōbaru-ka ga Kimete", *Nihon Keizai Shinbun*, 24 January 2010.
[769] "PetroRabigh Complex to Help Boost Economy", *Arab News*, 9 November 2009.

Beyond Petrochemicals: The State's Facilitation Role

Nevertheless, outside the petrochemical industry, the hand of the state has still been required for promoting Japanese FDI in the kingdom. As discussed in Chapter 6, Saudi Arabia is currently targeting five industrial sectors for development (automotive, minerals and metals processing, solar energy, plastics and packaging, and home appliances) and attempts to attract FDI to build the production base through the National Industrial Clusters Development Programme (NICDP). While development of these industries offers investment opportunities for Japanese firms, due to "market failure", particularly the insufficiency in information and the uncertainty arising from the absence of previous production, it has been difficult for Japanese firms to fully exploit the potential. Thus, the Japanese state keeps playing the role of a facilitator for Japanese investment in Saudi Arabia.

In the 2000s, Tokyo further reinforced the institutional framework for promoting Japanese FDIs in the kingdom. In January 2001, Japan's foreign minister Yōhei Kōno (河野洋平), at the time of his visits to four GCC states (Qatar, the UAE, Kuwait, and Saudi Arabia), announced a new concept in Japan's Middle East policy. The concept was named a "new initiative for building multi-layered relationships with the Gulf states" (湾岸諸国との重層的関係に向けた新構想). Also known as the "Kōno Initiative" (河野イニシアチブ), it called for multifaceted cooperative relations between Japan and the Gulf states in addition to energy trade and investment. Industrial and technological cooperation has been

counted as an indispensable layer, and new layers such as water, policy dialogues, and intellectual networks were added to the agenda of bilateral cooperation.[770] In April 2006, Tokyo and Riyadh issued a joint statement entitled "Towards the building of strategic and multi-layered partnership between Japan and the Kingdom of Saudi Arabia" (日本・サウジアラビア王国間の戦略的・重層的パートナーシップ構築に向けて). Crown Prince Sultan's visit to Tokyo for this joint statement took place 46 years after his first visit in 1960 when the Sultan–Kosaka agreement had been made.[771] In return, Prime Minister Shinzō Abe (安倍晋三) visited Riyadh in May 2007. Abe's visit was accompanied by the 180-member business delegation, the largest ever delegation in the history of Saudi–Japanese relations.[772]

Following Abe's visit, the two states launched the Japan–Saudi Arabia Industrial Cooperation Taskforce (日サ産業協力タスクフォース: henceforth "Taskforce"). The Taskforce was placed within JCCME and took over the role of promoting Japanese investments in Saudi Arabia from OPIJ. In coordination with Saudi Arabia's NICDP, it began to promote Japanese industrial FDI in emerging manufacturing industries in the kingdom.[773] The Taskforce's activities were to inform Japanese private firms about the fundamentals in the Saudi market; to invite those interested in the Saudi market to its business missions to Saudi Arabia where they meet Saudi industrialists and investors with the assistance of local chambers and commerce and industry; to provide them with a

[770] Ministry of Foreign Affairs, Japan 2002.
[771] Ministry of Foreign Affairs, Japan 2007.
[772] Ministry of Foreign Affairs, Japan 2008.
[773] Japan–Saudi Arabia Cooperation Taskforce, http://www.saudiarabia-jccme.jp/ [accessed 1 October 2014].

support office in Riyadh (which is located in the building the Council of Saudi Chambers); and to conduct surveys with them regarding the investment climate in Saudi Arabia for particular industrial sectors. By the end of 2013, around 30 Japanese private firms had participated in the Taskforce's business missions; 15 firms among them had used the support office in Riyadh; and 10 firms had partaken in the joint survey. As a result, eight cases of Japanese FDI have materialised so far in multiple manufacturing sectors such as cables, plastics, steel products, truck assembly, and components for water desalination facilities (see Table 7.1.). Under the kingdom's Saudisation policy, those projects have been expected to include the transfer of knowledge, skills, and technologies to their Saudi national workers.

In terms of capital, these investments were not as large as the petrochemical ones. In addition, their Saudi counterparts were not SOEs but smaller private firms. However, those investments have been welcomed by Saudi policymakers since, as discussed in Chapter 6, the development of industrial SMEs for job creation is one of the tasks prioritised by Saudi policymakers today. The Taskforce has also assisted the Saudi state to develop a SME policy. In cooperation with the Small and Medium Enterprise Agency (中小企業庁) of Japan (under the METI), the Taskforce began conducting a survey of SMEs in Saudi Arabia in October 2008 to investigate the potential for, and the barriers facing, them. The survey was concluded in 2010 and the Taskforce submitted a proposal for the development of a SME policy to the Ministry of Commerce and Industry of Saudi Arabia. The proposal included advices such as the promotion of start-ups, improvement of managerial and technological capabilities of SMEs, empowerment of finance for SMEs, cooperation

between SMEs and large firms, and the creation of a centralised governmental agency for a SME policy.[774] In May 2014, the two states agreed to further institutionalise SME policy cooperation with a memorandum of understanding signed by Japan's Organisation for Small and Medium Enterprises and Regional Innovation (SME Support: 中小企業基盤整備機構) and Saudi Arabia's National Entrepreneurship Institute (معهد ريادة الأعمال الوطني).[775]

Table 7.1.: Japanese FDI in Saudi Arabia Facilitated by JCCME Japan–Saudi Arabia Industrial Cooperation Task Force

No.	Japanese Firm	Saudi Counterparts	Product	Capital	Location	Year*
1	J-Power Systems (75%); Marubeni Metals (25%)	N/A	Undersea electricity Cable	¥1.5 billion	Al-Khobar	2009
2	Kubota (51%)	Tharawat Development Company (49%)	Steel castings	¥1.5 billion	Dammam	2009
3	Toyobo (36.1%); Itochu (14.9%)	Arabian Company for Water & Power Development (49%)	Reverse osmosis membrane elements for seawater desalination	¥200 million (initial) ¥700 million (total)	Rabigh	2010
4	Isuzu Motors	N/A	Trucks	¥1 billion	Dammam	2011
5	Azbil (51%)	Tharawat Development Company (49%)	Control valves	¥140 million	Dammam	2012
6	Hitachi (51%)	Walid Ahmad Juffali Company (49%)	Gas insulated switch	¥1.1 billion	Jeddah	2014
7	Toray (50%)	Abunayyan Holding Company (50%)	Reverse osmosis membrane elements for seawater desalination	¥1.2 billion	Dammam	2014
8	Toho Titanium (35%)	Cristal (32.5%); Tasnee (32.5%)	Titanium sponge	¥44 billion	Yanbu	2014

*Year in which agreement was signed
Source: JCCME Japan–Saudi Arabia Industrial Cooperation Task Force

[774] Ministry of Economy, Trade and Industry, Japan 2010.
[775] "Top Saudi Business Executives Seek Advanced Japanese Ties", *Arab News*, 9 May 2014.

Japan and the Emerging Automotive Industry in Saudi Arabia

As discussed in Chapter 6, among the five sectors targeted by the NICDP, the development of the auto industry is central to Saudi policymakers' latest efforts for industrial diversification. As Japan is one of the leading auto manufacturing countries in the world, Saudi policymakers have had high expectations about Japanese FDI in this sector. Saudis have been familiar with Japanese autos as well, in particular Toyota ones, which had a 38% share in the Saudi market in 2013.[776] Other major Japanese auto firms such as Nissan, Honda, Mitsubishi, and Mazda also sell their vehicles in the kingdom through local agencies. Those Japanese firms, led by Toyota, have cooperated with the TVTC and run a technical college for training Saudi auto mechanics since September 2002. The college was named the Saudi–Japanese Automobile High Institute (SJAHI: المعهد العالي السعودي الياباني للسيارات) and built in the suburb of Jeddah.

So far, major Japanese auto firms have not expressed a strong desire to invest in Saudi Arabia for production. Nevertheless, following some precedent investments by Western auto firms, Isuzu Motors (いすゞ自動車), the oldest and largest Japanese truck company which has an over 80% share in the truck market in Saudi Arabia, opened a truck assembly plant in Dammam in December 2012. The plant's production capacity is 600 units per year and Isuzu is reportedly targeting an increase of production to 25,000 units per year by 2017.[777] 60% of the assembled trucks are planned to be sold in Saudi Arabia

[776] "Saudis 'Bought 750,000 Cars in 2013'", *Arab News*, 10 January 2014.
[777] "'Made in Saudi Arabia' Isuzu Truck Makes History", *Arab News*, 13 December 2012.

replacing the imports and the remaining 40% exported to the Gulf and Middle Eastern markets. Saudi policymakers expect that the investment by Isuzu will lead to the transfer of knowledge, skills, and technologies to Saudi workers and prepare them for the production of vehicles and components on their own in the foreseeable future.[778] In fact, the plant has already achieved an over 30% Saudisation rate among its 100-plus employees (as at June 2014), many of whom are returnees from Japan who have studied at Japanese universities under the King Abdullah Scholarship Programme.[779] Nevertheless, most Saudi workers are in the administrative section of the plant, with the factory floor largely staffed by expat technicians. Recruitment of qualified national technicians is an impending task for Isuzu since more Saudi workers will need to be deployed on the factory floor in order to increase the size of production while maintaining the Saudisation rate required by the Nitaqat policy. For this purpose, Isuzu currently funds students at the SJAHI in order to employ them on the factory floor in the coming years.

Cooperation for HRD

As Saudi policymakers have attempted to empower the country's HRD institutions for enhancing the employability of Saudi nationals in industry, they have come to express their stronger desire for Japan's cooperation in HRD as well. The desire has been expressed

[778] "Isuzu Training to put Saudi Work Force in Drivers' Seat", *Arab News*, 27 February 2013.
[779] Isuzu Motors, interviewed by author, Tokyo, June 2014.

towards multiple actors from Japan, including the state, private firms, and HRD institutions. As for inter-state cooperation, the GOTEVOT (a precursor of the TVTC) and the JICA had been in cooperation since the 1980s for creating and running an industrial high school, the RTEI (as discussed in Chapter 4). The JICA supported the operation of the RTEI until 1996 through sending around 200 Japanese experts to the school and receiving the school's 30 staff members in Japan for training.[780] In 1997, the school was merged into the Riyadh College of Technology (RCT: الكلية التقنية بالرياض) as its department of electronics, to which the JICA's assistance continued. Appreciating the performance of the RETI and the RCT, the GOTEVOT requested the JICA to extend its cooperation programme to its newly created scheme of training technical educators. Thus, between 1998 and 2009, the JICA supported GOTEVOT/TVTC in running courses for technical trainers at the Electronics Education Development Centre (EEDC) in Riyadh, and its successor institution, the Development and Training Centre (DTC).

However, the JICA ended its three decades-long operation in Saudi Arabia in 2010 as Saudi Arabia, with its GDP per capita exceeding $20,000, was removed from the list of ODA recipients of the OECD's Development Assistance Committee. Its cooperation with the DTC, which was converted into the Technical Trainers College (TTC: كلية المدربين التقنيين) in 2010, was taken over by the GTZ (now the GIZ) from Germany. However, even after 2010, the JICA remained a window for Saudi–Japanese technical cooperation projects, which would be implemented largely at the expense of the Saudi state. The new

[780] Japan International Cooperation Agency, "History of Cooperation", http://www.jica.go.jp/egypt/english/activities/saudi_history.html [accessed 1 December 2014].

cooperation scheme, launched at the time of the Japanese Prime Minister Abe's visit to Saudi Arabia in May 2013, is called "cost-sharing technological cooperation" and covers diverse fields, such as water management, energy conservation, primary education, and training for public administration.[781]

As the JICA's full operation in Saudi Arabia ended, the main actor of the bilateral cooperation for HRD shifted from the Japanese state to Japanese private firms. This shift had already begun to take place at the beginning of the 2000s with the opening of the SJAHI in 2002. The creation of the SJAHI was led by JAIDO, with the assistance of the JICA, the Japan Automobile Manufacturers Association (JAMA: 日本自動車工業会), and Japanese auto firms in operation in Saudi Arabia. Those firms have also assisted the college by sending experts for developing curriculum.[782] By 2013, over 2,000 Saudis had already graduated from the college and found jobs in the auto industry in the kingdom.[783] The majority of the college's graduates have found jobs at Abdul Lateef Jameel (ALJ: مجموعة عبد اللطيف جميل), an agent for Toyota, with the remaining also employed by other auto agents for importing Japanese vehicles.

The SJAHI was followed by the opening of two similar technical colleges supported by Japanese firms: the Higher Institute for Plastic Fabrication (HIPF: المعهد العالي للصناعات البلاستيكية) in Riyadh, which opened in 2007 and has been assisted by SPDC, a Japanese

[781] Japan International Cooperation Agency, "Chūtō chiiki ni okeru 'kosuto shea gijutsu kyōryoku' shien kakudai he", 7 May 2013.
[782] Hiroomi Makimura, a former staff member of JAIDO, interviewed by author, Tokyo, June 2012; Saudi–Japanese Automobile High Institute, interviewed by author, Jeddah, May 2014.
[783] "206 Graduate from SJAHI Auto Institute", *Arab News*, 31 May 2013.

consortium operating a joint venture SHARQ with SABIC; and the Saudi Electronics and Home Appliances Institute (SEHAI: المعهد السعودي للإلكترونيات والأجهزة المنزلية) in Dir'iya (near Riyadh), which opened in 2009, and has been assisted by ten Japanese home appliance firms selling products in Saudi Arabia and the Nippon Engineering College (日本工学院).

The third actor for the bilateral cooperation for HRD is Japanese universities. Since the 1970s, a handful of Saudi students have studied at universities in Japan under scholarships provided by the Saudi government, AOC, or other sources. The creation of the King Abdullah Scholarship Programme in 2005 led to a great increase in the number of Saudi students studying at universities in Japan. By the end of 2013, over 500 Saudi students had been sent to universities in Japan under the programme to study economy- and industry-related subjects.[784] Some Japanese policymakers have expressed their concern about Saudi–Japanese HRD cooperation. Since the way Japanese schools teach students is unique and different from schools in the West not only in terms of language but also in terms of culture, they have been concerned as to whether Saudi graduates from Japanese schools will be able to show high employability in the Saudi labour market where Western influence on firms is strong.[785] So far, the increasing Japanese industrial investments in Saudi Arabia have maintained a good connectivity between education and the labour market. The presence of a pool of young Saudi nationals who are fluent in the Japanese language and have a good understanding of Japanese culture have been invaluable human resources for Japanese firms investing in Saudi Arabia as well, particularly under the

[784] "Job Fair Held for Saudi Students in Japan", *The Japan Times*, 16 March 2013.
[785] A Japanese bureaucrat (anonymous), interviewed by author.

current Saudisation policy. For some firms, recruitment of qualified Saudi nationals from the local labour market would have been much more difficult without them.

