



# THE ROLE OF INNOVATIVE SOLUTIONS IN CONFRONTING ECONOMIC CRISES IN THE UNITED ARAB EMIRATES

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**Abstract:** *The creative solutions economy strategy, which aims to deal with crises or boost output and productivity under normal circumstances, has contributed to the improvement of the United Arab Emirates' economic and social performance. As a result, after being one of the most underdeveloped nations, it has achieved significant strides in the area of economic innovation. In light of the recent economic crises that the United Arab Emirates has seen and experienced, it is instructive to investigate the potential effects of novel remedies on the economy. Regardless of the origins of the global financial, health, cultural, and political problems, the UAE has been able to achieve acceptable accomplishments via the applications of the economics of new solutions. High levels of innovation have been achieved in the UAE through science, knowledge, and the application of technology, as well as in the field of research and development. The UAE is one of the countries that encouraged development and innovation and provided the necessary means, financing, and support to get to where it is today.*

**Keywords:** *Innovative solutions, economic crises, UAE, Innovations*

## 1. Introduction

The success of any country in performing its tasks properly, particularly in times of crisis, depends on the extent to which it can adapt the element of innovation during those times, or even during normal times. Therefore, the innovation-based economy in the current era has become a solid base on which the success of institutions depends, regardless of their economic reference. For innovation to contribute to economic life, this is done through the use of innovative technology in achieving economic growth. It is also an important entrance to avoid the serious negative effects resulting from economic crises. The economy of innovative solutions takes the form of new products and new production methods, and the application of a strategy of innovation in organizations of any size, which leads to monitoring and collecting available ideas and knowledge, and exploiting them in developing the organization's products and gaining continuous competitive advantages (A. H. Almagtome, Al-Yasiri, Ali, Kadhim, & Heider, 2020). Here, we must take into account the experience adopted by the UAE, which began the features of its modern renaissance in a few decades and achieved tremendous achievements on all economic, social, and political levels. The importance of the research stems from the focus on the modern global economic trend within the framework of what is known as the economy of innovative solutions to face economic crises and the mechanism that achieves this. The research aims to study the role of the economy of innovative solutions in facing the effects of contemporary global economic crises and their role in reducing their causes and severity (A. Almagtome, Khaghaany, & Önce, 2020). Through the applications of the economy of innovative solutions, it is possible to achieve acceptable successes in confronting economic crises, regardless of the reasons behind the creation of these crises: financial, health, cultural, political, and so on. Therefore, the question that centers around the research problem is as follows:

What are the extents of success achieved by the United Arab Emirates in adapting the economy of innovative solutions to face economic crises, especially global ones, to prevent its economy from being affected by the negative effects of those crises?

## **2. A brief overview of the nature of the UAE economy**

In 1971, seven independent emirates came together to form the federation now known as the United Arab Emirates. With a population of little more than 180,000 people and an economy based on agriculture, pearl mining, fishing, and commercial activities, it developed against a background of poverty and social and economic backwardness. The country did not start its social and economic growth and the building of its infrastructure until the late 1960s when it received aid from other countries. Because of the oil wealth amassed during the 1970s, this development program has also made it possible to create a comprehensive welfare system for the people of the United Arab Emirates. As a result, the United Arab Emirates (UAE) has been able to maintain political and social stability by investing its large oil riches in social and economic infrastructure and providing its citizens with excellent social services (health, education). Private sector growth has been encouraged by state policy (Schiliro, 2013a). However, within 44 years, the UAE has managed to evolve from a subsistence economy to an innovation-driven economy. The UAE also achieved record-high growth rates and in 2015 was able to increase its real GDP. The UAE is now on par with the world's advanced economies in terms of the macroeconomic environment, infrastructure, technological progress, and innovation. However, cautious policy-making has been by the UAE's public policies. United Nations is also crucial in providing appropriate guidance and use of these natural resources. Because of its achievements, the UAE is now a role model for oil-producing countries (Al-Sarihi & Mason, 2020).

