



# Beyond Diversification: Complexity as a Source of Economic Resilience in the UAE

Salman Soz | Tanuja Pandey | Sophia Hamel

Edited by: Dr Damyana Bakardzhieva

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**Salman Soz**

is Adjunct Professor at the Anwar Gargash Diplomatic Academy and Consultant at the World Bank



**Tanuja Pandey**

is Research Assistant at the University of Delhi, India



**Sophia Hamel**

is Research Assistant at American Community School, Abu Dhabi, UAE

## Summary

- The UAE has achieved remarkable economic transformation since 1971, growing from a hydrocarbons-dependent economy into a diversified hub for services, logistics, tourism, and finance. However, in an increasingly volatile global environment marked by geopolitical tensions and external shocks, the central challenge is no longer diversification alone, but also economic resilience.
- The recent US-Israel-Iran war and global disruptions—including supply chain shocks and regional instability—highlight the limits of diversification strategies that rely on globally exposed sectors. While diversification broadens the economic base, it does not necessarily ensure the capacity to absorb shocks or adapt to rapidly changing conditions.
- At the same time, underlying structural challenges persist. While the UAE is ahead of its Middle Eastern and Gulf neighbours, labour productivity growth has slowed when compared with Singapore.
- Diversification has broadened the economy but now requires deepening. The UAE's top non-oil exports—gold, diamonds, aluminium, and re-exported mobile phones—carry limited domestic knowledge content. Singapore, Switzerland and South Korea, for example, are ahead of the UAE on the Economic Complexity Index.
- This Insight argues that while diversification has strengthened the UAE's economy, resilience depends on the depth of productive capabilities. Economic complexity—the ability to produce and export knowledge-intensive goods and services that few others can—provides a more robust foundation for long-term stability, adaptability and prosperity.
- The Insight offers the following policy recommendations:
  - » Redirect industrial strategy from quantity to quality. Prioritise sectors such as advanced manufacturing, green technologies, medical devices, and AI-enabled services — not only how much the UAE makes, but how knowledge-intensive it is.
  - » Invest in domestic human capital. Promote indigenous talent through technical education, upskilling and strong incentives for Emiratis to lead in high-skill private sector roles.
  - » Strengthen the innovation ecosystem through deeper university-industry collaboration, expanded R&D expenditure and a robust intellectual property framework.
  - » Retool institutional frameworks to enable long-term coordination and a level playing field for the private sector, including through the commercialisation of non-core state-owned enterprises.

## The Issue

The global economy is in a period of heightened uncertainty, shaped by geopolitical tensions, supply chain disruptions and shifting attitudes towards globalisation. Recent developments, including tensions involving the United States, Israel and Iran, which impacted the Gulf region the most, underscore how quickly trade routes, capital flows and key sectors can be affected. For open economies such as the United Arab Emirates (UAE), the central economic challenge is resilient growth—the ability to absorb shocks, adapt to disruption and sustain long-term prosperity.

Since its founding in 1971, the UAE has undergone a remarkable economic transformation, evolving from a hydrocarbons-based economy into a diversified hub for services, logistics, tourism, and finance.<sup>1</sup> Gross domestic product (GDP) per capita now exceeds US\$50,000, and the country routinely ranks among the world's top performers on infrastructure and investment climate indicators.<sup>2</sup>

Yet, while diversification has strengthened the UAE's economic base, it has not fully insulated the economy from external shocks, nor has it ensured sustained productivity growth. For instance, the UAE's output per worker (GDP constant 2021 International \$ at PPP) stood at 101,798 in 2024, down from 197,301 in 1991. While its performance is ahead of many countries in the region and the world, the corresponding figures for Singapore were 230,840 and 99,426.<sup>3</sup>

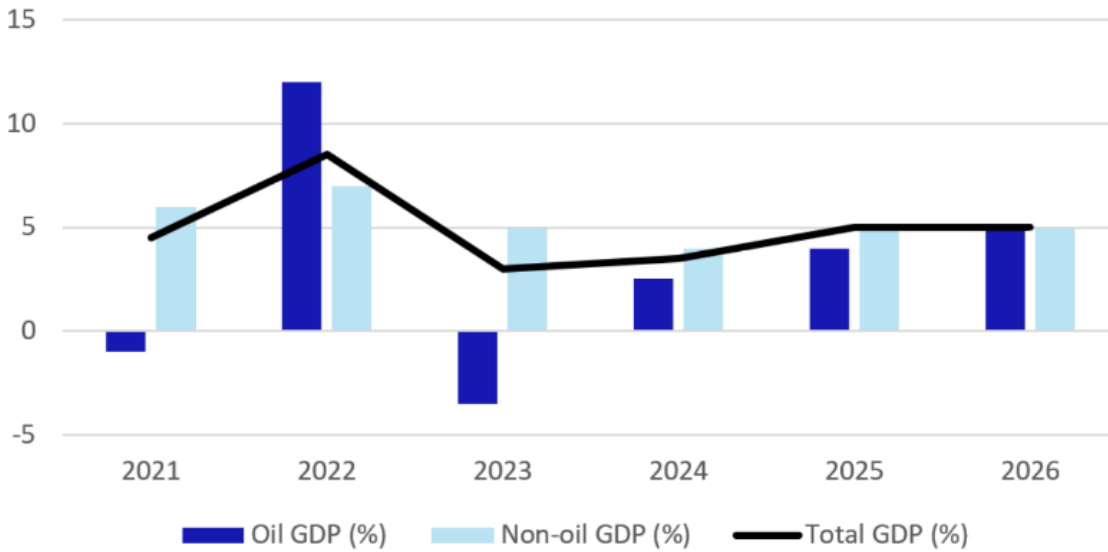
This Insight argues that while the UAE has successfully expanded the breadth of its economy, the next phase of development must focus on deepening its productive capabilities. Diversification expands the range of economic activities. Complexity, however, speaks to the depth of capability: the ability to produce and export knowledge-intensive goods and services that few others can. Ideas, innovation and integration into complex global value chains increasingly drive economic success. Therefore, economic complexity is a better marker of resilience and long-term prosperity than diversification alone.