In order to enhance this connectivity, the embassy of Saudi Arabia in Tokyo has hosted a job fair for Saudi graduates from Japanese universities too. In 2013, 31 Japanese firms participated in the job fair.[786] While the vast majority of Saudi graduates return to the kingdom immediately after completion of their degree, some Saudis have continued their stay in Japan, working for Japanese firms. While such a move used to be seen as a brain drain and was not welcomed by Saudi policymakers, today it is seen by them more favourably, since building knowledge, skills, experiences, and networks by working in Japan for some time will enable them to add more value to the Saudi economy in the future.[787] It will create opportunities for "brain tapping" rather than a "brain drain", just as the Chinese diaspora in the US has added great value to the Chinese economy in the past decade. Furthermore, some Saudi and Japanese universities have entered cooperation in R&D in recent years in multiple fields such as IT (between University of Tokyo and Umm al-Qura University) and solar-powered drone (between Tokai University and King Abdulaziz University).[788]

Both Saudi and Japanese parties involved in the process of education and training of young Saudi nationals in the Japanese way expect, in the long run, that those nationals will form a force transforming the kingdom from the current rentier society to an industrial society in a gradual manner. What they wish to achieve through the process in the end is a

[786] "Job Fair Held for Saudi Students in Japan", *The Japan Times*, 16 March 2013.
[787] Saudi Cultural Attaché Tokyo, interviewed by author, Tokyo, July 2014.
[788] Ibid.

(re)creation of Saudi citizens' positive attitude towards technical and industrial professions. In this sense, the transfer of knowledge and skills is considered not enough: that of an "attitude" conducive to industrial activities such as discipline, diligence, organisation, and above all a love of uniform for breaking the mould of the thawb syndrome, now appears on the frontier of Saudi–Japanese HRD cooperation.[789]

Some say that, only with those K.S.A. (knowledge, skills, and attitude) being transferred to the kingdom in a full set, a genuine change in the K.S.A. (Kingdom of Saudi Arabia) in the twenty-first century will be possible. The challenge is certainly not easy as the Japanese and the Saudis grow up and socialise in the different cultural contexts, but more stakeholders now work on that transferring and translating process bridging the two societies and cultures.[790]

Saudi–Japanese Relations in the Age of the Second Oil Glut

Finally, how would the current "second oil glut", in particular the rise of shale production in the US, possibly affect Saudi–Japanese industrial relations? The shale production in the US, which has been rapidly increasing in recent years, is likely to make the US more self-

[789] Saudi Electronics and Home Appliances Institute, interviewed by author, Dir'iya, February 2013; Higher Institute for Plastics Fabrication, interviewed by author, Riyadh, March 2013.
[790] Yamada 2015b; One of the major concepts related to Japan's work culture which is gaining popularity in Saudi Arabia today is *kaizen*. Kaizen, meaning "continuous improvement" (التطوير المستمر), is a management philosophy practised by some major Japanese industrial firms, such as Toyota.

reliant in energy in the coming years. The US oil imports peaked in 2005 at 10.1 million bpd and have continued to decline since then, down to 7.7 million bpd in 2013.[791] This may lead to the situation that more oil which used to be destined for the US will flow into Asia. For instance, the US used to be a major buyer of Nigerian oil, but US imports from Nigeria declined to almost nil in recent years, with India overtaking the US as the main importer of Nigerian oil.[792]

In the coming years, more Latin American oil may flow into Asia as well. This may give Japan opportunities to further diversify its oil import sources, resulting in a decline in the strategic importance of Saudi Arabia to Japan's energy security. However, even if this is the case, Saudi Arabia, which currently supplies around one-third of Japan's total oil imports, is likely to remain the major source of oil for Japan. Just as in the first oil glut period in the 1980s and the 1990s, Japan cannot forgo Saudi Arabia and other Gulf countries even if they may no longer be centre stage.[793]

Conclusion of Chapter 7

As the global oil industry entered the oil glut period in the 1980s, Japan's techno-diplomacy towards Saudi Arabia, based on the principle of the technology-for-oil exchange, became inactive as well. Japan began to diversify its source of oil supply and also to

[791] US Energy Information Administration, "US Imports of Crude Oil", http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=MCRIMUS1&f=A [accessed 1 October 2014].
[792] "India Overtakes US as Nigeria's Biggest Oil Importer", *BBC*, 19 June 2014.
[793] Robins 1989: 133.

develop alternative energies – in particular, nuclear. In addition, the rising insecurity in the Gulf region, and the IJPC incident in particular, made Japanese private firms more reluctant to invest in the Gulf region.

Following the end of the Gulf War, Saudi Arabia attempted to reinvigorate industrial diversification. Saudi policymakers, being frustrated with insufficient Japanese investments in the kingdom, demanded Tokyo's greater cooperation in the development of the Saudi economy. Tokyo, too, was keen on promoting Japanese industrial investments in Saudi Arabia in the 1990s, in order to renew the concession held by AOC, which was supplying around 5% of Japan's total oil imports and was to expire in 2000. In order to promote Japanese investments in Saudi Arabia, Tokyo created a variety of new institutional frameworks, such as the Organisation for the Promotion of Japanese Investment in Saudi Arabia, the GCC–Japan Industrial Investment Company, and the Saudi–Japanese Cooperation Agenda. However, substantial investments did not follow. In the 1990s, a Gulf-phobia still haunted Japanese industrialists, and private firms, in the economic downturn after the collapse of the bubble economy, were in the process of restructuring their businesses, shifting the focus of investment mainly to Southeast Asian economies.

The new institutional frameworks, however, led to an increase in Japanese industrial investments in the 2000s, as the investment climate in Saudi Arabia improved and a new oil boom created a number of new investment opportunities. Even after the loss of AOC's concession, Tokyo continued to be committed to techno-diplomacy towards Saudi Arabia because of the narrowing supply–demand gap in the global oil market and the rising oil prices. In addition, due to the intensification of competition in Asia, Japanese

petrochemical producers began to find Saudi Arabia to be an attractive destination for relocating their production, where they could enjoy an overwhelming feedstock advantage. The Japanese state also attempted to facilitate Japanese investment in emerging manufacturing industries in Saudi Arabia. The Japanese–Saudi Industrial Cooperation Taskforce, created in 2007, has cooperated with NICDP and materialised several industrial investments in Saudi Arabia by Japanese private firms. One of the major investments was Isuzu Motor's opening of a truck assembly plant in Dammam in 2012.

Japanese–Saudi cooperation in HRD has also progressed. JICA had cooperated with GOTEVOT/TVTC in technical education in Saudi Arabia until 2009. In addition, Japanese private firms investing in Saudi Arabia today run three technical training schools in the kingdom, in the fields of auto engineering, plastics fabrication, and home appliances. Furthermore, over 500 Saudi students have been sent to Japan to study at Japanese universities under the King Abdullah Scholarship Programme. Many of these young Saudis who have received a Japanese-style education have been employed by Japanese firms that are investing in Saudi Arabia: they have become, today, favourite choices for Japanese firms in the kingdom, which have to satisfy the Saudisation quotas.

Chapter 8

Crouching Dragon, Hidden Tiger:

Taiwan, China, and Saudi Arabia

"The investment [in Jubail Fertiliser] served a diplomatic purpose: to cement Taiwan's relations with Saudi Arabia…The outfit's main goal at that time was to assist Saudi Arabia to develop its chemical industry….Jubail [Fertiliser] is now a golden goose to us." – Joseph Lin, the general manager of the Investment Department, Taiwan Fertiliser (2013)[794]

"The Saudi Arabia–Taiwan relationship is distinctively built on common values and shared interests…I would like to take this opportunity to emphasize the importance of Taiwan's extended cooperation in technical education, vocational training and technology." – Hazzaa M. Hasher, the Representative of the Saudi Arabian Trade Office in Taipei (2011)[795]

[794] Huang, Joyce. "Looking East," *Taiwan Review,* 1 July 2013.
[795] Hasher, Hazzaa M. "Saudi Arabia–Taiwan Relationship Built on Common Values," *The China Post,* 22 September 2011.

As discussed in Chapter 5, Saudi–Taiwanese industrial and technological cooperation had reached its pinnacle by 1983, in spite of the growing international isolation of Taiwan after its ostracism from the UN in 1971. In terms of diplomatic recognition, Riyadh was Taipei's last bastion in the Arab world. However, despite the high level of cooperation between Saudi Arabia and Taiwan, Beijing began to increasing exchanges with Riyadh, finally succeeding in winning diplomatic recognition by Riyadh in July 1990, at the expense of the formal Saudi–Taiwanese relationship. This compelled Taiwan to reformulate its relationship with Saudi Arabia. Surprisingly, Taiwan continued its techno-diplomacy towards Saudi Arabia in spite of the loss of the supreme objective of its techno-diplomacy in the previous decades, maintenance of diplomatic recognition. Instead of halting the practice of techno-diplomacy, Taipei established its new, practical goal: maintenance and development of substantial bilateral economic relations. In fact, in the current century, under the stable informal bilateral relationship, Saudi–Taiwanese industrial and technological ties were further reinforced and diversified, in spite of the fact that Taiwan remains low-key in the kingdom.

8.1. "Formosa Betrayed": Saudi Arabia's Normalisation with the PRC

In fact, Saudi Arabia's normalisation with the PRC on 22 July 1990, which put an end to the 44 year-long formal Saudi–ROC relationship was a bolt out of the blue for the Taiwanese leadership. The Taiwanese leadership had been optimistic about continuation of

Taiwan's formal relationship with Saudi Arabia, which had been founded upon firm economic cooperation and was far more beneficial to development in Saudi Arabia than what the still-underdeveloped PRC could offer. In fact, just one year before the normalisation, in February 1989, a delegation of Taiwanese SOEs and private firms visited Saudi Arabia to discuss new industrial projects in fields such as steel and electronics.[796] However, Beijing's rapprochement with Riyadh had been more effective than the Taiwanese leadership had suspected, who had believed that the Saudi–PRC relationship would remain informal.

Certainly, achieving diplomatic normalisation with Riyadh was not an easy task for Beijing given the decade-long absence of any substantial bilateral relation after the beginning of the Cultural Revolution in 1966. The change began to take place in 1976: in September that year, Mao Zedong died and a reformist Deng Xiaoping (邓小平) grasped power in the Communist Party. During the Cultural Revolution, Deng was seen by Maoists as a "capitalist roader" (走资派) and was side-lined in the party. While Deng initiated domestic economic reform under the slogan of the "four modernisations" (四个现代化), he also shifted the strategy of the PRC's foreign policy from one that was ideology-driven to one marked by an economy-first pragmatism.[797] Beijing halted its support to Marxist forces around the world, including the Marxist rebel in Oman and Communist South Yemen. As the PRC ceased to be a threat to stability in the Arabian Peninsula, newly-independent Gulf

[796] Fan 1989: 3.
[797] Shichor 2006.

monarchies normalised with the PRC one by one: Oman in 1978; the UAE in 1984; Qatar in 1988; and Bahrain in 1989.[798]

Beijing also resumed informal exchanges with Riyadh, which had been suspended for over a decade. It again began to practise hajj diplomacy. As the Cultural Revolution ended the IAC was restored and mosques and Muslim schools in China reopened. The pilgrimage by Chinese Muslims to Mecca was resumed in 1979.[799] Subsequently, commercial exchanges between Chinese Muslim merchants and Saudi merchants also commenced. However, until the mid-1980s, the PRC's relations with Saudi Arabia were still limited and were not comparable with the ROC's relations with Saudi Arabia, which were based on diverse economic reciprocity.

There is a quasi-consensus in the literature on Saudi–Chinese relations that a "trump card" played by Beijing in order to change the mind of King Fahd was the clandestine sale of Chinese missiles to Saudi Arabia carried out in March 1988.[800] Following this event, Beijing and Riyadh rapidly improved their relations, deciding to mutually create representative offices in Beijing and Riyadh in November 1988 – which was a great leap forward towards normalisation. The backdrop to this was the rising insecurity in the Gulf region in the 1980s. The prolonged Iran–Iraq War put security to the fore in Saudi policymaking, making King Fahd desire to build up arms in the kingdom. However, Saudi

[798] The UAE maintained close relations with Taiwan even after its normalisation with China, hosting the Taiwanese President Lee Teng-hui in April 1995 and his successor Chen Shui-bian in September/October 2005, in spite of China's fierce opposition (Susan Yu. "Lee Calls Trip to United Arab Emirates, Jordan a Triumph" *Taiwan Review*, 14 April 1995; "UAE 'Given Guns' for Chen Visit" *Taipei Times*, 9 October 2005).
[799] Bin Huwaidin 2002: 219–225.
[800] For China's missile sale to Saudi Arabia, see Shichor 1989.

Arabia's request for the sale of F-15 fighter jets and other ground-strike equipment was declined by the US Reagan administration.[801] This caused Saudi Arabia to seek arms from other states. On the one hand, it opened a window of opportunity for the UK and France to improve their relations with Saudi Arabia through arms transfer.[802] On the other hand, it also provided a window of opportunity to the PRC. In July 1985, Prince Bandar bin Sultan, a Saudi ambassador to the US, secretly visited Beijing to initiate back-door negotiations. Eventually, Beijing sold CSS-2 ballistic missiles, "East Wind 3" (东风三号), to Riyadh.

Before the missile sale, Riyadh reiterated to Beijing its willingness to maintain recognition of Taipei, suggesting a possible double-recognition of Taipei and Beijing.[803] Riyadh did not promise normalisation in advance to Beijing as a quid pro quo for the sale of the missiles.[804] However, Beijing certainly won the heart and mind of King Fahd. Capitalising on its missile technology, Beijing further offered Riyadh the launch of the Arab Satellite Communications Organisations' third satellite, the Arabsat 1-C, using its "Long March 3" (长征三号) rocket. The Arab Satellite Communications Organisation (Arabsat) is a Riyadh-based pan-Arab consortium for operating satellites. It was created in 1976, partly as Saudi Arabia's initiative for obtaining leadership in respect of scientific and technological progress among Arab states (as discussed in Chapter 3). On the other hand, the PRC, since Deng Xiaoping's declaration of the four modernisations in 1978, had

[801] Bin Huwaidin 2002: 227.
[802] Nonnneman 2001.
[803] Shichor 1989: 21.
[804] Ottaway 2008: 70.

invested in the development of dual-use technologies, including rockets/missiles.[805] In February 1990, the PRC and Saudi Arabia announced that they had entered into negotiations for the rocket launch although the deal was eventually cancelled in 1991 due to a "licensing problem".[806]

In this way, the PRC greatly benefited from the change of priorities in the Saudi leadership in the 1980s. Just as in the case of Japan discussed in Chapter 4, Taiwan's techno-diplomacy towards Saudi Arabia, which was based on the transfer of civilian industrial technology, declined in effectiveness once development was less prioritised by the Saudi leadership. Witnessing the rapid rapprochement between the PRC and Saudi Arabia after the missile deal, some Taiwanese intellectuals called for the necessity of further strengthening the Saudi–Taiwanese bilateral industrial cooperation, by creating more joint venture projects like Jubail Fertiliser.[807] The insufficiency of Taipei's utility to Riyadh was also addressed in hindsight by others after the loss of the recognition.[808] However, given the rise of security as a priority in Saudi policymaking in the mid- and late 1980s, it is questionable if further industrial cooperation could have deterred Riyadh from normalising relations with Beijing. Beijing was able to supply what Riyadh was in need of at precisely the right time, and this is what changed the game.