The UAE has also been able to achieve political stability and strong economic development through strategies of using oil revenues to recruit skilled foreign workers from the West and low-skilled workers from Asia (Nyarko, 2010). In addition, hydrocarbon income has been mainly attributed to speeding the process of boosting national savings and capital accumulation required to support economic growth and hence enhance exports through higher investment. Dependency on fossil fuel supplies was an economic characteristic. Since the foundation of the UAE in 1971, the overall economic performance of the United Arab Emirates has been defined by the following five primary characteristics (Delgado, 2016):

### **1- Adoption of the Free Market System**

The UAE has pursued a different route than other growing economies, which consider that demand and supply influence economic elements such as pricing and investment in the country's numerous economic sectors as well as global and domestic commerce. In addition, the UAE has adopted an open economic policy through which it promotes freedom of investment and trade, supported by fiscal and monetary policies that favor foreign trade and investment.

### **2- Tight Local Market and Foreign Manpower**

In 2001, the UAE had a tiny local market with a population of around 3 million people, and it wanted to increase exports to overseas markets to boost its market and domestic demand. The development of production and service endeavors would be constrained by reliance on such a limited market. Through expanding exports to international markets. Depending on such a limited market would restrict the growth of production and service initiatives. Also, the UAE government has been able to enhance international investment, foreign market expansion, commercial activity, and local demand. Due to the lack of national manpower, the UAE economy was also characterized by its heavy reliance on the foreign workforce. This allowed expatriate workers to implement development projects in the oil and non-oil sectors, as well as the public and private sectors, which would not have been possible otherwise. This has always been a concern for the UAE, dating back to the original oil discoveries of the 1950s, which

were only made feasible by British expertise in hydrocarbon exploration. Free zones and foreign direct investment (FDI) have lately imported UAE-lacking technology and know-how. Foreign labor has successfully contributed to the quick economic, social, and cultural growth of the state and the formation of a market for the resuscitation of many sectors of the national economy in this way (Godwin, 2006).

### 3- Geographical Location is the Basis Of Main UAE Economic Features

The United Arab Emirates' excellent geographical position has allowed it to become a regional commercial center. This has contributed to the conclusion of several trade agreements with Arab, Gulf, Asian, and Western nations (mainly Europe). Owing to its location, the UAE is near raw material suppliers and less-cost manufacturing sectors, such as India and China. But, it is also near to markets such as Europe, to whom it can ship completed products. Specifies that this makes UAE possible. The United States can supply the demands of these markets more swiftly and at a considerably cheaper cost, which encourages the expansion of exports.

- 1- **Recovery of GDP Growth Rates:** The UAE has been able to go a long way in the process of economic growth and the ability to diversify its economic resource base so that it can avoid the volatility of oil prices so that the performance of various sectors has improved and its economy has been characterized by liberalization and openness to the global market (Zarrouk, El Ghak, & Abu Al Haija, 2017). During the period (1998-2020), the United Arab Emirates witnessed a remarkable recovery and significant developments in GDP growth rates, all of which are due to the trend towards the economy of innovative solutions in economic diversification and expansion of the production base.

*Table 1. GDP of the UAE at Current Prices, Average Per Capita Income and Growth Rate(1998-2020)*

Years	Population (1)	Gross Domestic Product ( billion dollars) (2)	Average per capita income (3)	GDP growth rate (%)(4)
1998	2813214	75.674336283	26899.602	—
1999	2966029	84. 445473111	28470.886	11.59
2000	3134067	104. 33737	33291.366	23.56
2001	3302722	103.31164	31280.756	-0.98
2002	3478769	109.816201	31567.546	6.30
2003	3711931	124.34635	33499.103	13.23
2004	4068577	147.82437	36333.187	18.88
2005	4588222	180.61746	39365.46	22.18
2006	5300172	222.11654	41907.421	22.98
2007	6168846	257.91613	41809.462	16.12
2008	7089486	315.47461	44498.941	22.32
2009	7917368	253.54735	32024.198	-19.63
2010	8549998	289.78733	33893.264	14.29
2011	8946778	350.66603	39194.672	21.01
2012	9141598	374.590605	40976.491	6.82
2013	9197908	390.10755	42412.64	4.14
2014	9214182	403.137006	43751.806	3.34
2015	9262896	358.13505	38663.401	-11.16
2016	9360975	357.04515	38141.867	-0.30
2017	9487206	385.605506	40644.791	8.00



2018	9630966	422.21504	43839.324	9.49
2019	9770526	417.21555	42701.443	-1.18
2020	9890400	358.86876	36284.555	-13.98

Source: Prepared by the researcher columns (3) and (4) based on the data of the World Bank <https://data.albankaldawli.org/country/china?view=chart> noting that the gross domestic product of the United Arab Emirates for the year 1997 is (78. 839008).