The analysis is presented in five sections. The first reviews the UAE economy's evolution since its founding, its efforts at economic diversification and why it is time to shift gears towards a more complex set of economic products and services. The second section explores the concept of economic complexity and why it matters, reviews global experience and presents international comparisons. The third section reviews the UAE's position on the economic complexity ladder, as well as its strengths and the constraints going forward. The fourth draws lessons from global experience, particularly by examining the policy strategies and institutional choices that allowed leading complex economies to achieve and sustain their positions. The fifth section concludes with a summary of the central argument and recommendations for further policy debate and research.

## From Diversification to Complexity

Over the past two decades, diversification has become a defining strategy for resource-rich economies, particularly in the Gulf. The UAE has been an example of this shift. Between 2000 and 2023, the share of non-oil GDP in the UAE's total economic output rose from just under 40% to over 74%. Non-oil GDP growth has outpaced oil GDP growth in recent years (Figure 1). Key sectors like logistics, tourism, finance, and information and communication technologies (ICT) have led this transformation. The UAE hosts the busiest air cargo hub in the Middle East and major economic free zones such as the Dubai International Financial Centre (DIFC) and Abu Dhabi Global Market (ADGM) and consistently attracts billions of dollars in annual foreign direct investment (FDI) inflows.<sup>4</sup> However, these achievements obscure some structural limitations. While the UAE's economy has broadened, it has not necessarily deepened. It has added sectors and products, but it has room to improve its productive capabilities.

UAE Annual Real GDP Growth: Oil vs. Non-Oil Sectors  
(2021–2026, % Change)



Source: International Monetary Fund (IMF). Macro Poverty Outlook (WEO), April 2025. Washington, DC: IMF. Data adapted from UAE authorities and World Bank staff estimates.

**Figure 1.** UAE Oil vs. Non-oil Real GDP Growth

While diversification contributes to economic resilience, they are not one and the same. The logic of diversification seems intuitive. Spread economic activity across more sectors, and you will reduce dependence on any single one. By this measure, the UAE appears successful; its economy today exports over 200 products, up from fewer than 100 in 2000. Services make up over 50% of GDP, and tourism alone accounts for about 12% of economic output. However, such numbers mask other aspects.

While diversification contributes to economic resilience by reducing dependence on any single sector, recent global shocks suggest that diversification alone is not sufficient. Disruptions such as the COVID-19 pandemic and renewed geopolitical tensions in the Middle East have demonstrated that multiple sectors—particularly those exposed to global trade, tourism and logistics—can be affected simultaneously. As a result, economies that rely on a broad but relatively shallow base of activities may still face significant vulnerability. By contrast, economies with deeper productive capabilities, embedded in complex and knowledge-intensive sectors, are better positioned to adapt, reconfigure production and sustain economic activity under stress.

While hydrocarbon output now accounts for around 20% of the UAE’s GDP, government finances remain heavily reliant on oil revenues, which fund approximately 60% of public expenditure.<sup>5</sup> This creates vulnerabilities because oil price volatility can disproportionately impact economic growth in oil exporting countries. A study of 17 members of the Organisation for Cooperation and Development (OECD) found that over a 144-year period from 1870 to 2013, “oil price volatility has a negative and statistically significant impact on economic growth...”. The authors found that oil producing countries were “significantly negatively impacted by oil price uncertainty, most notably Norway and Canada”.<sup>6</sup>