[805] Another major dual-use technology China developed was nuclear technology. It was speculated in the 1990s that China and Saudi Arabia had entered into negotiations for the transfer of nuclear technology although this was denied by both states (Al-Huwaidin 2002: 233).
[806] Anonymous 1990: 23; Anderson 2002: 62.
[807] Li 1989: 12.
[808] Ting 1992: 51.

Nevertheless, this thesis also emphasises the less known fact that the PRC's utility to development in Saudi Arabia was also rising rapidly in the 1980s. The opening of China's vast domestic market under the reforms by Deng was a timely blessing for SABIC. China imported 320,000 tons of Saudi petrochemical products in 1987, which accounted for 10% of Saudi Arabia's total petrochemical exports. In its annual report, SABIC regarded China as a country where "strong market growth for SABIC" was occurring.[809] The rising demand in the Chinese market saved SABIC from falling into an immediate failure, since the largest bottleneck for its petrochemical production had been the absence of a market when markets in OECD counties were already experiencing oversupply.[810] In addition, although China was still a net exporter of oil at that time, it also impressed on Saudi policymakers the great potential of the Chinese market – where over a billion consumers lived – as a market for Saudi oil in the future (China eventually became a net importer of crude oil in 1994).[811] Although it was not a decisive factor, the opening of the Chinese market must have lubricated Saudi–Chinese relations, in parallel with the missile deal in the late 1980s. This point is particularly important since China's greatest utility to development in Saudi Arabia today still remains its vast domestic market, particularly for oil and petrochemical products, while China still lacks advanced industrial technologies that are transferrable to Saudi industrialists. In some senses, its domestic market may be a unique and exceptionally powerful source of China's soft power towards both with industrialised or industrialising states in the world.

[809] Saudi Arabian Basic Industries Corporation 1988: 22.
[810] "Oversupply in Petrochemicals," *The New York Times*, 2 April 1983.
[811] Li 1989: 9.

8.2. Reformulating the Bilateral Relationship: More Continuity than Change

The severance of the formal diplomatic relationship necessitated the reformulation by Taipei and Riyadh of their relations on an informal basis. The Gulf Crisis, which occurred only ten days after the Saudi–Chinese normalisation, delayed talks, but the two states finally signed a memorandum of understanding which redefined their bilateral relationship in January 1991. In fact, surprisingly, what followed was more continuity than change. Some assistance programmes were halted and minister-level interstate exchange came to an end.[812] However, the two Taiwanese diplomatic outposts in Saudi Arabia (an embassy in Riyadh and a consulate in Jeddah) were preserved, being reorganised as "Taipei Economic and Cultural Offices" (台北經濟文化代表處). Likewise, the Saudi embassy in Taipei was renamed the "Saudi Arabian Trade Office" (المكتب التجاري العربي السعودي). Their usual businesses continued in spite of the absence of the formal diplomatic relationship.

Taiwan's technical assistance to Saudi Arabia in the fields of agriculture and aquaculture continued under its International Economic Cooperation Development Fund (IECDF: 海外經濟合作發展基金管理委員會) and its successor organisation the International Cooperation and Development Fund (ICDF: 國際合作發展基金會). In 1995, the IECDF launched an assistance programme for culturing prawns at the Fish Farming Centre in Jeddah, helping the Saudi prawn industry gain competitiveness until today.[813]

[812] A Taiwanese diplomat, interviewed by author, Taipei, April 2012.
[813] The Fish Farming Centre was created in 1980 by the Saudi Ministry of Agriculture and Water (Wang and Ye 2003: 63–74).

(Today, prawns are one of the top export items of the food industry in Saudi Arabia).[814] In addition, joint economic and technological cooperation conferences were resumed in 1992 after only a one-year break.[815] In 1993, Taiwan Fertiliser decided to add to the production capacity of Jubail Fertiliser 150,000 tpa of 2-ethylhexanol (2EH) and 50,000 tpa of dioctyl phthalate (DOP).[816] To discuss further industrial investment cooperation, Taiwan's vice economy minister Li Shu-jiu (李樹久) led a business delegation to Saudi Arabia in 1995.[817]

This continuity in Taiwan's industrial cooperation and its willingness to further develop the cooperation seems to contradict the theoretical assumptions underlying the concept of techno-diplomacy. As discussed in Chapter 5, the supreme objective of Taiwan's techno-diplomacy towards Saudi Arabia since the mid-1960s had been the maintenance of Saudi Arabia's diplomatic recognition of the ROC. Thus, it would have been more natural, from this perspective, if Taiwan had cancelled its techno-diplomacy towards Saudi Arabia following Saudi Arabia's normalisation with the PRC. Nevertheless, in contrast to this theoretical assumption, Taiwan continued to practise techno-diplomacy towards Saudi Arabia in the 1990s despite the absence of the original motivation for doing so.

Why did Taiwan continue to practise techno-diplomacy towards Saudi Arabia? This thesis considers that, following the severance of the formal relationship, both Taiwan and Saudi Arabia adapted to the new domestic and international environments, and that this

[814] "Healthy (Saudi) Prawns Are Happy Prawns," *Arab News*, 2 June 2010.
[815] Li 1996: 4–5.
[816] Ministry of Economic Affairs, ROC 1996: 18–20.
[817] Ministry of Economic Affairs, ROC 1995: 51–52.

adaptation generated between the two states a different type of demand–supply dynamic to that which had existed in the previous decade. In the new dynamic, the two states re-established their mutual perception of the importance of the bilateral relationship, even in the absence of a formal diplomatic relationship. Arguably, this created a new objective for Taiwan's techno-diplomacy towards Saudi Arabia after 1990.

Lee Teng-hui's "Pragmatic Diplomacy"

By the time Taiwan lost the recognition of Saudi Arabia, Taiwan's international isolation had become irreversible. The number of states that had recognised the ROC at the end of 1990 was only 28, in comparison with 139 states that had recognised the PRC. In addition, following the end of the Cold War, over 30 more states normalised their relations with the PRC (at the end of 2013, the number of states that had recognised the ROC and the PRC was 22 and 172, respectively). The PRC's victory in the competition between the two Chinese states regarding international legitimacy had already been clear, and it was highly unlikely that many states that had recognised Beijing would switch back to Taipei, at least in the foreseeable future. In such an environment, the best Taipei could do was not to attempt to gain "more", but to prevent itself from having "less" – preserving the status quo as much as possible.

This realistic approach to diplomacy was embodied in the "pragmatic diplomacy" (務實外交) formulated by Taiwan's President Lee Teng-hui (李登輝) (1988–2000). Lee

succeeded Chiang Ching-kuo (蔣經國), the son of Chiang Kai-shek who had succeeded his father and ruled Taiwan from 1975 to 1988, upon his death. Lee had been the Vice President under him and became Taiwan's first democratically-elected President in May 1990. Under the Lee administration, Taipei abandoned its traditional one China policy in diplomacy and embraced the idea of "two Chinas" (兩個中國), beginning to accept other states' dual recognition of the ROC and the PRC.[818] In relation to those states that had recognised the PRC, Taipei proactively attempted to reinforce substantial economic relations with them on an informal basis.[819]

In practice, pragmatic diplomacy accelerated the de-politicisation of Taiwan's foreign relations. A greater emphasis came to be placed on economic affairs, and the Ministry of Economic Affairs began to play a greater role in Taiwan's informal diplomacy. Taking advantage of its more advanced economy, Taiwan attempted to forge stronger trade and investment ties with states around the world. By doing so, Taipei attempted to ensure its *de facto* (rather than *de jure*) survival in the international community. To some extent, this was the re-emphasis of what Taipei had tacitly pursued with major states (such as the

[818] Cao 2006: 25; Granada became the first state to recognise both the ROC and the PRC at the same time (Mengin 1997: 240); The reader should not confuse the one China policy with the "1992 Consensus", in which the ROC and the PRC agreed on that there was only one Chinese state encompassing both mainland China and Taiwan, meaning that the ROC still claims the territory of mainland China

[819] Taiwanese scholars like Bau Conghe (包宗和), an IR scholar at the National Taiwan University, had conceptualised in 1987 a diplomatic strategy similar to Lee's pragmatic diplomacy, using his own terms "flexible diplomacy" (彈性外交) and "substantial diplomacy" (實質外交) (Pao 1987: 12–18).

US and Japan) since the 1970s. Françoise Mengin, a French specialist on Taiwan and China, even suggested: [820]

> "This unofficial pattern of external relations could suggest that the lack of diplomatic ties is insignificant. In turn, this could lead to a questioning of the utility of the diplomatic institution".

The focus of Lee's pragmatic diplomacy was Southeast Asia, a region whose economy was rapidly growing in the 1990s. Under the name of *Sudpolitik* (南進政策), Taipei began to promote trade and investment relations with ASEAN states in December 1993.[821] In doing so, the Taiwan External Trade Development Council (TAITRA: 對外貿易發展協會), jointly sponsored by the Ministry of Economic Affairs and Taiwanese business associations, played an important role. TAITRA, in collaboration with relevant authorities of other states, has supported Taiwanese firms operating abroad through various activities, such as data collection, marketing, and advisory services.[822]

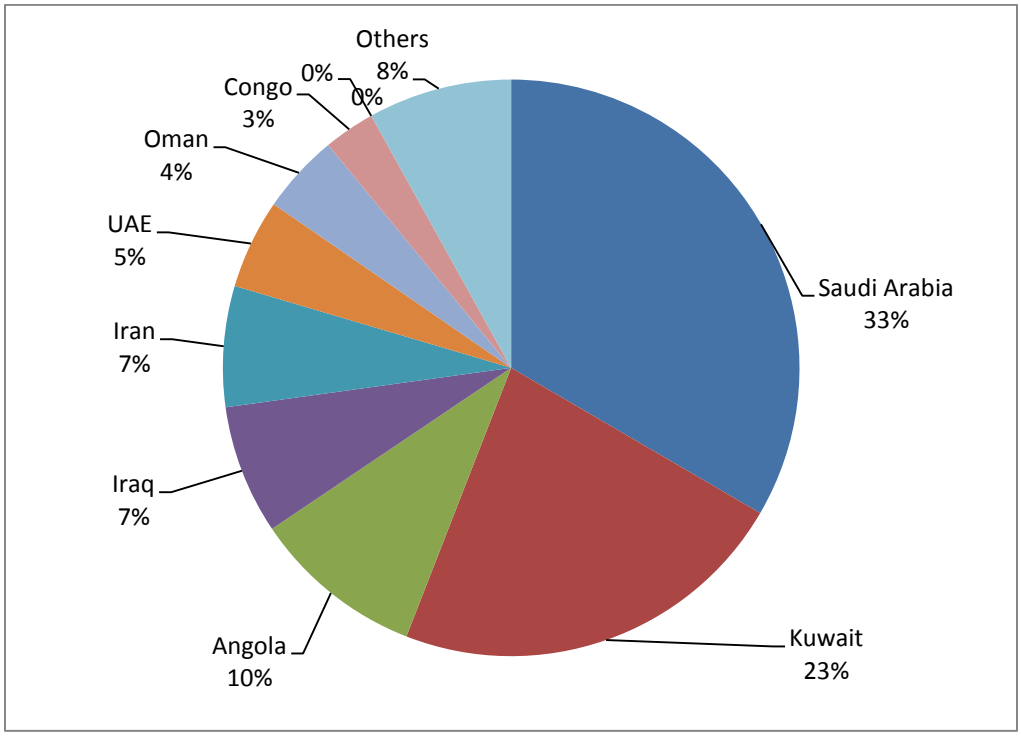
In comparison with Southeast Asian states, Saudi Arabia was considered by many Taiwanese firms to be less attractive as an investment destination. However, by the 1990s, Saudi Arabia had become an indispensable state for Taiwan's energy security. On average, the supply of oil from Saudi Arabia accounted for one-third of Taiwan's total oil imports.

[820] Mengin 1997: 234.
[821] Chan 1996: 97.
[822] Taiwan External Trade Development Council, http://www.taitra.org.tw/ [accessed 1 October 2014].

For instance, in 1992, Taiwan imported 456,000 barrels per day (bpd) of crude oil. Saudi Arabia was the largest supplier, providing 175,000 bpd, or 38% of the total, dwarfing others (such as Oman which supplied 53,000 bpd, or 11% of the total, and Iran which supplied 43,000 bpd, or 9% of the total).[823] More recently, in 2010 Saudi Arabia supplied 33% of Taiwan's total oil imports (see Graph 8.1.). Taiwan imported more Saudi oil than China until 2002.[824] In this sense, it can be said that Taiwan's techno-diplomacy towards Saudi Arabia has been undergoing a process of "Japanisation" – as the technology-for-oil exchange has been becoming a more salient feature of Taiwanese–Saudi bilateral relations too. However, because Taiwan has never experienced the level of energy-related turmoil experienced by Japan during the First Oil Crisis in 1973, energy security has not been as strongly addressed in Taiwan's Gulf diplomacy as it is in Japan's.

[823] Bureau of Energy, Ministry of Economic Affairs, ROC, "Yuanyu chinkou laiyuan", http://web3.moeaboe.gov.tw/ECW/populace/web_book/WebReports.aspx?book=M_CH&menu_id=142 [accessed 1 October 2014].
[824] Saudi Arabian Monetary Agency, various years.