### 5- Fluctuation In Population Growth Rates

After the year 2003, the growth rate of the population increased from (6.702428359), and the population continued to increase and reached in 2007 (16.38954358), and through Table (16) shows the population and the annual growth rate in the development of the population conditions of the United Arab Emirates, and this is due to several reasons, including the rapid growth of expatriate labor, net external migration, improved services and health care, and high fertility rate. They constitute the main reasons, which will lead to an increase in the domestic market as well as dependence on foreign trade, increased demand, and strengthening the economy (Mishrif, 2018).

*Table 2. Population and Annual Growth Rate in the United Arab Emirates (1998-2020)*

Years	Population (1)	Population Growth Rate (2)	Years	Population (1)	Population Growth Rate (2)
1998	2813214	5.310139663	2010	8549998	7.990407923
1999	2966029	5.432043208	2011	8946778	4.64070284
2000	3134067	5.665419994	2012	9141598	2.177543692
2001	3302722	5.381346346	2013	9197908	0.615975456
2002	3478769	5.330360836	2014	9214182	0.176931537
2003	3711931	6.702428359	2015	9262896	0.528685021
2004	4068577	9.608098857	2016	9360975	1.058837323
2005	4588222	12.77215597	2017	9487206	1.348481328
2006	5300172	15.51690393	2018	9630966	1.515303873
2007	6168846	16.38954358	2019	9770526	1.449075825
2008	7089486	14.92402307	2020	9890400	1.226894028
2009	7917368	11.67760258			

Source: From the work of the researcher, column (2), based on the data of the World Bank, noting that the population for the year 1997 is <https://data.albankaldawli.org/country/china?view=chart> (2671361).

### 6- Dependence On Oil and Gas

The prosperity of the United Arab Emirates and its rapid transformation into a prosperous economy has become thanks to the revenues of oil exports, as the rise in oil export prices has led to an improvement in the terms of trade (Schiliro, 2013b).



*Table 3. Oil and Natural Gas Production, Gross Fixed Capital Formation and Trade Balance of UAE (1997-2020)*

Years	Gross domestic product at current prices Billion Dollar	Oil production Billion Dollar	Average Crude Oil Prices Dollar/Barrel	Natural Gas Production Billion Dollar	Total fixed capital formation Million Dollar
1997	78.839008	2.1607	-	-	-
1998	75.674336283	2.2441	-	-	-
1999	84.445473111	2.1540	-	51.000	-
2000	104.33737	2.2800	28.2	52.590	-
2001	103.31164	2.2310	24.4	39.360	21.673
2002	109.816201	1.9003	24.9	43.390	23.140
2003	124.34635	2.2872	28.9	44.800	25.854
2004	147.82437	2.3436	37.7	46.290	27.620
2005	180.61746	2.4677	53.4	46.600	33.196
2006	222.11654	2.591	64.3	48.790	39.044
2007	257.91613	2.529	71.1	50.290	60.798
2008	315.47461	2.572	97.0	50.240	70.584
2009	253.54735	2.242	61.8	48.840	73.308
2010	289.78733	2.304	79.0		71.639
2011	350.66603	2.5640	104.0	2.5640	75.269
2012	374.590605	2.6525	105.0	2.6525	78.064
2013	390.10755	2.7970	104.0	2.7970	71.161
2014	403.137006	2.7940	96.2	2.7940	79.049
2015	358.13505	2.9710	50.8	60.2	83.840
2016	357.04515	3.0880	42.8	61.9	87.343
2017	385.605506	2.9670	52.4	49.8	81.298
2018	422.21504	3.0072	69.8	53.2	80.438
2019	417.21555	3.0580	-	55.1	-
2020	358.86876	-	-		-

Source: The Unified Arab Economic Report for different years from 1998-2020

- Studies of National Accounts for the Arab Region, Economic and Social Commission for Western Asia, Issue 37, 2019.