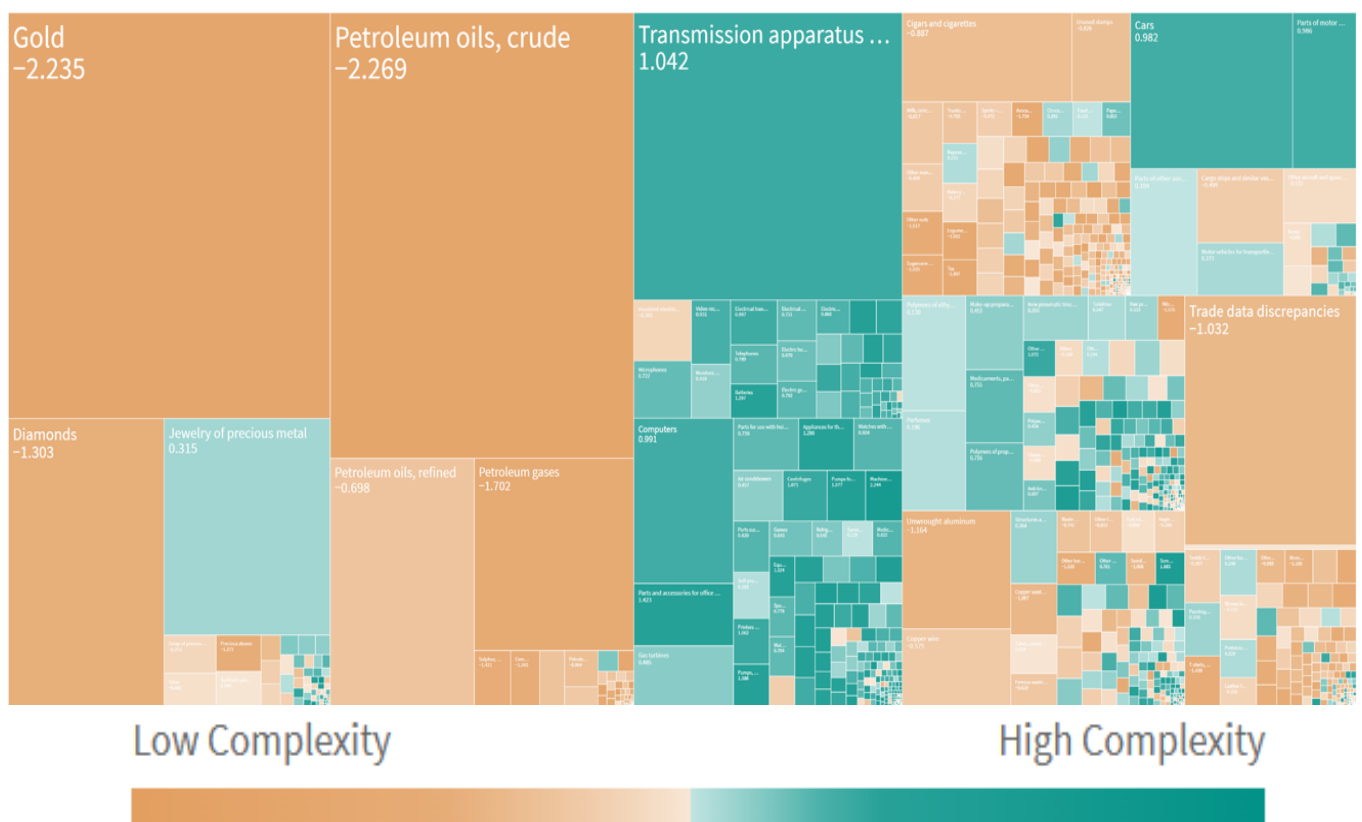
It is true that the non-oil UAE economy is a much bigger share of the total. However, there are differences between the emirates that constitute the UAE which largely reflect their resource endowments. Abu Dhabi holds the vast majority of the UAE’s oil reserves, giving it a hydrocarbons-based revenue base. Dubai, with minimal oil reserves, was compelled to build an economy around trade, tourism, finance, and logistics, making necessity the driver of its diversification. The diversification strategy is at the heart of many of the strategic initiatives launched by the UAE, including “We the UAE 2031”, which is currently under implementation.

While these efforts are welcome, there is growing evidence that suggests that it is not diversification alone that ensures resilience but also the nature and complexity of production and exports.<sup>7</sup> The UAE’s top non-oil export categories – gold, aluminium, re-exports of mobile phones, polymers, and diamonds, are either resource-dependent

or include limited domestic technological content. For instance, mobile phone re-exports, which contribute billions to trade figures, add little in terms of know-how or domestic supply chain depth.

This is where economic complexity comes in. According to Harvard University’s Growth Lab, complexity, not just diversity, is what correlates most strongly with long-run income growth and innovation readiness.<sup>8</sup> Economic complexity, measured by the rarity and sophistication of a country’s products and services, reflects the kind of embedded knowledge, skills, coordination, and institutional capacity that foster economic strength (Figure 2). It is the difference between exporting raw cocoa and Swiss chocolate – the leap from basic production to high-value, knowledge-intensive creation. Countries with a more complex product mix may export fewer goods, but their products carry layers of design, precision and intellectual property. The UAE’s success in expanding sectoral participation is undeniable. However, to move from diversification as protection against volatility to complexity as a platform for sustainable transformation, the UAE must shift to building the capabilities required not just to participate in the global economy, but also to shape it.

**Figure 2:** Complexity of UAE Exports in 2023



**Source:** The Atlas of Economic Complexity, Harvard University.

## Economic Complexity: Concepts, Measures, and Pathways

Before the Industrial Revolution, the difference in per capita incomes between the wealthiest and poorest countries was significantly lower than it is today. According to the Maddison Project Database, GDP per capita in the richest regions such as Western Europe was about three to four times higher than in the poorest regions such as Sub-Saharan Africa and South Asia. By the middle of the twentieth century, the richer regions were about 30 times wealthier.<sup>9</sup> In recent decades, some countries like China have grown quickly and closed the gap with wealthier countries, but many have not. For example, Switzerland’s GDP per capita (constant 2015 US\$) is almost 100 times that of Ethiopia. Switzerland is almost 40 times wealthier on a GDP- per-capita basis than India, one of the fastest growing economies over the last three decades. Some countries have zoomed ahead. What explains this?