Graph 8.1.: Taiwan's Oil Imports by Source (2010)



Source: Bureau of Energy, Ministry of Economic Affairs,

The Republic of China

For Saudi Arabia too, there was a reason for maintaining the status quo of its relations with Taiwan after 1990. As a decade of insecurity in the Gulf region finally settled down with the end of the Gulf War, the financially-squeezed Saudi Arabia turned its attention back to development, attempting to reinvigorate economic diversification by inviting industrial FDI and promoting the transfer of knowledge, skills, and technologies from foreign investors to national workers. In this sense, Taiwan was still an attractive partner for Saudi Arabia, in spite of the absence of a formal diplomatic relationship. By

1990, Taiwan had become a political dwarf in the international community, but it had at the same time grown into an economic giant in the global economy.[825] In the 1990s, Taiwan continued to upgrade its manufacturing sectors with more sophisticated industrial technology, such as semiconductors and flat panel displays.[826] Its growth continued, not even being substantially affected by the Asian Financial Crisis (1997–98).[827]

Saudi policymakers expected that Taiwanese firms, rapidly climbing up the technological ladder, would add value to Saudi industry through FDI. Thus, in October 2000, the two states signed a memorandum of understanding in relation to the promotion and protection of foreign investment.[828] However, just as in the case of Japan discussed in Chapter 7, little substantial industrial investments by Taiwanese firms took place in Saudi Arabia in the 1990s. This was mainly because of the uncompetitive investment climate in Saudi Arabia. Taiwanese firms preferred to invest in other places with more attractive investment climates, such as OECD and ASEAN countries.[829] However, the lack of Taiwanese investment in Saudi Arabia was also because of the change taking place in Taiwan: the progress of democratisation-cum-privatisation in the 1990s. While in the past, just as the case of Jubail Fertiliser, the Taiwanese state could direct SOEs to invest in Saudi Arabia by fiat, privatisation of these SOEs meant that now the market dynamics mattered more in regard to investment decisions (Taiwan Fertiliser, which held 50% ownership of Jubail Fertiliser, was also privatised in September 1999). The state's role changed to that of

[825] Chan 1996: 96.
[826] Greene 2008.
[827] Chu and Lee 2004: 52.
[828] Su 2002: 62.
[829] Li 1988: 3–7.

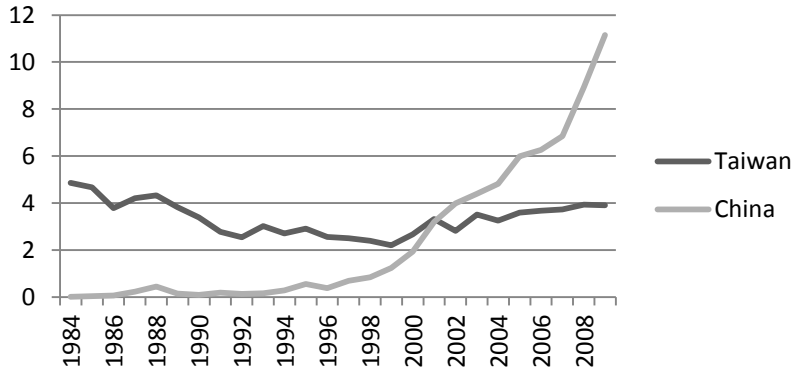
a navigator and a facilitator for Taiwanese private investments in foreign markets, represented by the TAITRA – in this sense, Taiwan underwent the process of Japanisation too.

On the other hand, Saudi Arabia's economic relations with China did not grow substantially in the 1990s either. China's transition to a market economy was still at an embryonic stage. In addition, Deng's economic reforms were interrupted by the Tiananmen incident in June 1989, and the subsequent Western sanctions imposed on China. China's economic development got on a growth track in 1992, when Deng called for growth based on a "socialist market economy" (社会主义市场经济) during his tour of southern China.[830] Saudi–Chinese economic relations eventually began to develop following Crown Prince Abdullah's visit to Beijing in 1998. In return, China's President Jiang Zemin (江泽民) (1993–2003), a successor of Deng, paid a visit to Riyadh in October 1999. At the time of Jiang's visit, China and Saudi Arabia signed the bilateral Saudi–Chinese Strategic Oil Cooperation Agreement.[831] Following this agreement, China's oil imports from Saudi Arabia began to rise in an exponential manner. After 2002, China far outweighed Taiwan in terms of oil imports from Saudi Arabia (see Graph 8.2.).

[830] "Deng Xiaoping: Leading Thinker in China's Market Economy", *Xinhua News Agency*, 12 August 2004.
[831] Yetiv and Lu 2007: 205.

Graph 8.2.: Saudi Arabia's Exports to Taiwan and China

(% of the Total Exports)



Source: Saudi Arabian Monetary Agency

8.3. Reinvigoration of Taiwanese–Saudi Economic Relations After the Mid–2000s

While Taiwanese firms had been reluctant to invest in Saudi Arabia in the 1990s, Saudi Arabia's accession to the WTO in December 2005, and its second industrial expansion supported by new oil windfalls, began to offer lucrative investment opportunities to Taiwanese firms in the late 2000s. Saudi policymakers sought Taiwan's value-added investments in diverse fields, ranging from high-tech infrastructure and petrochemical to IT and manufacturing. In March 2008, the King Abdullah Economic City invited a Taiwanese

delegation headed by the vice economic minister Hsieh Fa-dah (謝發達), urging Taiwanese firms' investment.[832]

High-Tech Infrastructure

In the field of high-tech infrastructure, Taipower, a state-owned power company which had assisted the Saudi state in the 1970s and the 1980s in building electricity infrastructure, was again called in. This time, Taipower was expected to participate in the kingdom's integrated water and power provider (IWPP) projects, which have increasingly been popular businesses in the kingdom, where rapid population growth has caused a shortage of both water and electricity. Responding to the Saudi request, the administration of the Democratic Progressive Party (DPP: 民主進步黨), led by the President Chen Shui-bian (陳水扁) (2000–2008), directed Taipower to form a consortium with Taiwan Water Corporation (台灣自來水公司), a state-owned water utility enterprise, and Taiwan Cogeneration Corporation (台灣汽電共生公司), a private firm specialising in providing cogeneration (combined heat and power) technology for enhancing energy efficiency, to bid for an IWPP project in Ras Al-Zur (رأس الزور), a new industrial city under development in the Eastern Province (in 2011 it changed its name to Ras Al-Khair (رأس الخير)).

[832] "Taiwan Invited to Head Development at King Abdullah Economic City", *Khaleej Times*, 3 March 2008.

The bid was scheduled for July 2008 but the consortium withdrew at the last minute. The reason for the withdrawal was not disclosed, but it has been suggested that the scandal related to Taiwan's relations with Papua New Guinea had an impact on the decision.[833] The scandal, involving the disappearance of $30 million in the Taiwanese state's failed attempt to "buy" the diplomatic recognition of Papua New Guinea caused public outrage and resulted in the resignation of the Foreign Minister James Huang (黃志芳) in May 2008, just before the change of administration from the DPP to the Kuomintang.[834] Saudi Arabia reportedly warned the DPP administration not to withdraw from the bid by suggesting a halt of oil exports to Taiwan might occur in the case of withdrawal (although both the Ministry of Economic Affairs and CPC (a state-owned oil company) denied this suggestion).[835] The withdrawal notwithstanding, Taipower reportedly continues to keep its eyes on the Saudi power industry.[836]

[833] "Three in for US$5.5 billion Ras Al Zour IWPP", *Infrastructure Journal*, 30 June 2008; Kuomintang, "Economics Ministry Calls a Halt to Investment Plans in Saudi Arabia Due to Papua New Guinea Scandal", 12 May 2008, http://www.kmt.org.tw/english/page.aspx?type=article&mnum=112&anum=4545 [accessed 1 October 2014].
[834] "3 Taiwan Officials Quit in Diplomatic Furor", *The New York Times*, 7 May 2008.
[835] "Saudi Arabia Threatens to Stop Oil Exports to Taiwan", *Khaleej Times*, 12 May 2008; "Saudi Arabia Will not Turn off Spigot on Crude Meant for Taiwan, CPC Says", *Taipei Times*, 13 May 2008.
[836] "Taiwan Seeks Power Industry Ventures", *Arab News*, 28 March 2014.

Petrochemical Industry

The petrochemical industry is another field where Saudi policymakers desire Taiwanese investment.[837] Just like Japanese petrochemical producers, Taiwanese producers also face tough competition from cost-advantaged Chinese and Gulf producers today. Thus, in the words of a chairman of ACS (新鼎系统), a petrochemical-related technology firm in Taiwan, Taiwanese petrochemical producers today "have little other choice than to move their operations abroad".[838] In fact, CTCI (中鼎工程), a private Taiwanese engineering and construction firm which owns 50% of ACS, has been active in the EPC business in the Saudi petrochemical industry since 2006.[839] CTCI has been awarded three EPC projects by SABIC: Saudi Kayan's new plant for producing 700,000 tpa of ethylene glycol (EG) (2006); the expansion of Ibn Rushd's aromatics production capacity from 560,000 tpa to 1.2 million tpa (2010); and new plants of the SABIC–Mitsubishi Rayon joint venture for producing 250,000 tpa of MMA monomer and 40,000 tpa of PMMA (2014).[840]

Nevertheless, there has been no new case of investing in production itself in spite of the expected profitability of such investment shown by Jubail Fertiliser. In fact, CPC's

[837] John Calabrese, "Taiwan and the Gulf: The Sky's Limit?", Middle East Institute, 18 July 2012, http://www.mei.edu/content/taiwan-and-gulf-sky's-limit [accessed 1 October 2014].
[838] A Chairman of ACS, interviewed by author, Taipei, April 2012.
[839] "Focus on Taiwan: Saudi-Taiwanese Ties Grow as New Avenues Open", *Arab News*, 19 October 2010).
[840] Joyce Huang, "Looking East", *Taiwan Review*, 1 July 2013; "Saudi SABIC Unit Awards Deals to CTCI, Sinopec", *Reuters*, 28 December 2010; "SABIC, Mitsubishi Rayon Sign SR4.5bn Deal for 2 Plants", *Arab News*, 28 June 2014.

negotiations with the Saudi counterpart for forming a joint venture reportedly failed.[841] Why? One Taiwanese diplomat provides a reason, saying that "Taiwan stands in limbo" – meaning that Taiwanese firms are no longer cost-competitive in comparison with Chinese ones, but neither are they as advanced as Western and Japanese firms in terms of technology. Capital-rich Gulf industrialists prefer Western and Japanese firms for industrial investment and let Chinese firms take low-tech projects.[842] A chairman of ACS also emphasises that Taiwanese petrochemical firms "must clearly define their competitive advantages", such as specialised technologies and human resources, in presenting their investment plans vis-à-vis their potential Saudi business partners.[843]

Emerging Manufacturing Industries

Some Taiwanese firms have found investment opportunities in Saudi Arabia's emerging downstream manufacturing industries. For instance, TECO (東元電機) established a motor plant in Dammam in January 2012, in the form of a joint venture with Al-Quraish Group and Al-Shoaibi Group, with the capacity to produce 400–600 units per year.[844] Likewise, AFTA Technology (亞而特科技) is currently finalising a plastics joint venture with Bin

[841] Tseng 2011.
[842] A Taiwanese diplomat, interviewed by author, Taipei, April 2012.
[843] A Chairman of ACS, interviewed by author, Taipei, April 2012.
[844] TECO Middle East, "Company Profile", http://teco-me.com/aboutus.htm [accessed 1 October 2014].

Taleb Group.[845] As Saudi Arabia develops labour-intensive manufacturing industries through the NICDP, more Taiwanese firms may find investment opportunities in the kingdom. Ibrahim Chao (趙錫麟), a former Taiwanese representative to Saudi Arabia (2009–2012), says that upcoming Taiwanese investments are likely to be small and medium-sized.[846] As discussed in Chapter 6, Saudi Arabia is currently attempting to empower industrial SMEs to be able to create job opportunities for young Saudi nationals. This is a development that is favourable for Taiwan, whose economy is characterised by competitive SMEs. Because of the creation of a dual economy after the arrival of the Kuomintang to Taiwan in 1949, where those from mainland China, called *waishengren* (外省人), dominated the governmental sector while local Taiwanese, called *benshengren* (本省人), sought opportunities in private entrepreneurship, the Taiwanese economy has been a unique mixture of a developmental state and an active private sector with competitive SMEs.[847] While Taiwanese firms are disadvantaged, for instance, in comparison with Korean *chaebol* firms, for large projects in which economies of scale matter, more Saudi–Taiwanese small and medium-sized joint ventures may take place in the coming years.[848]

As democratisation-cum-privatisation progressed after the 1990s, many economists have observed that Taiwan's once famous "developmental state" was significantly

[845] "Trade Delegation Promotes Taiwanese Products", *Arab News*, 11 June 2014.
[846] Makio Yamada, "Taiwan's Relations with Saudi Arabia: An Interview with Ibrahim Chao", Middle East Institute, 8 December 2014, http://www.mei.edu/content/map/taiwan's-relations-saudi-arabia-interview-ibrahim-chao [accessed 1 January 2015].
[847] Clark and Jung 2004: 139.
[848] A Taiwanese diplomat, interviewed by author, Taipei, April 2012.

eroded.[849] In addition, the DPP administration, which took power for the first time from the Kuomintang in 2000, practised a distributive economic policy without long-term economic planning, because of its desire to stay in power. Today, business lobbies are more influential in Taiwanese politics than in the past, and they often defy the Taiwanese state's economic policy. In this situation, the Taiwanese state has been in the process of a transformation from a director to a facilitator in terms of Taiwanese industrial investment abroad. In this sense, Taiwan today is more like Japan. It still does not have an institution that specialises in connecting private firms with industrial policymaking authorities in the Gulf states comparable to Japan's JCCME, but TAITRA has been strengthening its role in this regard. Having regional offices in Dubai and Kuwait, TAITRA assists Taiwanese firms that are interested in the Gulf markets through data collection, marketing, and advisory services.[850] In recent years, Taiwan and Saudi Arabia have coordinated with each other and provided firms in both countries with opportunities for collective matchmaking. For instance, a delegation comprising 18 Taiwanese firms visited Riyadh in October 2011 and had one-on-one meetings with over-100 Saudi entrepreneurs.[851]

Nevertheless, there remains a large unexploited potential in regard to Taiwanese firms' investment in Saudi Arabia. This is partly because of the strong attractiveness of the Chinese market, into which Taiwanese investments have been absorbed in recent years.[852]

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[849] Wu 2007; Chu 2011.
[850] "TAITRA Opens Trade Center in Kuwait City", *Taiwan Today*, 22 January 2013.
[851] "Taiwan's Trade Delegation Meets with Saudi Businessmen", *Arab News*, 19 October 2011.
[852] Makio Yamada, "Taiwan's Relations with Saudi Arabia: An Interview with Ibrahim Chao", Middle East Institute, 8 December 2014, http://www.mei.edu/content/map/taiwan's-relations-saudi-arabia-interview-ibrahim-chao [accessed 1 January 2015].