- Annual Economic Report, UAE

It is noted through Table (3) that the United Arab Emirates has witnessed significant developments in continuous growth rates in GDP, as it witnessed a remarkable recovery during the study period, as it reached its highest level in 2014, reaching about (403.137006) billion dollars and a growth rate of (3.23%) as a result of the good performance in the oil and natural gas sector that year, as well as the rise in average oil prices to (96.2) dollars per barrel, which is one of the factors that contributed to the growth of sectors. Economic and social, growth has started to fluctuate up and down until 2020 about (358.86876) billion dollars and a growth rate of (-16.2) due to fluctuations in crude oil prices **between**

high and low, which directly affected the oil sector of the United Arab Emirates, but the non-oil sectors remained practicing their role normally in the GDP, and all these things did not prevent them from moving towards innovation and economic diversification. And expand the production base to reach a strong economy that competes with advanced economies.

**Concerning the formation of fixed capital:** investment is one of the most important economic variables that strengthen capital accumulation in any country, as well as its importance, stems from being a source of funding or expanding the productive capacity of the economy, and investment plays an important role in economic development because it constitutes real additions to the existing **capital** in society and the creation of complementary or alternative financing sources to the role of the state. Therefore countries are keen As a result of the concerted efforts of many in the United Arab Emirates, the formation of total capital increased to (87.343) million dollars in 2016, due to the great role played by the private sector in the volume of local investments as a cornerstone supporting investments in the public sector in that period, as well as the UAE's interest in the private sector by diversifying the base of the national economy.

### 3. Macroeconomic Stability and Growth of Exports and Imports

Similar to other oil-exporting nations, the economy of the United Arab Emirates saw considerable changes in oil prices throughout the 1990s. Since then, the UAE has seen a real GDP growth rate of about 7 percent. Diversification into non-oil industries such as energy-intensive, petrochemical, fertilizer, cement, and aluminum, as well as tourism, commerce, and manufacturing, contributed significantly to this expansion. The UAE's diversification plan away from oil dependency has been generally effective, and it is also dedicated to an outward-oriented economic policy. The objective was to progressively establish the economy of the UAE as a regional financial and international commerce hub. Between 2000 and 2008, the nation saw amazing growth rates as a result of its strong capital productivity, which led to high levels of GDP. Nonetheless, labor productivity in the UAE remained relatively low, and overall worker productivity did not contribute to economic development. Owing to the absence of domestic high-tech industries, the United Arab Emirates seeks to acquire and access foreign technology, notably technology from highly industrialized OECD nations (Schiliro, 2013b).

#### First: Creating an encouraging environment for exports and imports

Throughout the 1960s and 1970s of the previous century, Dubai served as an export center for oil. All oil income was utilized to construct the essential infrastructure, including Jebel Ali Port, Dubai International Airport, and Port Rashid, in anticipation of the non-oil sector's long-term viability in Dubai and the United Arab Emirates. In the 1980s, the economy diversified further to become the hub of commerce, services, and industry. The United Arab Emirates (UAE) became an original member of the World Trade Organization (WTO) in 1996, and Dubai reached a major milestone in 2010 by constructing the world's tallest building, Burj Khalifa, along with other tourist attractions such as Palm Jumeirah, Burj Al Arab, Dubai Metro, and several shopping malls. In the same year (2010), the government prioritized economic sustainability via innovation (Baldwin, 2016).

The primary objective of the United Arab Emirates' economic policy was to adopt innovative economic solutions through sound economic policies that ensure sustainable economic growth, diversify the economy away from the oil industry, create more employment opportunities for all citizens, and attract domestic and international investment. In addition, economic authorities are advancing a progressive economic agenda centered on economic liberalization, diversification, and the expansion of the private sector's involvement in the economy. Covers diversification and expansion of the tourist, media, shipping, and service industries. In addition to growing its industrial base by joining the World Trade Organization, the United Arab Emirates is completely committed to a more open international



economic environment. For instance, the UAE has set a 5% tariff charge for all commodities. Under international agreements, the highest tariff that may be levied is fifteen percent. In addition, the UAE has levied an average tariff of 6.5% on agricultural goods, compared to a maximum tariff of 25% that may be imposed under international agreements. Furthermore, the UAE has signed several regional, bilateral, and preferential trade agreements to expand Commerce (Sweidan & Malkawi, 2019).