Economists have long focused on the growth of GDP, the economic output of a country, as the main determinant of convergence or divergence between countries. The Solow growth model posits that economic output is a function of labour and capital, albeit with diminishing returns. Moreover, technological progress has helped to drive growth.<sup>10</sup>

However, the continued divergence between countries led to other theories of long-term growth such as the endogenous growth theory, advanced by the likes of Paul Romer and Robert Lucas. This theory posits that innovation, human capital investments and knowledge accumulation drive growth, and that technology is not exogenous, as indicated in the Solow model. However, the disparities between countries have not yielded answers to why some countries leverage existing ideas to grow while others do not.<sup>11</sup>

To help policymakers better diagnose growth constraints and develop effective strategies for development, The Growth Lab at Harvard University’s Center for International Development (CID) developed Economic Complexity, which is “a measure of the amount of capabilities and knowhow that goes into the production of any given product”. Countries produce hundreds of thousands of products, and while some are easier to produce, others are less so. To produce a T-shirt, you need a combination of materials, processes, machinery, and labour expertise. Some countries can do this more efficiently than others.

There are obviously far more complex products such as advanced machinery, specialty chemicals and high-precision products that countries produce; some countries have the capability to produce more complex products while others are lower on the complexity scale.<sup>12</sup> Highly complex products fetch premium prices. On the other hand, there are countries that produce less sophisticated products that other countries could produce easily, and such products attract no premium.

To develop a practical framework for complexity, Ricardo Hausman and Cesar Hidalgo developed the Economic Complexity Index (ECI), which weighs not only what countries produce, but also how few others can produce it.<sup>13</sup> The corresponding index for products is called the Product Complexity Index (PCI). The ECI is based on trade data and ranks economies by the knowledge intensity of their exports, and its usefulness as a predictor of economic growth is well established. In a study of over 120 countries, a one standard deviation increase in the ECI was associated with 4-5% higher annual GDP per capita growth over the following decade, outperforming variables such as investment-to-GDP and secondary school enrolment ratios.

There are limitations, however, to the ECI and PCI that policymakers need to be aware of. Complexity indices focus on trade and not on the entire production of a country. Also, services are not part of these indices.<sup>14</sup> Nevertheless, even with such limitations the ECI and PCI offer insights into structural transformation in countries seeking to tackle declining productivity and growth. Tables 1a and 1b present the most complex and least complex products in the inaugural Atlas of Economic Complexity.

**Table 1a:** Top 5 Products by Complexity

Product Code (SITC4)	Product Name	Product Community		Product Complexity Index
7367	Other machine tools for working metal or metal carbide	Machinery		2.08
8744	Instrument & appliances for physical or chemical analysis	Chemicals & Health		2.02
7742	Appliances based on the use of X-rays or radiation	Chemicals & Health		1.96
8821	Chemical products and flashlight materials for use in photography	Chemicals & Health		1.91
7373	Welding, brazing, cutting, etc. machines and appliances, parts, N.E.S.	Machinery		1.86

**Table 1b:** Bottom 5 Products by Complexity

Product Code (SITC4)	Product Name	Product Community		Product Complexity Index
2631	Raw cotton, excluding linters, not carded or combed	Cotton, rice, soy beans and others		-2.51
2876	Tin ores and concentrates	Mining		-2.57
2320	Natural rubber latex; natural rubber and gums	Tropical tree-crops and flowers		-2.63
2225	Sesame seeds	Cotton, rice, soy beans and others		-2.99
0721	Cocoa beans, raw, roasted	Tropical tree-crops and flowers		-3.10

**Source:** Atlas of Economic Complexity (2013). Harvard University.

The Country Complexity score ranges from -2.47 for Chad (rank:145) to +2.52 for Singapore. While Singapore is exceptionally wealthy, Chad is exceptionally poor. Singapore, Switzerland, Japan, Taiwan, and South Korea lead in the 2023 ECI rankings, and have dominated the ECI rankings over the last decade. Remarkably, Japan and Switzerland have maintained a top 3 ranking since 2000. Singapore has never dropped out of the top 10, and Taiwan and South Korea have improved considerably since the global financial crisis of 2008-09. For reference, the UAE's rank has improved significantly from 96<sup>th</sup> in 2000 to 35<sup>th</sup> in 2023.

China is a good example of a country whose product complexity improved along with its GDP per capita. According to data from the World Bank and the Harvard Growth Lab, China's ECI rose from 0.50 in 1995 to about 1.47 by 2023, and its GDP per capita grew from US\$603 in 1995 to over US\$12,000 in 2023, driven by large-scale entry into high-complexity sectors such as electrical and electronic equipment, machinery and transport equipment. Vietnam's ECI improved from -0.43 in 1995 to approximately 0.14 in 2023, with GDP per capita rising from US\$358 in 1995 to US\$4,324 by 2023, led by its emergence as a global electronics and machinery exporter.

In contrast, Brazil and South Africa illustrate the developmental ceiling that arises from dependence on low-complexity exports. According to the Atlas of Economic Complexity, Brazil had an ECI of -0.52 in 2023, ranking 93<sup>rd</sup> globally, with exports dominated by soybeans, iron ore and crude petroleum, which are products with limited technological content. South Africa, with an ECI of -0.28 and a global rank of 77<sup>th</sup>, continues to rely heavily on gold, platinum and coal. Despite a degree of sectoral diversification, both countries have struggled to move into industries with higher knowledge intensity. Natural resource endowments, which limit innovation spillovers and constrain long-term productivity growth, heavily influence the structure of their exports. These patterns demonstrate how economies anchored in low-complexity goods often plateau, unable to generate the capability-based growth required for sustained development.