In 2012, Taiwanese investments in China stood at $10.9 billion, while those in other parts of the developing world were only $6.4 billion in total ($5.7 billion of which were in Southeast Asian countries).[853] Taiwanese firms, sharing the Chinese language and culture, have a great advantage vis-à-vis their foreign competitors in doing business in China. On the other hand this causes them to pay less attention to other markets. Although the famous slogan in Taiwan, "Feet on Taiwan, Eyes on the World" (立足台灣，放眼世界), has been calling for the globalisation of Taiwanese businesses, many Taiwanese firms have not yet ventured outside mainland China.

HRD

Another field where Saudi Arabia desires Taiwan's extended cooperation is HRD, comprising education, R&D, and technical training.[854] Some Saudi students study at universities in Taiwan, but the number is not comparable to those who study at universities in China under the King Abdullah Scholarship Programme (around 1,200 by 2012).[855] Bilateral cooperation has been more visible in the field of R&D, however. One of the major developments in R&D is the cooperation between the National Taiwan University (NTU:

[853] "Taiwan Investment in Mainland China Decreases" *Taiwan Today*, 22 January 2013; UNCTAD, Bilateral FDI Statistics 2014, Taiwan, http://unctad.org/en/Pages/DIAE/FDI%20Statistics/FDI-Statistics-Bilateral.aspx [accessed 1 October 2014].
[854] "Saudi Arabia–Taiwan Relationship Built on Common Values", *The China Post*, 22 September 2011.
[855] Al-Sudairi 2012: 30.

國立臺灣大學) and the KAUST. The NTU is a top-ranking university in Taiwan, scoring 142nd in the *Times Higher Education* World University Rankings for 2013–14.[856] In December 2008, the KAUST signed an agreement with the NTU for research collaboration and the exchange of scholars and students.[857] Following the agreement, the KAUST provided the NTU's New Energy Centre (新能源中心) with its Global Research Partnership Award, worth 150 million new Taiwanese dollars ($5 million), for developing solar energy technology on the condition that the Centre would assist research at the KAUST in this field in return.[858] In addition, Taiwan Fertiliser donated $50 million to the Saudi Ministry of Agriculture in September 2009, for creating a new agricultural research centre.[859] The donation was made as a quid pro quo for Saudi Arabia's extension of Taiwan Fertiliser's 50% stake in Jubail Fertiliser (which was to expire in February 2013) for another two decades, until 2033. KACST has also held joint workshops with Taiwanese research institutes, such as the Industrial Technology Research Institute (ITRI: 工業技術研

[856] Times Higher Education, "World University Rankings, 2013–2014", http://www.timeshighereducation.co.uk/world-university-rankings/2013-14/world-ranking [accessed 1 October 2014].
[857] Department of International and Cross-Strait Education, Ministry of Education, ROC, "Agreements for educational and academic exchange cooperation signed between Taiwanese and foreign schools and academic institutions (2012)", http://www.edu.tw/pages/detail.aspx?Node=2205&Page=8036&Index=4&WID=409cab38-69fe-4a61-ad3a-5d32a88deb5d [accessed 1 October 2014].
[858] National Taiwan University, "NTU's New Energy Center Won the Coveted 'Global Development Partnership' International Academic Award", 28 May 2008, http://www.ntu.edu.tw/engv4/spotlight/2008/e080528_1.html [accessed 1 October 2014].
[859] "Taifei kungtsu chuangtseng shakuo 5-chienwan meiyuan chengli nungyeh yanchiu chunghsin ping chute hetso hsu yueh-20-nien", *Nungyeh Hsinwen*, 12 October 2009.

究院) and the Institute for Information Industry (III: 資訊工業策進會), and is seeking further cooperation in industry-oriented scientific fields.[860]

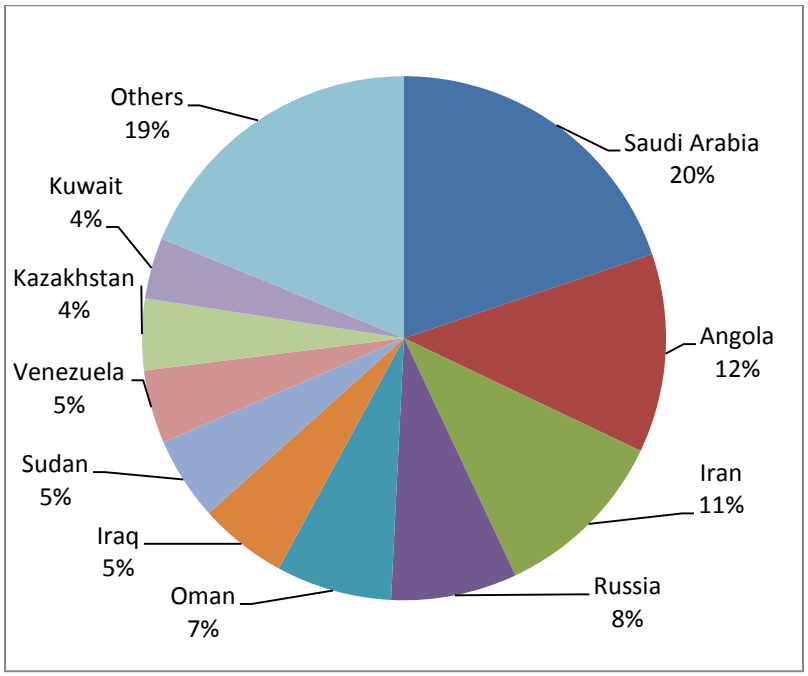
Saudi–Chinese Relations in the 2000s

On the other hand, Saudi Arabia's economic relations with China began to develop in the 2000s as well. Following the Strategic Oil Cooperation Agreement of 1999, the Saudi–Chinese energy nexus developed significantly. China's staggering economic growth made the country the world's largest importer of oil. Drawing industrial investment from OECD countries, China, in the 2000s, emerged as a "new factory of the world". One by one China's GDP surpassed that of major economies – France's in 2005, the UK's in 2006, Germany's in 2007, and Japan's in 2010 – and now is the second largest economy after the US. One of the latest predictions is that China's economy may catch up with that of the US in the mid-2020s.[861] In September 2013, China's net oil imports reached 6.3 million bpd, overtaking the US's (6.1 million bpd).[862] Oil supplied by Saudi Arabia accounts for nearly

[860] "Taiwanese Delegation Looking to Expand Business in Kuwait", *Taiwan Headlines*, 18 November 2011; KACST, "Dr. Al-Suwaiyel Inaugurates a Joint Workshop between "Science & Technology" and Taiwan Institutes", 21 October 2011. http://www.kacst.edu.sa/en/about/media/news/Pages/news313.aspx (accessed 1 March 2014).
[861] Linda Yueh. "Is China about to Overtake US as the World's Largest Economy?" *BBC*, 30 April 2014.
[862] "China Overtakes US as the Biggest Importer of Oil", *BBC,* 10 October 2013.

one-fifth of China's total oil imports (around 1 million bpd) today (see Graph 8.3.).[863] This made China an indispensable country for Saudi Arabia's demand security. In 2012, China was the third largest export partner after the US and Japan, accounting for 12.9% of Saudi Arabia's total exports – while Taiwan was the seventh largest (see Table 8.1.).

Graph 8.3.: China's Oil Imports by Source (2011)



Source: US Energy Information Administration

[863] US Energy Information Administration, "China", 4 February 2014.

Table 8.1.: Saudi Arabia's Top 10 Export Partners in 2012 (Million Saudi Riyal)

No.	Country	Value	%
01	The US	208,339	14.3%
02	Japan	192,201	13.2%
03	**China**	188,229	12.9%
04	South Korea	133,585	9.2%
05	India	120,841	8.3%
06	Singapore	53,582	3.7%
07	**Taiwan**	50,277	3.5%
08	Italy	39,326	2.7%
09	Bahrain	39,121	2.7%
10	The UAE	38,927	2.7%
Others	-	392,074	26.9%
Total	-	1,456,502	100.0%

Source: Central Department of Statistics and Information, The Kingdom of Saudi Arabia

China's rapid economic development made Saudi policymakers begin to expect the development of Saudi–Chinese economic relations beyond oil. Following his visit to Beijing in 1998, King Abdullah again visited Beijing in January 2006 (for the first time as king). In return, China's President Hu Jintao (胡锦涛) (2005–2013) paid a visit to Riyadh in April 2006, followed by his second visit in February 2009. Through these exchanges of state leaders, the two states entered negotiations for wider bilateral economic cooperation. Around the same time, China's fast recovery from the financial crisis of 2008 generated the discourse of a "China model" and the "Beijing Consensus" in the global intellectual sphere, leading leaders of many developing countries to expect that China would offer them a development model alternative to the Washington Consensus.[864] In fact, Beijing has never admitted the presence of the China model of development nor claimed to export such a

[864] Halper 2010.

model.[865] However, Beijing began to encourage the globalisation of Chinese businesses in the 2000s with the policy of "going out" (走出去), based on the understanding that China's past development had been unbalanced: FDI inflows had far outweighed FDI outflows as a result of the practice of the policy of "pulling in" (引进来).[866] In addition, many Chinese workers kept seeking work opportunities abroad because a great number of Chinese citizens were still poor and the inequality in the Chinese society was growing.

Owing to those factors, Chinese investments in Saudi Arabia began to increase in the late 2000s. Today, there are around 150 Chinese firms operating in the kingdom.[867] Many firms have been assisted by political initiatives in their investment. For instance, China Railway Construction Corporation (CRCC: 中国铁道建筑), a SOE, was awarded the construction of a railway in Mecca when China's President Hu visited Riyadh in February 2009.[868] For the construction, CRCC sent over 10,000 Chinese workers to Saudi Arabia. This 18.1 km railway, the Al-Mashaaer Al-Mugaddassah Metro (قطر المشاعر المقدسة), known as "Mecca Metro", which connects the main cities of the *hajj*, such as Mecca, Arafat, Muzdalifah, and Mina, began operation in November 2010, and has reportedly transported over 12 million people since then.[869] Another major Chinese investment in Saudi Arabia is a joint venture between Saudi Aramco and Sinopec (中国石油化工), also a SOE, for creating an oil refinery in Yanbu. An agreement for this project was made in January 2012

[865] "Why Premier Wen Shrugs off 'China Model'?", *People's Daily*, 15 March 2011.
[866] Zhu 2013.
[867] "China Considers Manufacturing Cars in Saudi Arabia", *Arab News*, 7 February 2014.
[868] "China to Build Mecca Rail System" *BBC*, 11 February 2009.
[869] "Rapid Pace of Saudi Growth: Golden Opportunity for CRCC", *Arab News*, 1 October 2014.

when China's Prime Minister Wen Jiabao (温家宝) visited Riyadh.[870] (Prior to this investment, Sinopec had explored with Saudi Aramco commercially-viable gas reserves in the Rub Al-Khali (الربع الخالي) since 2004, but the exploration had failed to make any significant discovery.) [871]

However, outside the energy and construction sectors, China's investments in Saudi Arabia have been still limited. There have been no major Chinese investments either in the petrochemical industry or emerging manufacturing industries in Saudi Arabia. Instead, Saudi petrochemical producers invest in the petrochemical industry in China. Saudi Aramco established a petrochemical joint venture with Sinopec and ExxonMobil in Quanzhou in Fujian province (福建省泉州) in May 2009, producing 800,000 tpa of ethylene. SABIC also established a petrochemical joint venture with Sinopec in Tianjin (天津) in January 2010, producing 1 million tpa of ethylene.[872] SABIC also opened an R&D centre for advanced engineering plastics in Shanghai in December 2013. The centre, in collaboration with the Dalian Institute of Chemical Physics (大连化学物理研究所), develops plastics products targeting Chinese and East Asian markets.[873]

Those inverse flows of industrial investment suggest that the main value of China to Saudi industry still remains its market for selling products rather than its technological inputs to production. In terms of industrial technology, both China and Saudi Arabia remain

[870] "Saudi Aramco, Sinopec Set to Sign Refinery Deal", *Arab News*, 8 January 2012.
[871] "Saudi Aramco Ventures Continue Gas Exploration in Saudi Desert", *Bloomberg*, 6 June 2011.
[872] Yamada 2011.
[873] "$100m SABIC Technology Center in Shanghai to Spur Innovation", *Arab News*, 3 December 2013.

at the stage of absorbing advanced foreign technologies through FDI inflow rather than exporting their national technologies through FDI outflow. In fact, although China is a global manufacturing powerhouse today, over half of its exports, and no less than 85% of its high-tech exports, are carried out by foreign-invested firms.[874] Because of this similarity, there is little complementarity between the two economies outside the energy and construction sectors.[875] The similarity may even lead the two countries into competition: as the Saudi economy diversifies to labour-intensive and knowledge-based industries, they may find Chinese producers formidable competitors in the global market. In fact, China's industrial growth in the past two decades has resulted in de-industrialisation in other less competitive developing economies with similar industries. As China upgrades its economy in the coming years, other economies with mid- to mid-high tech industries may start losing ground.[876] (Thus, Saudi industrialists will always have to count this China factor in their future development and seek appropriate differentiation strategy.)

In recent years, Saudi Arabia, finding that China is still at a transitory stage of development, has been counting more on Asian Tiger economies, in particular South Korea and Singapore, for industrial and technological inputs.[877] This has been creating greater opportunities for Taiwan (which is another Asian Tiger economy) as well. Although Taiwan inevitably remains low-key due to the absence of a formal diplomatic relationship, its industrial and technological prowess and experience of technological upgrading create a

[874] Kroeber 2011: 50.
[875] International Institute for Strategic Studies 2011.
[876] Yamada forthcoming.
[877] "Huge Spending on Education to Boost Knowledge-Based Economy: Al-Jasser", *Arab News*, 26 March 2012; "Saudi-Singapore Venture Targets SR 1.5 bn Projects", *Arab News*, 19 September 2012.

source of its soft power.[878] On the other hand, China has also attempted to make industrial and technological inputs to Saudi Arabia in recent years. The Chinese Academy of Sciences (中国科学院), a governmental think-tank, agreed with SABIC in September 2014 to promote cooperation in research, knowledge exchange, and training.[879] Likewise, BYD (比亚迪), a private Chinese auto firm from Shenzhen (深圳), is currently conducting a study about building an assembly plant in the kingdom.[880] Whether China can diversify its economic relations with Saudi Arabia to industrial sectors will depend on how fast its economy can climb up the technological ladder in the coming years.