Massive budgetary surpluses in infrastructure projects are credited as the main reason behind the non-oil sector's sustained economic prosperity. Stability continues to characterize the state's economic activities, with investments in infrastructure projects receiving consistent attention. Foreign investment is anticipated to be attracted by the stability of many businesses, advances in the real estate industry, tourism, and the accelerating expansion of economic performance. In light of the global financial crisis, the UAE's growth rates demonstrate the efficacy of its objective of diversifying sources of revenue and lowering reliance on oil. High oil prices in the past enhanced government income, supplied funds for public expenditure, and promoted investment (Shaikh, Worku, & Rao, 2017).

*Table 4. Exports of goods and services to the GDP of UAE at current prices (2001-2018)*

Years	Exports of goods and services (1)	The ratio of exports to GDP(2)	Export Growth Rate (3)
2001	50.787202178	4.206375499	-
2002	54.362695711	4.164742327	24.71894401
2003	69.538461538	4.199420575	24.96514584
2004	93.968596324	4.510380774	25.26622648
2005	112.930428863	4.633134069	25.45003779
2006	166.134240980	4.894895446	25.83606198
2007	219.714363512	5.001473659	26.11559419
2008	187.139823008	4.640644882	25.95512189
2009	178.610755616	4.387176867	25.90847472
2010	215.973042886	4.427689317	26.09841943
2011	239.748672566	4.330683141	26.20285701
2012	252.509462219	4.601068283	26.25471456
2013	277.888359428	4.563242296	26.35048528
2014	266.276378488	4.329870679	26.30780062
2015	270.442477876	4.279395899	26.32332526
2016	290.782845473	4.311324453	26.39584259
2017	281.535738597	4.24615288	26.36352523
2018	295.599807278	4.413266551	26.41227237

Source: From the work of the researcher columns (2), (3) based on World Bank data <https://data.albankaldawli.org/country/china?view=chart>

*Table 5. Imports of goods and services to the UAE at current prices in US dollars (2002-2020)*

	Imports to UAE (Billion dollars) (1)	The ratio of imports to GDP (2)	Import Growth Rate (3)
2002	42.053369639	38.29	-
2003	47.845064670	38.48	13.77
2004	57.668073519	39.01	20.53



2005	78.428046290	43.42	36.00
2006	93.862491491	42.26	19.68
2007	112.930428863	43.79	20.31
2008	166.134240980	52.66	47.11
2009	219.714363512	86.66	32.25
2010	187.139823008	64.58	-14.83
2011	178.610755616	50.93	-4.56
2012	215.973042886	57.66	20.92
2013	239.748672566	61.46	11.01
2014	252.509462219	62.64	5.32
2015	277.888359428	77.59	10.05
2016	266.276378488	74.58	-4.18
2017	270.442477876	70.13	1.56
2018	290.782845473	68.87	7.52
2019	281.535738597	67.48	-3.18
2020	295.599807278	82.37	5.00

Source: From the work of the researcher columns (2), (3) based on World Bank data <https://data.albankaldawli.org/country/china?view=chart>.

It is noted through Table (4), which shows the exports of goods and services and the rates of continuous increase during the period for the years (20 21-20 18) witnessed a recovery in total exports, as they increased from (50.787202178) million-year dollars in 1 200 to (295.599807278) million The dollar in 2018, due to the increase in the value of oil exports resulting from the rise in global oil prices and the prices of raw and intermediate materials, and the continuation of global oil prices at high levels, but there are periods in which crude oil prices fell for the period (2009, 201 4), as the values reached (178.610755616), (266.276378488) respectively, but it did not affect exports to the country of Marat because of the economic diversification of its exports and not absolute dependence on oil exports. For the imports in Table (5), they witnessed a significant recovery during the period (20 02 - 20 02), as they increased from (42.053369639) milli-dollar in 200 to (295.599807278) milli-dollars in 20 02, due to High levels of government surpassing and high imports of capital goods, as well as years in which imports have decreased for reasons previously mentioned in Table (4) for exports.