What complexity also offers is a buffer – an economic immune system of sorts. When global headwinds strike, complex economies bend but don't break. During the COVID-19 pandemic, Switzerland leveraged its pharmaceutical industry, South Korea scaled up semiconductor and diagnostic kits exports, and Singapore expanded its biomedical sector. Meanwhile, the UAE, despite having built a diversified services base, found many of its pillars – aviation, tourism and logistics – vulnerable. According to the World Bank, the UAE's GDP contracted by 6.1% in 2020, compared to 2.8% in South Korea and just 2.4% in Switzerland. While services provide breadth, they often lack the counter-cyclicality and innovation spillovers of complex manufacturing. Complexity, by contrast, builds deep roots that keep the economy grounded even when the winds change.

Economies that are highly reliant on commodity exports such as raw materials and, by extension, re-exports tend to exhibit limited domestic value addition and capability development, as these activities typically involve minimal processing and weak integration into local value chains. Such economies face greater challenges in moving up the value chain and diversifying into complex products. High-complexity countries, on the other hand, embed themselves in upstream stages of global value chains.<sup>15</sup>

Producing cement, steel or basic chemicals expands output. These products are relatively complex to produce. However, greater gains lie in high-knowledge sectors: aerospace components, green technologies, medical devices, and robotics. These require long-term investment in education, Research and Development (R&D), institutional support, and a high-skill workforce. Countries that have made this leap, from South Korea to Finland, invested heavily in technical universities, patent regimes and public-private R&D consortia. Building these capabilities is not easy to do and requires consistent effort and time. However, for those countries seeking to shape global economics, it is essential to climb the ladder of economic complexity.

As shown in Section IV, countries like Singapore, South Korea and Switzerland did not achieve complexity by accident. They used targeted industrial policies, education reform, public procurement, and persistent investment in innovation ecosystems. The UAE, with its fiscal strength, international connectivity and bold vision, is fully capable of doing the same but it must act with urgency, clarity and consistency.

## The UAE’s Position in the Global Complexity Landscape

The UAE has transformed impressively over the past few decades – diversifying, reforming and modernising. But to ensure that the UAE’s progress is in line with its potential, growth should incorporate complex, knowledge-based production. This is not only about more exports or better rankings on international indices; the UAE faces significant challenges in the form of a declining growth trend and productivity. By addressing these challenges, the UAE can build the foundations of a future-ready economy, one where national talent flourishes, innovation thrives and prosperity is both broad-based and resilient.

An analysis by the International Monetary Fund (IMF) indicates that the UAE faces considerable challenges to future productivity growth. The analysis, prepared in 2022, found that “Potential non-oil growth in the UAE has been on a downward trend over the past twenty years”. The proximate cause of this downward trajectory is declining total factor productivity (TFP) before the Global Financial Crisis in 2008-09. Since that crisis, contributions from labour have been declining. The IMF noted that the UAE’s capital stock was also in decline during this period, although the level of capital remains significantly above the OECD average.<sup>16</sup>

These challenges are evident in the UAE’s product mix and export structure. According to the Atlas of Economic Complexity, over 60% of the UAE’s non-oil exports are in low-complexity categories such as gold (Product Complexity Index: –2.24), crude petroleum (–2.27) and diamonds (–1.3). Even among the 40 new products added between 2008 and 2023, a significant share includes low-complexity goods like copper wire (PCI: –0.575), iron tubes (–0.653) and unwrought aluminium (–1.16). A few additions, such as computers (PCI: 0.991) and polymers of propylene (0.716), register as high-complexity exports. This pattern suggests that while the UAE has broadened its export base, the depth of embedded know-how remains limited.

This distinction becomes clearer when we examine the composition of the UAE’s non-oil GDP. Non-oil sectors recorded a growth rate of 5% in 2024 and contributed over 75% to the AED 1.8 trillion national economy in 2024.<sup>17</sup> Non-oil exports grew by 4.5% in the first nine months of 2024 compared to the same period in 2023, largely driven by jewellery, tobacco products and gold.<sup>18</sup> While Abu Dhabi’s non-oil GDP rose by 9.1% in 2023, sectors like hospitality and retail, though economically significant, remain limited in terms of technological depth.

**Table 2:** Manufacturing Sector Contribution to GDP (%)

Manufacturing Sector Contribution to GDP (%)	
Country Name	Average of Last 5 Available Years
Japan	20.29
Norway	5.86
Saudi Arabia	14.82
Singapore	18.65
South Korea	25.09
Switzerland	18.13
UAE	9.97

Manufacturing (% of GDP), 2017–2023 for Selected Countries.  
Source: World Bank (2025), World Development Indicators.

Manufacturing still accounts for less than 10% of GDP, focused mainly on basic metals, plastics and construction-related materials.<sup>19</sup> In contrast, Singapore derives over 20% of its GDP from manufacturing, led by high-complexity sectors such as semiconductors, electronics and precision instruments (Table 2). This contrast underscores a difference not only in economic scale but also in structural sophistication. While the UAE’s non-oil economy continues to grow, limited knowledge-intensive production poses long-term challenges. The gains of economic diversification are slowing because the focus has been on less complex services such as tourism and logistics, and on manufacturing that is less knowledge-intensive than in some of the advanced comparators listed above.