Future Prospects

Regarding Taiwanese–Saudi relations, there have been some positive developments in recent years. The return of the Kuomintang administration in 2008 after eight years of the DPP administration (2000–08) reinforced Taiwan's economic diplomacy in general. Taiwan's economic diplomacy had declined in those years not only because of the inexperience of the DPP as a ruling party but because of its confrontational policy towards Beijing. The DPP's confrontation with Beijing invited an active anti-Taiwan campaign by Beijing in the international community. Beijing protested to states that were willing to strengthen their relations with Taipei and, thereby, made Taipei appear as a "troublemaker"

[878] Tsang 2008: 221.
[879] "SABIC Signs Deal to Promote Scientific Research", *Arab News*, 14 September 2014.
[880] "China Considers Manufacturing Cars in Saudi Arabia", *Arab News*, 7 February 2014.

to them.[881] In contrast, the Kuomintang administration led by the President Ma Ying-jeou (馬英九) (2008–present) restored the pragmatic diplomacy established by Lee and developed it into his own "vibrant diplomacy" (活路外交). Vibrant diplomacy is a strategy for enhancing Taiwan's presence in the international community through rapprochement with China.[882] The subsequent cross-strait thaw resulted in stronger economic cooperation between Taiwan and China – represented by the Economic Cooperation Framework Agreement in 2010 – on the one hand, and Taiwan's greater diplomatic leeway, on the other.[883] Today, some Taiwanese firms even begin envisioning co-investment with Chinese firms in third countries, including Saudi Arabia, by combining each other's strengths, such as the advanced technology owned by Taiwanese firms, and the low-cost labour of Chinese firms.[884]

On the other hand, some Taiwanese began to concern the risk of Taiwan's growing economic dependence on China as it will make the country more vulnerable to Beijing's political interventions in the long run.[885] They call for diversification of Taiwanese investments away from China to emerging economies. Diversification begins to make sense from the perspective of economy as well: as production costs in China keep rising due to the rise of land and labour costs and increased environmental and safety regulations, many foreign firms investing in China today employ a "China plus one" strategy, relocating a part

[881] Tsang 2008: 217–221.
[882] Office of the President, ROC, "Viable Diplomacy", http://english.president.gov.tw/Default.aspx?tabid=1145 [accessed 1 March 2014].
[883] Pao Tsung-he, National Taiwan University, interviewed by author, Taipei, March 2012.
[884] A chairman of ACS, interviewed by author, Taipei, April 2012.
[885] Wang 2013.

of their production from China to other emerging and frontier economies.[886] Many Taiwanese firms are keen on investing in India today, for instance.[887] In such context, it is likely that a larger number of Taiwanese firms will consider Saudi Arabia as a potential destination for investment in the coming years.

Conclusion of Chapter 8

In spite of the high level of Taiwanese–Saudi industrial cooperation, Riyadh switched its recognition from Taipei to Beijing in 1990. The backdrop of the switch was Riyadh's prioritisation of security over development in the 1980s. After Riyadh's request for arms transfers was declined by Washington, Beijing took advantage of the window of opportunity and improved its relationship with Riyadh through the sale of missiles. In addition, China also began to benefit the Saudi petrochemical industry by providing it with a vast market, to which SABIC began exporting its products.

After the severance of the formal diplomatic relationship, Taiwan decided to continue its techno-diplomacy towards Saudi Arabia on an informal basis. As Taipei's loss in the diplomatic competition with Beijing had already become clear, Taipei attempted to preserve and develop substantial economic relations with states without a formal diplomatic relationship as much as possible, under the strategy of "pragmatic diplomacy", rather than

[886] They, at the same time, retain some productions in China too which still has unique advantages such as well-developed infrastructure, supply-chains, and vast and booming domestic market ("The End of Cheap China", *The Economist*, 10 March 2012).
[887] "Taiwanese Firms Keen to Invest in India", *The Times of India*, 8 September 2014.

risking further losses. Saudi Arabia was an indispensable state for Taiwan's economic development as the kingdom supplied nearly one-third of Taiwan's total oil imports – although the idea of energy security has been less predominant in Taiwan than in Japan because Taiwan had not experienced the turmoil of the oil crises in the 1970s in a comparable way to Japan.

Just like the case of Japan, Taiwanese investment in Saudi Arabia did not increase greatly in the 1990s, mainly due to the uncompetitive investment climate in Saudi Arabia. In addition, the democratisation-cum-privatisation in Taiwan in the 1990s eroded Taiwan's developmental state, making Taiwan more like Japan in the sense that Taiwanese policymakers now could not simply order SOEs to invest in a foreign country for strategic purposes, but rather had to play the role of a facilitator of private firms' investments. The improvement in Saudi Arabia's investment climate and the second industrial expansion supported by a new oil boom in the 2000s created a number of investment opportunities for Taiwanese firms in multiple fields, such as high-tech infrastructure, the petrochemical industry, and manufacturing industries. There have already been some cases of Taiwanese industrial investments in Saudi Arabia. However, the potential has not yet been fully exploited because Taiwanese firms have tended to focus on the Chinese market, where they enjoy linguistic and cultural advantages, in spite of the Taiwanese state's call for diversifying Taiwanese FDI outflows away from China to other emerging economies.

In the 2000s, China's economic relations with Saudi Arabia also significantly improved. However, due to the fact that China also is still at the stage of absorbing foreign technologies, Chinese investments in Saudi Arabia have largely been limited to the energy

and infrastructure sectors, and have not yet been substantially extended to industrial sectors. Instead, Saudi petrochemical producers have invested in China. This attests to the fact that the utility of China to Saudi industrial producers remains the provision of a market for their exports rather than as a provider of industrial and technological inputs to their production. Whether China can diversify its investment in Saudi Arabia to industrial sectors will depend upon how fast the Chinese economy can climb the technological ladder in the coming years.

Conclusions and Future Prospects

This thesis has examined Saudi–East Asian non-oil industrial relations in the past six decades. In particular, it identified the dynamics of (i) industrial diversification in Saudi Arabia, (ii) Saudi Arabia's demand for industrial cooperation from East Asian states, (iii) East Asian states' cooperation in industrial diversification in Saudi Arabia, and (iv) East Asian industrial firms' investment in Saudi Arabia, in order to answer (I) why there has been state-sponsored diffusion of industrial technology from East Asian countries to Saudi Arabia, and (II) why the outcomes of this diffusion have been uneven across time and country. In order to elucidate these issues, the thesis began discussion with contextualising Saudi–East Asian relations in the larger and longer picture of the global economy.

Saudi–East Asian Relations in the Divergence and Convergence of the Global Economy

While Saudi Arabia's relations with East Asian states have been developed as energy producer-consumer relationships in the past six decades, they have, at the same time, shown their gradual evolution into "industrialising-industrialised" relationships. This evolution has been one of the microcosms of the transformation of the global economy itself in the same period, where the norm has been shifting from divergence to convergence. In the era after the Western Industrial Revolutions, the world was divided into the industrialised, resource-

importing West and the underindustrialised, resource-exporting non-Western world. While East Asian states, in particular Japan and Asian Tiger economies, were few exceptions to this dichotomy, Saudi Arabia, an archetypal rentier economy, fell to the latter category.

One of the most decisive factors that created the divergence in the first place was the gaps in HRD between the two worlds. In European and neo-European countries, the majority of citizens were literate on the eve of their Industrial Revolution and, thus, they were more easily transformed into modern industrial workers through their absorption of knowledge, skills, and technologies. However, the literacy rates were generally very low in non-Western countries, except for Japan, and they failed in making industrialisation take root in among their citizens, leading to their long dependence on European technologies and technologists. As dependency theorists claimed, this divergence continued even after decolonisation as non-Western developing countries, with still-compromised levels of HRD, except for Taiwan and Korea, failed again in catching up with the West.

The conventional understanding of Saudi–East Asian relations as energy producer-consumer relationships is founded upon this divergence structure. Saudi Arabia, whose literacy rate was only around 5% in the 1950s, was not able to industrialise immediately, with its economy becoming dominated by oil. Even in the oil industry, technological expertise was largely possessed by American and other foreign workers, and it took for two decades for Saudi Arabia to nationalise the oil production and run it by Saudi hands. On the other hand, Japan and its former colonies, Taiwan and South Korea, succeeded in industrial catch-up partly because of their workers' high basic ability to absorb Western knowledge, skills, and technologies, and put them in productive activities.

Nevertheless, with the progress of HRD, non-Western countries have been slowly but surely heading toward convergence. In addition, the development of IT and the extension of global supply-chains it enabled after the 1990s also made it easier for them to industrialise even with relatively low levels of HRD by inviting foreign industrial producers who attempt to capitalise on low-cost labours in those countries. This accelerated diffusion of industrial technology in the non-Western world, resulting in the formation of a much thicker middle tier of the global economy in the first decade of the twenty-first century. This thesis examined Saudi–East Asian "industrialising-industrialised" relations in this context, with the emphasis placed on HRD and industrial diversification in Saudi Arabia and diffusion of industrial technology from East Asian states to Saudi Arabia.

Saudi Arabia as a Late Industrialiser with Rentier Characteristics

While rentier state theory assumes that the rentier nature of the economy would create under-industrialisation, this thesis argued that Saudi Arabia was not so different from other developing countries in terms of its decades-long quest for techno-sovereignty. The outcome of that quest is more visible today: Saudi Arabia is emerging as a late industrialiser in the global economy, just like other emerging economies in other parts of the world. Its transformation has changed the assessment of the impact of oil rents on development: in the past, Saudi Arabia was a poster child for the resource curse; today, it is increasingly considered to be a beneficiary of a resource blessing. This thesis further

unpacked the relationship between abundant oil rents and industrialisation by asking what the nature of industrialisation in the rentier economy of Saudi Arabia is like. It particularly identified the low degree of HRD as a key variable, arguing that this lack (a) was responsible for the rise of a rentier economy in the first place; (b) determined the sectors of initial development, which were capital-intensive heavy industries; and (c) created the Saudi economy's dependence on foreign technologists.

The extremely low degree of HRD at the time of the discovery of oil and the rise of oil production made the Saudi economy resource-*dependent* rather than resource-*abundant*: unlike economies such as Norway and Canada, Saudi Arabia had not experienced industrialisation before oil rents became a major source of income. In the 1960s, Saudi policymakers embracing economic nationalism began to develop the country's own industries, but, unlike other developing states which practised import-substitution industrialisation (ISI), they had to give up industrialisation on its own due to the scarcity of qualified national technologists.

Because of the low degree of HRD, Saudi policymakers faced the paradox of the techno-nationalist: it was inevitable that they would need to invite foreign capital first in order to establish the country's own industry, from which they attempted to transfer knowledge, skills, and technologies to national workers in a gradual manner. In order to support that transfer, they also invested in the development of a modern education system, against opposition from religious conservatives who feared the decline of their influence on the country's education. They also sent talented young nationals abroad, especially to the US, in order to capitalise on the advanced higher education system in advanced countries.

This meant the country's even greater dependence on foreign technologies and technologists beyond Aramco. However, there was no other choice for Saudi policymakers: their initial attempt of creating and running a fertiliser plant by Saudi nationals failed due to the lack of experience; likewise, their attempt at industrial planning was also delayed for years – the five-year development plan was initially planned to be launched in 1959 rather than 1970 – due to the scarcity of qualified economic planners. Witnessing the limit of economic nationalism, Saudi policymakers decided to keep the country's industrialisation open to foreign technologies and technologists, trying instead to diversify the source of industrial technology as much as possible for avoiding overdependence on the single source, the US, and achieve the absorption of knowledge, skills, and technologies as effectively as possible. In this manner, East Asian firms and Western European (West German, Italian and others) were drawn to SABIC's first-generation projects in the early 1980s, in addition to American ones.

The low degree of HRD and the limited availability of university graduates in the Saudi labour market inevitably resulted in the growth of machine-oriented capital-intensive heavy industries, especially petrochemicals, rather than labour-intensive manufacturing industries as sectors of choice. The country's abundant oil rents during the first oil boom period and feedstock advantage emanating from plentiful oil and gas reserves also assisted the growth of the petrochemical industry. However, the greatest advantage of Saudi Arabia was that its recovery of oil production from the hands of the Americans in the 1970s, as a result of the two-decade long efforts for technology transfer in Aramco, enabled the Saudi state to use the supply of oil as a bargaining chip to lure American, European, and Asian

industrial investments to its newly-created industrial cities. Those investments were made not primarily for industrial production but in pursuit of the "incentive oil" provided by the Saudi state in return for the investment. The strong bargaining position of the Saudis also shaped the form of investments, most of which were equally-owned joint ventures.

Throughout the 1980s and the 1990s, transfer of knowledge, skills, and technologies took place in those industrial projects: although about half of those employed in SABIC's joint venture projects were initially foreign experts, those projects were effectively Saudised over years, offering the third most popular work choice for the best educated Saudi nationals after the government and Saudi Aramco. By the 2000s, SABIC had grown into a beacon of techno-sovereignty in Saudi Arabia, with over 80% of those working on its projects being Saudi nationals today. Being confident in the success of SABIC, Saudi policymakers decided in the late 1990s to open the petrochemical industry to private investors. At this time many workers from SABIC moved to new private producers, creating the "second technology transfer" – the dissemination of knowledge and skills to the wider industrial circle. In terms of techno-sovereignty, the final two decades of the previous century was an age of stable growth in which overexpansion of the industrial infrastructure beyond the capacity of HRD stopped and those existing projects saw a sound transfer of industrial technology from foreign experts.

However, such a positive outcome was largely limited only to SABIC. SABIC was an "island of efficiency" which showed a distinctively different institutional quality from the rest of the economy. While the country's best and brightest national workers were absorbed into this island as a labour force, Saudi society in general was rapidly "rentierised"

and grew even less favourable in terms of techno-sovereignty. The inflow of abundant oil rents into the Saudi society made it disproportionately consumerist, nipping the bud of self-production, with nationals preferring to be employed either in the public sector or privileged "thawb-wearing" managerial and administrative jobs in the private sector, avoiding and leaving laborious uniform-wearing technical professions to expat workers.

Such a division of labour was initially thought to be only transitional, until the country's HRD could catch up with the requirements in the labour market. However, over the years, the division was institutionalised in Saudi society, causing Saudi people to be, on average, more underproductive than they could otherwise be. The bloated public sector and the heavy dependence on expats in the private sector, however, began to present a paradox in the mid-1990s. As the plummeting oil prices combined with the rapid population increase meant that the umbrella of the rentier welfare state was unable to cover all, unemployment among young nationals became a more visible problem. In the 2000s, the proportion of expats in the Saudi population reached nearly one-third while the youth unemployment rate among nationals surpassed 30%. While SABIC achieved an over 80% rate of Saudisation, the opposite took place in the private sector as a whole, with over 80% of private sectors workers being expats today.