### **Second: Building Human Capital:**

Human capital is becoming increasingly recognized by policymakers and economists as a core asset in the economies of innovative solutions. However, empirical studies show the importance of skills and knowledge in economic growth, particularly through the adoption and imitation of technological capabilities. The shift from resource-based to knowledge-based economies has made human capital very prominent in wealth accounting and three vital elements of human capital in the United Arab Emirates can be illustrated (Al-Ali, 2006).





## 1- Education & Training

The United Arab Emirates considers education a vital component of the economy of innovative solutions for social and political transformation, as the education system in the UAE needed to be improved and expanded to serve development more effectively, as government school curricula were changed from basic teaching to advanced methods based on technology, technical practices, and problem-solving, and teachers from highly qualified developed countries such as Australia were brought in. Also, about the usage of computers since they have a good effect on pupils' academic performance. The United Arab Emirates has promoted training and the development of a learning environment as vital components of competitive success. Training is the deliberate process of altering attitudes, knowledge, or skill behaviors via learning experiences to attain optimal performance in an endeavor (or group of activities) (Preiss & McCrohan, 2006).

The higher the level of education, the more likely it is that education and innovation go hand-in-hand, and schools and universities will play a larger role in promoting innovation by collaborating with the best international academic institutions to provide new specialized educational materials, launching innovation challenges, and recognizing national innovators. Establish organized procedures for identifying creative and talented persons at a young age, fostering their growth, and maximizing their potential. Education spending in the UAE for the year (2019) amounted to (12.6788197) and for the year (2020), (11.7062302); hence, human capital is the foundation of innovative economic solutions. This is evident by the increasing interest of businesses and governments worldwide in recognizing and supporting creative people and teams. (Al Marri, 2021).

## 2- Skill and Knowledge:

Within the context of providing a solid foundation for the adoption of innovative solutions, the United Arab Emirates has adopted a systematic and comprehensive approach to skills and knowledge policies based on particular policies including, among others (Barza & von Suchodoletz, 2016):

- A. **Help prioritize investment in scarce resources:** Developing the skills of the population is expensive; therefore, skills policies must be designed so that these investments yield the greatest social and economic returns, as all governments face difficult choices when allocating scarce resources, and economic crises have exacerbated these challenges. Spending may be made more efficient if approaches to skills policy include how the demand for and activation of skills and the effective use of skills interact.
- B. **Enhancing the lifelong learning status:** By seeing skills as a tool to be refined throughout an individual's lifetime, the Strategic Approach to Skills Policy allows states to assess the relative impact of different institutional and informal settings for skills development from early childhood education, through formal education, to balance resource allocation to maximize outcomes.
- C. **Activate the skills offering:** Some people may have diverse abilities that they choose not to give on the labor market, and many others are out of the workforce by choice, because of their circumstances, or because of the existence of financial disincentives to work. This involves identifying and perhaps retraining inactive persons, ensuring that the benefits system offers them financial incentives to join the labor market, and decreasing demand-side impediments to employment.
- D. **Use skills effectively:** Investing in talents is just the beginning. Effective skill policies must guarantee that available talents are used efficiently to prevent investment loss. Furthermore, the correspondence between the skills required for the job and the skills of the person performing the job affects the development of additional skills, such that unused skills tend to atrophy while new skills are largely developed informally, frequently through work experience.

The United Arab Emirates considers investing in human capital as a vital factor in achieving the economic goals of full employment, increasing productivity, and enhancing the participation of the



country's citizens in economic activities. The UAE witnessed non-oil economic growth, supported by increased growth for progress in human development during the period (2005-2015) through its efforts to transform its oil projects into a sustainable non-oil economy. A dimension of human capital is Economic development efforts in the United Arab Emirates are constantly focused on strengthening the workforce through human development to create new sources of economic growth that will achieve a sustainable economy and less dependent on oil, and investment in human capital is one of the innovative economic solutions and a key engine for achieving sustainable economic growth and development in the State (Matsumoto, 2019).