Furthermore, low-wage, low-skill expatriate workers dominate the labour force, which helps competitiveness in industries like construction and logistics, but it also weakens incentives for investment in automation, innovation and upskilling, which drive productivity and complexity.<sup>20</sup> According to the IMF, over 90% of the UAE’s private sector workforce is foreign labour. Meanwhile, sectors that generate middle-income, high-skill employment, the kind found in advanced manufacturing and high-tech services, remain underdeveloped. Countries with higher ECIs tend to have more inclusive labour markets and better income distribution. Over the past decade, GNI per capita trends have diverged across these economies relative to the UAE. As shown in Table 3, between 2014 and 2024, Singapore and Switzerland widened their income advantage over the UAE, while South Korea substantially narrowed its gap.

**Table 3:** GNI per Capita, Atlas Method (Current US\$), Selected Economies, 2014 and 2024

Country	2014	2024	Change
Korea, Republic	29,480	36,750	+7,270
Singapore	56,380	74,750	+18,370
Switzerland	88,250	95,220	+6,970
United Arab Emirates	53,360	51,550	-1,810

**Source:** World Bank. (2024). GNI per capita, Atlas method (current US\$) [Data set]. World Development Indicators. <https://data.worldbank.org/indicator/NY.GNP.PCAP.CD>

The UAE’s role in global trade is undeniable. In 2024, foreign trade reached AED 3 trillion, a record-breaking figure, marking a 14.6% increase from the previous year.<sup>21</sup> However, re-exports stood at AED 734.4 billion, highlighting the UAE’s world-class logistics infrastructure. It underscores a structural challenge – transit and not just transformation powers the nation’s trade engine.

Policy makers are not blind to this challenge. Initiatives like “Make It in the Emirates” and the broader Operation 300 Bn industrial strategy aim to increase the manufacturing sector’s GDP contribution from AED 133 billion to AED 300 billion by 2031.<sup>22</sup> In fact, manufacturing already accounts for 9.5% of Abu Dhabi GDP.<sup>23</sup> These are positive steps but, again, the question is not only how much the UAE makes, but also what it makes. Construction materials, food processing and basic chemicals, sectors generally classified as low to medium in technological intensity based on OECD standards, still dominate industry.

To strengthen its capabilities, the UAE must ask more difficult questions: (1) not how many sectors or products it runs, but how complex they are; (2) not how fast the economy grows, but how deeply; and (3) not how much it trades, but how much value it creates. For that, the export strategy must shift towards qualitative deepening, embedding knowledge and innovation in the production of globally scarce, high-value goods. Other economies have confronted similar challenges yet managed to climb the complexity ladder, offering lessons the UAE can adapt. That is the subject of the next section.

## Lessons from other countries

In July 2025, US President Donald Trump observed that he liked a strong dollar but that “you make a hell of a lot more money” with a weaker one.<sup>24</sup> He went on to argue that “...when we have a strong dollar, one thing happens: It sounds good. But you don’t do any tourism. You can’t sell tractors, you can’t sell trucks, you can’t sell anything”. President Trump is not alone in holding such views; economists across the political spectrum understand that a weaker currency helps exports become more affordable for an importing nation. However, that is not the entire story.

The dollar is not the world’s strongest currency. It has not been so for decades. Instead, it is the Swiss franc that has been “the top-performing currency over the past 50 years, 25 years, 10 years and five years.”<sup>25</sup> The strength of the Swiss franc does nothing to diminish the trading prowess of Switzerland – exports as a share of the economy are about 75% and 2% of global exports, both historic highs. For perspective, Switzerland has a population of 9 million and has the same share of global exports as Mexico, a country with a population of 130 million. The way Switzerland achieves this is by producing high quality products and services that consumers around the world pay a premium for.

Switzerland dominates the United Nations’ global innovation rankings, investing heavily in education and R&D (Table 4). It generates US\$100 of GDP for each hour of work, higher than any of the 20 biggest economies in the world. More than half its exports are “high tech”, double that of the United States. The complexity of its advanced exports helps Switzerland run current account surpluses averaging 4% of GDP since the 1980s.<sup>26</sup> Unsurprisingly, Switzerland ranks second best on the Economic Complexity Index (ECI) with a score of 2.51. Remarkably, it has never ranked below third place in the history of the ECI.

Singapore and South Korea also rank highly on the ECI. In fact, both South Korea (population of 50 million) and Singapore (population of 6 million) have a slightly higher share of global exports than Switzerland. Singapore transformed from a low-income country to one of the wealthiest countries on the back of an average GDP growth rate of 7% since its independence in 1965.<sup>27</sup> In the process, Singapore became a manufacturing and services powerhouse, developing a high value-added economy that consistently ranks among the best countries on a host of global development indices. Since 2008, Singapore has been a consistent top five performer on the ECI, leading the 2023 ranking with a score of 2.52.