Providing solutions to the rising youth unemployment problem became an impending task for Saudi policymakers in the 2000s. Although the oil prices picked up and the state recovered its distributive capacity, a sense of unsustainability was shared across the Saudi leadership. As the number of young nationals entering the labour market kept increasing, Saudi policymakers began to accelerate further industrial diversification from

the heavy industries to labour-intensive manufacturing sectors in order to create job opportunities for young nationals, The NICDP attempts to nurture five industrial sectors – automobile, plastics, metals, home appliances, and solar energy – by 2020. This second industrial expansion was supported by the new oil windfall and the four new economic cities (in addition to the original two) are currently under development. The NICDP attracts foreign industrial investments with the aim of repeating the success of SABIC in the transfer of knowledge, skills and technologies from foreign investors to national workers.

The second oil windfall enabled the Saudi state to invest extensively in HRD as well. In the past decade, education institutions in the kingdom saw a significant leap, with the number of universities quadrupling from eight to 32. Today, 96% of Saudi nationals are literate and over 80% of high school graduates are enrolled in universities. However, the problem is the qualitative mismatch of the school curricula and the skills required in the labour market, as shown by the fact that almost half of university degree holders are jobless. In particular, there is an absolute paucity of Saudi national engineers, as less than 10% of the engineering jobs in the private sector have so far been Saudised. In order to create more job opportunities, the Saudi government implemented the Nitaqat programme in 2011, imposing legally-binding quotas for national workers on private firms. However, given the scarcity of qualified national technicians, there is a concern that the quotas may cap the rise of industrial production.

Thus, HRD reforms in order to send more national graduates equipped with technical skills into the labour market are an urgent task today. Private firms investing in Saudi Arabia are increasingly required to make contributions to HRD, not only through the

on-the-job training but also by coordinating with Saudi educational institutions as a part of their corporate social responsibility. For foreign firms investing in Saudi Arabia too, investing not only in factories but also in national human resources is of greater interest than in the past as the Nitaqat's Saudisation requirements are tightened each year.

How Were East Asian States Drawn to Saudi Arabia?

Why, then, did Saudi policymakers choose East Asian states for its sources of industrial technology in addition to the US? An obvious answer is the presence of advanced industrial technology in East Asia, which has been a global manufacturing hub since the late twentieth century. Nevertheless, it is also important to mention that there were, in fact, not many other options available to Saudi Arabia. Cultivating industrial ties with the Soviet Union was hard for political reasons during the Cold War. Saudi Arabia's diplomatic relationships with the UK and France were severed at the time of the Suez Crisis, and it took decades for them to fully recover mutual trust. Thus, Saudi Arabia had to seek alternative sources of technology in industrialising East Asia – and, in this sense, this thesis argues that the origin of Saudi Arabia's "Look East" policy was already present half a century before, in the aftermath of the Suez Crisis. (Other major alternative sources of technology for Saudi Arabia were former Axis powers in Europe, Italy and West Germany.)

The common advantage of East Asians (as well as Italians and Germans) was that they were mercantilist in the Middle East and did not exercise political influence there. Riyadh did not need to worry much about possible politicisation of its industrial relations with them. The aggravation of Saudi–American relations following the Six-Day War further strengthened Riyadh's preference for non-political powers as partners for industrialisation. More recently, the unravelling of the Saudi–American alliance following the end of the Cold War and particularly in the aftermath of the 9/11 attacks accelerated Riyadh's Look East policy. Nevertheless, this did not mean that East Asians replaced the role played by the US. Both after the Six-Day War and the 9/11 attacks, Americans made their return to the kingdom after a certain period. Their industrial presence in Saudi Arabia has been too large to forgo. However, each time, they found themselves no longer monopolising the source of industrial technology in Saudi Arabia and facing Saudis who were more confident in their bargaining because of their practice of managed multi-dependence.

East Asian States' Techno-Diplomacy and the Role of Private Firms

Why, then, did East Asians states, particularly Japan and Taiwan, respond to Saudi Arabia's request for transfer of industrial technology? This thesis analysed this issue by identifying two major actors: the state and private firms. In explaining the state's behaviour, this thesis coined the concept of techno-diplomacy, a foreign policy strategy of implementing the transfer of industrial technology as a means to acquire other types of gain

in return. It identified the most important political objective for Japan as being energy security (a "technology-for-oil" exchange), and that for Taiwan being the maintenance of the diplomatic recognition by Saudi Arabia (a "technology-for-recognition" exchange).

These different political objectives enable us to explain the different degrees of Japan's and Taiwan's commitment to their techno-diplomacy towards Saudi Arabia in the past decades. In the case of Japan, the Japanese state showed a high level of commitment in the 1970s, the 1990s, and the 2000s, but not in the 1960s and the 1980s. This is because energy security was high on the agenda of Japanese policymakers in the former three decades while it was relatively low in the latter two. In the 1960s, because Saudi oil was supplied to Japan by Americans (Aramco), the oil trade was treated as part of Japanese–American economic relations. Thus, Japanese policymakers lacked a strong incentive to cooperate for industrialisation in Saudi Arabia. However, they began to face a strong need to do so in the 1970s, particularly following the Oil Crisis in 1973, as Saudi Arabia began gaining control of Aramco and emerged as a direct counterpart of Japan for the supply of oil. In the 1980s, however, the global oil market entered the age of an oil glut and the strategic importance of Saudi Arabia to Japan became not as great as it had been in the 1970s. In the 1990s, however, Tokyo again strengthened its efforts to promote industrial investment in Saudi Arabia in order to preserve the concession given to AOC. Nevertheless, its goal was not achieved and the concession was lost in 2000 due to ineffective coordination with private firms. In the 2000s, energy security was kept high on the agenda of Japanese policymakers as the global oil market entered a boom period again. The rise of China and other emerging economies pushed up the global demand for oil. As a result, oil

came to be seen as a strategic commodity once again. In addition, Saudi Arabia's relative importance as a supplier of oil has grown even greater in recent years as Japan had to cut its oil imports from Iran, which used to be the third largest source of Japan's oil imports (down to the fifth in 2012), in coordination with the economic sanctions imposed on Iran by the US and the EU because of Iran's development of a nuclear capability.

On the other hand, the degree of Taiwan's commitment to its techno-diplomacy towards Saudi Arabia has been consistently high since the 1960s till today. Taiwan already showed a high level of commitment to development in Saudi Arabia in the 1960s through its deployment of the agro-techno mission in the Eastern Province. This is because Taiwan was already facing a diplomatic competition with Communist China in the international community, which had become intense in the late 1950s due to Beijing's active Third World diplomacy following the Bandung Conference in 1955. In Saudi Arabia, Taiwan won this competition owing to its agricultural assistance and to Beijing's rupture with Riyadh in the Cultural Revolution period. However, it lost against Beijing in the wider international community, being ousted from the UN in 1971. In the 1970s and the 1980s, Saudi Arabia was one of the few states that maintained recognition of Taipei. The strategic importance of Saudi Arabia to Taiwan's international legitimacy, thus, sustained Taiwan's commitment to development in Saudi Arabia at a high level. The bilateral cooperation was extended to infrastructure building, industrial joint venture, and scientific cooperation in the 1970s and the 1980s.

However, Taiwan lost the goal of its techno-diplomacy towards Saudi Arabia in 1990 as Riyadh finally normalised with Beijing at the expense of its formal diplomatic

relationship with Taipei. Surprisingly, this did not change Taiwan's practice of techno-diplomacy towards Saudi Arabia: under the new diplomatic strategy of "pragmatic diplomacy", making a departure from its traditional "One China" policy, Taiwan attempted to maintain the status quo of substantial economic relations with other states in an informal manner. In terms of substantial economic relations with Saudi Arabia, Taiwan relied on Saudi Arabia for nearly one-third of its oil imports. Thus, Taipei attempted to not further aggravate its relations with Riyadh by cancelling its industrial cooperation. Taiwan's continuing techno-diplomacy towards Saudi Arabia helped it maintain an informal but stable bilateral relationship. The recent Iran sanctions affair also enhanced Saudi Arabia's strategic importance to Taiwan as Taiwan also had to cut oil imports from Iran in coordination with the US and the EU.

While states engineer techno-diplomacy, its implementation is dependent upon the decisions made by private firms which are the actual actors of industrial investment. When industrial firms are state-owned, such as major Taiwanese firms before the 1990s, the state can simply direct them to make an investment in accordance with its own preference. However, the decisions made by private firms must be analysed independently from the preferences of the state, as their calculation is mainly driven by market fundamentals. This explains why Japanese private firms did not much heed the Japanese state's encouragement to invest in Saudi Arabia in the 1990s. Saudi Arabia's uncompetitive investment climate and major Japanese firms' own need to downsize their global activities due to the economic downturn then made it difficult for them to invest in places other than selected countries with better fundamentals like China and Southeast Asian countries. In addition, although

the preservation of AOC's concession for supplying 5% of Japan's oil imports was an important agenda item for the Japanese state, its loss was unlikely to affect the business of most Japanese firms since it would only change the supplier from AOC to Saudi Aramco. In contrast, the Oil Crisis in 1973 had a nation-wide impact on Japan's economy, in which a shortage of oil was a real menace to Japanese businesses. The event, thus, provided Japanese firms with a greater incentive to cooperate with the state in industrial investments in Saudi Arabia through participating in consortiums.

On the other hand, the reinvigoration of Japanese investments in the 2000s was primarily owed to the improvement of the investment climate in Saudi Arabia mainly due to Saudi Arabia's accession to the WTO and reforms related to the accession. In addition, the rise of China as a new manufacturing powerhouse posed a serious challenge to Japan's high-cost producers. Thus, some firms decided to move their production to Saudi Arabia where they could benefit from the country's overwhelming feedstock advantage in the time of high oil prices. The Japanese state also facilitated investments in cooperation with its Saudi counterpart in order to overcome the absence of information among Japanese firms about the Saudi market and possible business counterparts in emerging industries. After the progress of democratisation-cum-privatisation in the 1990s, Taiwan came to face the same dynamics. There have been some Taiwanese investments in the manufacturing sector in Saudi Arabia in recent years, driven by similar market fundamentals. However, Taiwanese–Saudi industrial relations today are constrained by two factors: the state's facilitation of private investment has to remain low-key due to the absence of a formal diplomatic relationship; and the absorption of Taiwanese foreign investments into mainland China, in

which Taiwanese investors enjoy the exceptional advantage of having the same culture and language, leaving Taiwanese firms relatively indifferent to markets in other parts of the developing world.

Future Prospects

Finally, how would Saudi–East Asian development relations unfold in the next five years (2016–20)? We, already having witnessed a number of events arising out of the blue in the first fifteen years in the current century, such as the 9/11 incidents, the global financial crisis, and the Arab Spring, have learned that our world is, in fact, greatly dictated by contingency and unforeseeable variables, which make predictions about the future, even the immediate future, extremely difficult. Indeed, Philip Robins once wrote:[888]

> "Forecasting the future is not an exact science: indeed, it is not a science at all. One may exaggerate or underestimate particular factors which one knows will be important to the future. Then there is the problem of entirely unforeseen variables."

The author concurs with his opinion. However, still, it should be worthwhile to identify some key analytical elements which are likely to remain relevant – and possibly important – to the upcoming developments.

[888] Robins 1989: 136.

In the remaining space, this thesis will give prospects over the next five years regarding Saudi Arabia's industrial diversification and development relations with East Asian states.

Industrial Diversification in Saudi Arabia

First, we should remain "cautious optimists" about Saudi Arabia's technological rise and the future of its industrial diversification. Although Saudi Arabia, along with other emerging economies of the G20, has been forming a new paradigm of global convergence today, whether these economies will be able to continue to climb up the technological ladder still remains to be seen.[889] They are still "probationer" technological powers whose self-growing technological capacity has just begun to be tested. In order to achieve a fuller catch-up, they must make a transition to a knowledge-based economy supported by competitive human resources. That transition is not guaranteed. Among the NIEs in the 1970s, Asian Tiger economies succeeded in that transition, but Latin American ones failed. As a result, while the former economies today enjoy as high an income per capita as South European economies, over $20,000 and almost double the global average ($10,472 in 2013), the incomes per capita of Latin American countries are only around the global average or

[889] Spence 2011.

slightly above. [890] Latin American economies even experienced substantial deindustrialisation after the 1990s as China emerged as a formidable industrial competitor to them.[891] Dani Rodrik warns that today's emerging economies face the risk of "premature deindustrialisation" as the development of global supply-chains has made industrialisation "easy-come" but also "easy-go".[892]

Thus, a real challenge for industrial diversification awaits Saudi policymakers in years to come. Whether the development of manufacturing sectors targeted by the NICDP will succeed or not will depend ultimately on whether the current reforms of HRD see significant progress. In the next five years, around three million young Saudis currently in universities, technical schools, and high schools will enter the labour market. Whether producers in emerging industries will be able to recruit qualified technical workers from among national citizens and increase their production while maintaining the tightening Saudisation quotas depends on whether schools can offer them appropriate education, to arm them with the knowledge and skills required in industry. Domestic schools are not the only source of talent: 100,000 of those currently studying at foreign universities under the Custodian of the Two Holy Mosques Scholarship Programme (previously the King Abdullah Scholarship Programme) will also complete their studies and return to the kingdom. However, depending upon foreign education is not a sustainable model: domestic educational institutions must grow more competitive in educating and training technical

[890] International Monetary Fund, "World Economic Outlook Database", October 2014, http://www.imf.org/external/pubs/ft/weo/2014/02/weodata/index.aspx [accessed 1 December 2014].
[891] Moreira 2007; Jenkins, Peters and Moreira 2008.
[892] "Emerging Economies: Arrested Development", *The Economist*, 4 October 2014.

workers. In this sense, the challenge lies in how much gaps currently existing between the school curricula and the expertise required in the labour market will be closed in the next five years. Because of the institutionalised division of labour, in which only few nationals work as technological workers in the private sector, there is little communication between schools and private firms. In addition, the absence of industrial associations, which are banned for political reasons, is making it hard for firms to accumulate collective data about what common human resource challenges are facing them. Thus, a mechanism of coordination must be created that correctly identifies knowledge and skills required in the emerging industries and reflects those needs in education. Ideally, this should be done by a higher authority that can bring together stakeholders and create an implementable unified strategy.