### **Third: Efficiency of privatization and changing the productivity of labor markets**

#### **1. The performance of the UAE labor market**

The structure of GDP, labor productivity, and money are other areas that have already affected the growth of the UAE Arab economy. Some of the key factors that have contributed to the expansion of the UAE economy include trade, inflation, political stability, and the labor force. The UAE Arab economy has also been influenced by a wide range of important macroeconomic and microeconomic factors. Therefore, the process of liberalizing the market to make it a free market was one of the most important steps that led to an increase in the domestic level of the country. This was accomplished by ensuring the full participation of the private sector in the process of building the economy of the country. The establishment of free markets has been crucial in the expansion of the country's economy, and the implementation of market-based pricing mechanisms has enabled supply and demand dynamics to play a role in determining market prices. Because the government does not intervene in either international or domestic trade, the economy of the country has been able to advance at a quicker rate. Additionally, the government's adoption of a free economy policy has already made it possible for the private sector to play the primary role in the economy of the state, as well as strengthened that role. The paucity of available labor on the national level forces the state to rely on labor from other countries (Pfeffer & Waitkus, 2021).

Even though most of the population is young and the United Arab Emirates was only founded in 1971, there is a significant disparity in the distribution of labor throughout the country. This is because the majority of the population is comprised of individuals who are still in their youth. The vast majority of workers are employed in industries that are relatively less economically productive and of secondary strategic importance to sustainable development. Some examples of industries that fall into this category include construction and utilities, government and other traditional service sectors, and others. This indicates that the majority of workers are employed in economic sectors that provide support for other economic sectors rather than working in industries that directly contribute to economic development. Since a nation's capacity to reach and sustain high levels of productivity is the single most critical factor in determining whether or not it will be prosperous in the future, it is required to make significant adjustments to the labor markets in the UAE. This is possible by using significant protocols that it has implemented, which are as follows: (Schiliro, 2013b):

- **First**, reduce the income difference between the public and private sectors, which is the primary reason Emiratis choose to work in the public sector.
- **Second**: modifying people's perceptions of the rigidity of the job market and the connections between that rigidity and the application of the kafala system.
- **Third**, Turning knowledge and skills into employment is essential for rebalancing the disproportionately high number of low-skilled employees, who are a direct outcome of entrepreneurs who choose labor-intensive, low-cost businesses over those that depend on high-value-added skills. To transform technical advancement into productive development, we need



a deeper understanding of the talents that produce these positive economic and social benefits. Building efficient job markets is essential.

To ensure more flexible and equitable labor markets. More efficient and inclusive investments in education and training in emerging fields would enhance human capital and facilitate more opportunities for young people. Modernizing visas and work permits will contribute to market flexibility and adaptability and help increase the skill of the workforce to meet future growth needs. Government initiatives to stimulate national employment in the private sector should help reduce fragmentation between national labor markets and domestic workers. However, more efforts are needed to reduce the size of the civil service, better harmonize public and private wages, and stimulate active labor market policies (skills improvement, training, and retraining programs to help move workers between jobs and reduce recruitment costs for firms), including for expatriate workers<sup>1</sup> (Annunziata & Bourgeois, 2018).

## **2. Productivity Growth In The UAE Labor Market**

Coastal agriculture, fishing, and pearling contributed marginally to the economy of the United Arab Emirates. Once the United Arab Emirates won its independence from the United Kingdom in 1971, the discovery of oil had a profound impact on the country's economy. Since then, the government has launched extensive modernization initiatives to improve the quality of life in the nation. Fixes for the Economy Industry expansion in areas like commerce, tourism, and the built environment, as well as service industries, have benefited from massive expenditures in infrastructure and institutional advancements. The economy of the United Arab Emirates expanded by a factor of 200 between 1971 and 2013. In 2012, oil earnings accounted for just around 42% of GDP, and this percentage is likely to continue to fall as the UAE diversifies its economy away from hydrocarbons. The United Arab Emirates (UAE) is now one of the world's richest nations, with a per capita GDP of more than US\$39000 (2011) (Tong & Al Awad, 2014).