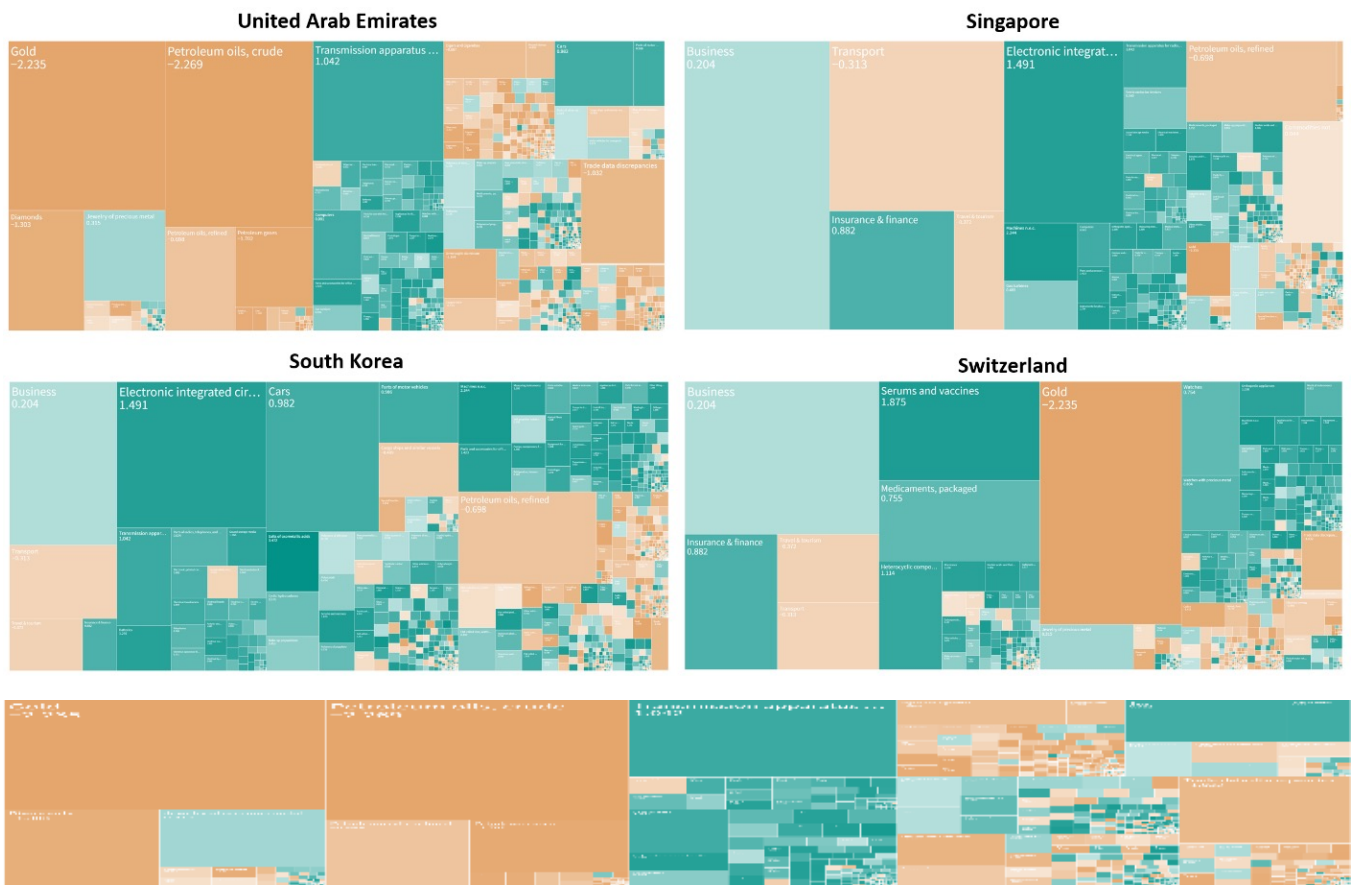
South Korea’s journey on the complexity ladder started with raw material and agricultural exports in the 1960s, which gave way to chemicals, shipbuilding and electronics in the 1970s. Since then, South Korea has progressed to more advanced sectors like semiconductors and consumer electronics. It transitioned from being an importer of knowledge to a source of accumulated experience and knowledge. Moreover, South Korea’s R&D expenditure increased from just over US\$46 million in 1976 to over US\$70 billion in 2020, with the private sector accounting for most of this amount.<sup>28</sup> With a score of 2.23, South Korea ranked 5th on the ECI in 2023. As with other top performers like Singapore, Switzerland and Japan, South Korea has shown considerable consistency in maintaining its high rank over the past 15 years.

**Table 4:** R&D Expenditure (% of GDP)

<b>Research and Development Expenditure (% of GDP)</b>	
<b>Country Name</b>	<b>Average of Last 5 Available Years</b>
Japan	3.28
Norway	1.97
Saudi Arabia	0.55
Singapore	1.96
South Korea	4.81
Switzerland	3.11
UAE	1.3

Research and Development Expenditure (% of GDP), 2012–2023 for Selected Countries. Source: World Bank (2025), World Development Indicators.

Figure 3: Comparative Product Complexity of Exports in 2023



**Source:** The Atlas of Economic Complexity, Harvard University.

At first glance, there are similarities between the experiences of Singapore, Switzerland and South Korea and that of the UAE. The UAE has also transformed dramatically in five decades, rising from poverty to prosperity. For a country of 10 million people, its exports value of about US\$560 billion is among the top 20 in the world, close to Spain. Additionally, the UAE’s GDP per capita is higher than that of France, Italy and South Korea. The UAE also ranks highly on many global indices, especially those related to competitiveness and business environment. Yet, the UAE trails on the ECI in 35th place with a score of 0.61. Figure 3 shows a snapshot of the complexity of UAE exports and comparator countries. The greener spaces indicate higher complexity.