Looking beyond 2020, what is equally important, however, is the reform of primary and secondary education. Whether students in higher education perform strongly depends on what they have learned at primary, intermediate, and high schools. Currently, less than 10% of high school graduates attend technical and vocational training schools,[893] and only around 5% of university students read for engineering.[894] The unpopularity of technical education among Saudi students is partly because of the institutionalised division of labour in the labour market itself, but also because of the lack of opportunities for students to familiarise themselves with technical activities at primary and secondary level. Primary and secondary education in Saudi Arabia is heavily religion-oriented, and the hours dedicated to

[893] "Why Technical and Vocational Training is an Urgent Need for KSA's Future", *Arab News*, 19 June 2014.
[894] "Only 5 percent Saudis Study Engineering", *Arab News*, 6 April 2014.

mathematics and sciences are only around 20% of the curriculum.[895] In addition, the quality of school teachers is compromised because schools have been the major outlet of welfare-oriented public sector employments. Many of those who had not been competitive enough to get a job elsewhere have ended up being school teachers.[896]

The education minister Prince Khalid bin Faisal (December 2013–January 2015) attempted to revamp the primary and secondary education reform, which had stagnated for years due to opposition by religious conservatives, through the introduction of a large-scale (re)training programmes for school teachers.[897] In addition, a stronger emphasis on mathematics and science came to be placed.[898] This thesis proposes that a reformed school curriculum should include basic technical training as well, which enables students at early stages to discover the joy in the act of engineering and learn how to apply the knowledge of maths and sciences they have learned into practical use.

In sum, Saudi Arabia's emerging manufacturing industries still lack a social underpinning. In order to support those labour-intensive industries with qualified national human resources, Saudi Arabia's rentier society must be transformed into an industrial society which has a pool of talented young nationals aspiring towards the careers of technicians and engineer. HRD is central to that transformation and must be tackled with a sense of urgency.

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[895] "Saudi Education Reforms Face Resistance", *Financial Times*, 25 April 2011.
[896] "Saudi Arabia's Education System in the Spotlight Again", *Al-Arabiya*, 9 February 2014.
[897] "Overseas Training of Teachers to Cost SR 5bn", *Arab News*, 26 May 2014.
[898] The education minister Prince Khalid was replaced by Azzam Al-Dakhil (عزام الدخيل) in January 2015 in the Cabinet reshuffle by the new king Salman ("Massive Cabinet Shake-up", *Arab News*, 30 January 2015). In addition, the Ministry of Higher Education was re-integrated into the Ministry of Education after 40 years ("King Salman Merges Ministries to Boost Educational Standards", *Arab News*, 2 February 2015).

Japanese and Taiwanese private firms are likely to find more investment opportunities in the emerging manufacturing industries in Saudi Arabia in the next five years. They are also likely to be requested by the Saudi authorities to cooperate further for the development of HRD institutions in the kingdom.

In addition to Japan and Taiwan, South Korea, another Asian Tiger economy, a detailed analysis of which was omitted from this thesis, is likely to increase its presence in the kingdom in those fields. Indeed, Korea is seen by many Saudis as a role model for development today since it is one of the most recent cases of successful transition to a knowledge-based economy.[899] So is Taiwan, but Korea is more the talk of the town because of the industrial products produced by competitive *chaebol* conglomerates, such as Hyundai autos and Samsung TVs, which are now imported to Saudi Arabia in large quantities and began to compete with Japanese products. Korea's previous president Lee also successfully showed the Korean flag in the kingdom through his twice visits to Riyadh, and particularly his appearance at the opening ceremony of Saudi Arabia's Janadriyah national festival with the previous king Abdullah in February 2012.[900]

What about China, the state seen by many to be a next superpower? As discussed in this thesis, China has largely been absent from the picture of Saudi–East Asian development relations until recently. This is primarily because China's industrial rise is a

[899] "Huge Spending on Education to Boost Knowledge-Based Economy: Al-Jasser", *Arab News*, 26 March 2012; "Aramco to Train 2 Million Saudis by 2020", *Arab News*, 4 May 2012.
[900] "Grand Start to Janadriyah Festival", *Arab News*, 8 February 2014.

fairly recent phenomenon. China, currently being the third largest importer of Saudi oil, attempts to strengthen its economic ties with Saudi Arabia beyond the energy sector. However, its industrial investments in Saudi Arabia are still limited and concentrate on construction and energy sectors. The reason for this is the low complementarity between Saudi and Chinese industries.[901] Like Saudi Arabia and other emerging economies, China still remains at the stage of absorbing advanced foreign technology and preparing itself for a transition to a knowledge-based economy. Although China is a global manufacturing powerhouse, much of its high-tech industrial productions are actually made by foreign-invested firms.[902] Although Beijing encourages Chinese firms' active investments abroad by its "going-out" (走出去) policy, most of Chinese investments abroad are currently low-cost low-tech one, lacking major national brands comparable to Japanese and Korean investments. Thus, whether Saudi–Chinese industrial relations will be markedly strengthened in the next five years depends on how fast China climbs up the technological ladder. China's President Xi Jinping (习近平) (2013–present) recently claimed the "new normal" (新常态) of China's economy, calling for an acceptance of slower, but quality growth harnessing science and technology.[903] To what extent such a policy will succeed remains to be seen.

For the time being, the attraction of China for Saudi Arabia remains its vast market for Saudi industrial products. In the past, the opening of China's market to the world saved SABIC from falling into failure in its infancy. Saudi petrochemicals and plastics producers

[901] International Institute for Strategic Studies 2011.
[902] Kroeber 2011: 50.
[903] "Xi's 'New Normal' Theory", *Xinhua*, 9 November 2014.

are likely to find markets in China in years to come. SABIC's recent creation of an R&D centre in Shanghai attests to this direction of development.[904] However, there is a concern as well. In the coming years, China's domestic petrochemicals and plastics productions will rise too. Chinese producers may find Saudi exports a menace to their business and may lobby the Zhongnanhai to impose some protective measures by exploiting legal loopholes in the WTO regime. In fact, China and Saudi Arabia have already experienced trade disputes between 2008 and 2010 because of Beijing's imposition of anti-dumping tariffs on certain Saudi petrochemical exports.[905] As Saudi Arabia's relations with China enter the "industrialising-industrialising relationship", they may find themselves in a competitive relationship in more cases.

In the past few decades, China has grown as a champion of the global economy by capitalising on the liberal trade regime and fast-growing global supply-chains. On the other hand, the exceptional competitiveness of China's industrial exports created the deindustrialisation of similar low-cost low-tech manufacturing sectors in other parts of the developing world, particularly in Latin America and Sub-Saharan Africa.[906] Now, China is about to move up the technological ladder to the production of mid-level technological products. What this would mean for other economies with similar technological levels is a much harder competition from Chinese producers in the coming years. Although emerging economies are often analytically treated as monolithic, the gap in competitiveness between

[904] "$100m SABIC Technology Center in Shanghai to Spur Innovation", *Arab News*, 3 December 2013.
[905] Yamada 2011.
[906] Kaplinsky 2008.

China and the rest is, in fact, large.[907] For Saudi Arabia, this means that finding markets against Chinese products is not an easy task for its emerging manufacturing producers. In order to survive that "second China shock" and avoid premature deindustrialisation, they have to contrive a production and marketing strategy that sufficiently differentiates their products from Chinese exports, based on their unique comparative advantages.

Finally, how will the current drop in oil prices affect Saudi Arabia's industrial diversification and industrial relations with East Asian states? Due to China's economic slowdown and the rise of shale production in the US, the price of the WTI, which had hovered above $100 per barrel since early 2011, began declining in 2014. As at early December, it had dropped to below $60 per barrel, the same level as mid-2010 when the global economy was still on the way to recovery from the global financial crisis.[908] As China's slowdown is structurally inevitable, an increase in global demand for oil is likely to remain weak in years to come. In addition, the US' growing self-sufficiency would mean that the oil previously exported to the US will flow into Asian markets, providing East Asian countries with the new options of diversifying the source of oil imports away from the Gulf region.[909] If such a "second oil glut" scenario became real, the incentive for East Asian states to cooperate for development in Saudi Arabia would inevitably be affected: bureaucrats and policymakers calling for the state's active assistance for private

[907] "The World's Next Great Leap Forward: Towards the End of Poverty", *The Economist*, 1 June 2013; "Economic Convergence: The Headwinds Return", *The Economist*, 13 September 2014.
[908] "Oil Drops below $60 after Saudis Question Need to Cut", *Bloomberg*, 11 December 2014.
[909] For instance, the US, which used to be the largest buyer of Nigerian oil, has significantly reduced its oil imports from Nigeria. India instead became the largest buyer of Nigerian oil ("India overtakes US as Nigeria's Biggest Oil Importer", *BBC*, 19 June 2014).

investments in Saudi Arabia for the sake of energy security would find themselves receiving less support within the ministry, the government, and in the public. This, however, may not necessarily be a bad thing, since the Saudi government, then, would have to work even harder to improve its investment climate in order to attract East Asian investments. As the focus of its industrial diversification is moving from heavy industries to more private, SME-oriented manufacturing industries, market fundamentals rather than the country's feedstock advantage come to matter more in any case.[910]

In addition, just like the period of the first oil glut in the 1980s and the 1990s, less oil rents would enable the Saudi state to refrain from overexpansion of industrial infrastructure, focusing instead on the projects which they have already got on their plate. Rather than further increasing the number of new economic cities, those currently under development should be completed on time and should be run efficiently. Furthermore, less oil rents would help revive the sense of crisis among Saudi policymakers, which had been salient in the late 1990s and functioned as a dynamo powering institutional reforms. Nevertheless, this sense of crisis was much diluted in the past decade as the policymakers got used to the new oil boom.[911] Psychological pressure emanating from having less wealth should be wisely used as a force for accelerating the "de-rentierisation" of Saudi society. Through appropriate HRD and labour market reforms, the Saudi society should be transformed into an industrial society where young nationals stand on their own feet as technical and industrial workers.

[910] Evans 1995.
[911] A former staff member of the Saudi Arabian General Investment Authority, interviewed by author, Riyadh, February 2013.

Indeed, many senior Saudis the author interviewed expressed their nostalgia for the days before the oil boom period. One of them, who taught Islamic work ethics at a technical college in Riyadh, lamented that abundant oil rents had made Saudi society "abnormal" where peoples' positive attitudes towards work had been lost. Interestingly, for him, this nostalgia for the normal past was also nostalgia for the future. He predicted with a glimpse of hope: "Saudi society would return to the normal orbit in the twenty-first century as we earn less money from oil".

Do Theories Travel?

This thesis coined several concepts offering an analytical framework to the enquiry of Saudi–East Asian industrial relations. Now the question is: do these concepts "travel" to other empirical cases? Since conducting comparative studies is beyond the capacity of this thesis, it is not possible to be conclusive about this. However, some suggestive remarks can be made about the applicability of the concepts to cases from other times and places.

First, the ideas of "techno-sovereignty" and "the paradox of the techno-nationalist" should be applicable to the analysis of other emerging economies. They may even help us understand the rise of China better. Although China has successfully developed itself as the new factory of the world, many technologies used in industrial production in China were brought in by foreign investors employing Chinese workers mainly as routine workers. In other words, China's techno-sovereignty is still under development. China faces the risk of

premature deindustrialisation if it only relies on the "cheap China" growth model, as those low-skilled jobs would flee as the wage levels go up.[912] Here, the key perspective is to what extent China's technology regime was "autonomous" as well as "open". In other words, to what extent have Chinese workers been successful in absorbing knowledge and skills from foreign investors? Such a perspective would help us think about the sustainability of China's growth and whether it can make a transition to a knowledge-based economy in the years to come.

Second, the concept of "production with rentier characteristics" and the "rentier society" should be applicable to the analysis of other rentier economies in the world. According to Michael Herb, there are over 20 rentier economies in the world: nine of them in the Gulf region (six GCC countries, plus Iran, Iraq, and Yemen); two in North Africa (Libya and Algeria); seven in Sub-Saharan Africa (Angola, Botswana, Congo Brazzaville, Equatorial Guinea, Gabon, Guinea, and Nigeria); four in Latin America (Bolivia, Ecuador, Venezuela, and Trinidad and Tobago); and one in Southeast Asia (Brunei).[913] Among these, some economies, particularly those in Sub-Saharan Africa, have yet to see substantial industrial diversification comparable to that in Saudi Arabia although the robustness of several Sub-Saharan African rentier economies amid the very recent fall in oil and commodities prices has attested to positive signs of economic diversification in those economies as well.[914] However, these concepts should be applicable, at least, to other GCC economies, particularly the UAE and Kuwait, as well as Iran, Iraq and Algeria, which have

[912] "Manufacturing: The End of Cheap China", *The Economist*, 10 March 2012.
[913] Herb 2005: 299.
[914] "African Economic Growth: The Twilight of the Resource Curse?", *The Economist*, 10 January 2015.

seen certain degrees of industrial diversification. These countries also initially created a petrochemical industry as an "industrialising industry" and now seek foreign investments in downstream manufacturing sectors. While Saudi Arabia is embarking on the development of an auto industry today, Iraq and Algeria are also beginning to invite foreign auto investors.[915] Iran already possesses its own auto industry which produced more vehicles than Malaysia, South Africa, and Poland did in 2013.[916] These concepts may also be applicable to Latin American cases, although the dynamics there are considered quite different from Gulf/MENA ones, as those economies began their industrialisation before the arrival of oil rents. Setting up a cross-regional collaborative research project about the impact of oil rents on the nature of industrialisation would be desirable.

Third, the concept of techno-diplomacy should be applicable to many other cases too. In theory, techno-diplomacy can be practised by states at all levels – superpower, major power, and regional power – as long as they attempt to gain something that is scarce from less developed states as a *quid pro quo* for the transfer of technology which is hard to attain if left to the market. Among those cases similar to the analysis presented in this thesis, Italy's and West Germany's industrial relations with Saudi Arabia are likely to offer good comparative studies, with the case of Italy presumably close to the case of Japan (a "technology-for-oil exchange") and the case of West Germany to that of Taiwan (a "technology-for-recognition" exchange). Likewise, East Asian states' economic relations

[915] "Iraq's Car Factory Shows Road Ahead for Industry", *Reuters*, 28 July 2011; "Algeria Inaugurates New Renault Plant in Oran", *Bloomberg*, 10 November 2014.
[916] International Organisation of Motor Vehicle Manufacturers, "2013 Production Statistics", http://www.oica.net/category/production-statistics/2013-statistics/ [accessed 1 October 2014].

with other developing states exporting natural resources may be analysed with this concept. In addition, other cases, such as Israel's African policy before 1967 can possibly be understood with the concept of techno-diplomacy.[917] The state–private sector relations should also show different traits in different cases. For instance, the way France practises techno-diplomacy should be different from the way the UK or Germany does so. Comparative studies would help us further unpack the dynamics of techno-diplomacy.

[917] Israel dispatched nearly 1,800 technical experts to Sub-Saharan African countries before 1967 in order to gain their support regarding the Palestine question at the UN General Assembly. Those technical experts were sent by Israel's Department of International Cooperation (MASHAV) and assisted Africans in the fields of agriculture, education and other development-related affairs (Chazan 2006).

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