What lessons might the UAE learn as it seeks a path towards a higher status in the global league tables? Singapore, Switzerland and South Korea have each followed distinct strategies to advance their status. However, there are some common elements that can help illuminate the UAE’s path to an economy with higher productivity and complexity.

Singapore transformed from a port city to a high-income economy through a heavy dose of government intervention, strong institutions of governance, strategic planning and an embrace of free market principles, and there has been a strong commitment to innovation and openness. Through the Economic Development Board, Singapore courted foreign investment and gradually shifted the economy from labour-intensive manufacturing to higher-end electronics and biotech.<sup>29</sup> As its comparative advantage shifted, Singapore sought to climb the technology and value-added ladder through a combination of state intervention, free trade and capital flows. Heavy investment in education and infrastructure underpinned its transition to a knowledge-based economy.

South Korea followed a state-directed, export-oriented industrialisation model. The key difference was that the government actively encouraged large conglomerates or chaebols to lead the economy’s transformation from an agrarian one to a manufacturing powerhouse. In the process, successive governments engaged in trade protectionism and nationalised the financial system, enabling greater control of the development process. Notably, the government incentivised chaebols to export more by directing credit towards companies that were successful in gaining a share of international markets. This contrasts with some countries where trade protectionism leads to domestic industries not competing in international markets but instead seeking greater control of an easier domestic landscape.

A key element of South Korea’s ability to become a more knowledge-intensive economy was a deliberate strategy to produce new products that were not part of the country’s product mix. This was possible because of earlier investments in technology and human capital.<sup>30</sup>

Switzerland took a different path towards its status as a leading knowledge economy. The country has had a long tradition of precision manufacturing and that, combined with institutional excellence, allowed it to innovate continuously rather than seek radical transformation through various stages of development.<sup>31</sup> One could argue that Switzerland’s path appears more seamless than that of the East Asian countries. It had an early lead in key sectors such as pharmaceuticals, chemicals and machinery, which it leveraged to create infrastructure for innovation. Along with massive R&D investment, Switzerland focused on vocational education and technical skills, as well as close collaboration between universities and industry on a platform of stable institutions to develop an innovation ecosystem that is constantly adapting to global shifts.

**Table 5:** Patent Applications filed by Residents

Patent Applications Filed by Residents	
Country Name	Average of Last 5 Available Years
Japan	241,819
Norway	1,003
Saudi Arabia	1,173
Singapore	1,743
South Korea	171,994
Switzerland	1,332
UAE	57

Patent Applications residents (number), 2017–2021 for Selected Countries.  
 Source: World Bank (2025), World Development Indicators.

We can summarise the lessons in this Insight as follows. Firstly, all three comparator countries invested heavily and consistently in education and R&D. The number of patents they file is a testament to these investments (Table 5). Secondly, each country pursued a strategy of advancing on complexity ladder and shunning their comfort zone of producing what they were familiar with. They leveraged the innovation infrastructure that came through investments in human capital and research. Thirdly, the role of strong and capable institutions is clear in all three cases. This facilitated the creation of a long-term vision, enabled coordination between economic actors, and helped smooth over challenges during transitions.

## Conclusion: A Complexity-Centred Development Paradigm for the UAE

The UAE has reached a critical juncture in its development journey. In just a few decades, it has transformed with remarkable speed from a hydrocarbons-dependent economy to a diversified regional hub. However, in an increasingly uncertain global environment marked by geopolitical tensions and external shocks, the next stage is more demanding, requiring a shift from diversification to complexity, and from economic breadth to economic depth. This transition is not only about enhancing long-term prosperity, but also about strengthening economic resilience.

Singapore, South Korea and Switzerland did not reach the top of the complexity ladder by accident. For the UAE, their experience points to a concrete policy agenda:

- Shift industrial policy from breadth to depth. The question is not how many sectors the UAE participates in, but how knowledge-intensive they are. Advanced manufacturing, frontier technologies, green energy, and precision industries should be the targets.
- Build the domestic talent base. This will be important for building capabilities even as imported expertise helps fill the gaps. Technical universities, vocational training and deliberate Emiratisation of high-skill roles could be explored.
- Invest in R&D and innovation infrastructure. Switzerland and South Korea consistently spent on research, patents and university-industry partnerships. The UAE must do the same.
- Strengthen institutions for the long term. Complexity requires coordination across ministries, economic cycles and political transitions. Capable, empowered institutions make this possible.
- Level the playing field for the private sector. Commercialising non-core state-owned enterprises, reducing barriers to entry and rewarding innovation over incumbency can unlock the dynamism that complexity demands.

The transition to complexity needs political will, sustained commitment and a willingness to trade short-term comfort for long-term resilience. But the UAE has already shown that it can defy expectations, transforming deserts into human habitats. The next challenge—moving from diversification to complexity—is equally daunting, but also equally necessary.

The choice before the UAE is not whether to pursue complexity, but how decisively and effectively to do so. The opportunity is clear, the capability exists and the time is now.

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