As imported labor in the United Arab Emirates is more productive and competent than the native labor force, the increase in the productivity and skills of human capital contributes to the growth of the country's non-oil exports (Anser et al., 2021). The United Arab Emirates (UAE) has adopted extensive programs to encourage domestic investment, especially private investment, and to promote the non-oil export sector by (21.3%) from (1985) to (27.3%) in (1998). This shift, reflecting the weakness of the commodity base of the economy, is influenced by the nature of capital allocation and has allowed the UAE to achieve sustainable growth rates that are less sensitive to changes in the oil market. Substantial increases in capital allocation to non-oil sectors coincided with the move away from reliance on oil in the 1970s and 1980s. Construction and real estate received the largest share of domestic investment in 1990, followed by the transportation and communications industries. Throughout the '90s, oil industry investment dropped by about half as a share of the total (Elhiraika & Hamed, 2006).

According to (2014), the country's GDP has greatly expanded in terms of value and growth, as GDP numbers have doubled in comparison to earlier years. The expansion of non-oil industries such as aluminum and natural gas has led to a scenario in which oil's proportion of GDP has already declined since these non-oil sectors have contributed more than 62% of GDP to the UAE economy. The most important non-oil items are commerce, building, manufacturing, communications, storage, and transport. The UAE Ministry of Labour also reported in the same year that the labor market in the United Arab Emirates has established a new record, with the number of workers exceeding (4.4) million, and that the employment rate climbed by almost (10%) in comparison to the previous year (2013). There are three major household representatives in the UAE labor market: local households, non-local households, and collective families (Reichelt, Makovi, & Sargsyan, 2021).

#### 4. Innovation in the Production Diversity

The knowledge economy, which encompasses economic incentives and institutional structures, education and human resources, innovation system, and information and communication technologies, is one of the pillars of the innovative solutions economy. In the end, however, a knowledge-based economy is defined by an ecosystem of interrelated components and networks that enable a nation to produce, adopt, adapt, distribute, and market knowledge-intensive goods and services. Using creative ideas in the economy effectively involves the creation of suitable policies, institutions, investments, and coordination among them (Schiliro, 2013a).

##### First: Encouraging certain industries:

The aims of diversification efforts were laid forth in a law passed by the United Arab Emirates in 1979, known as the Industrial Code. One of their main goals was to take advantage of the United Arab Emirates (UAE) very cheap energy costs to boost the competitiveness of its enterprises by creating a thriving manufacturing industry. In addition, EOI's work is on full show. The United Arab Emirates has improved its methods for collecting natural gas, which was previously mostly wasted during the oil refining process. Das Island, Ruwais, and Dubai's principal gas stations were built, and they have since earned significant export revenue. The gas business expanded, and major transit hubs for exporting gas were established. These developments within the oil industry help with diversification but do not provide a permanent solution to the problem of reliance on a single resource. As a result of cheap energy, other heavy industries like aluminum, steel, and plastics have flourished and expanded. Almost 60% of Dubai's non-oil exports in 2000 came from aluminum (Livsey, 2019).

##### Second: The National Innovation Strategy in the United Arab Emirates:

###### 1- Innovation in the information and communication system

The transport and logistics sector is an important sector in the UAE economy, accounting for 10.4% of non-oil GDP in 2005. The efficiency and size of DP is the third largest re-export hub after Hong Kong and Singapore. Dubai Port ranked ninth among the busiest container ports in the world in 2005 (7.6) million containers, up (15.63%) from (2004) (Krzymowski, 2020). UAE ports mainly export oil and gas, as well as raw materials and finished goods. Imports consist of intermediate and consumer goods, as well as significant re-export trade to other economies, particularly in the Gulf region, India and East Africa. The transport, storage, and communications sector is one of the leading sectors in activating the policy of diversification and consolidating the foundations of the knowledge economy, and the average annual growth rate (2015) reached about (11.4%), and the percentage of its contribution - to the sector during the period (2001) to the GDP at current prices increased from (7.7%) in (2001). to (9.7%) in (2015), and the UAE is characterized by the latest technologies in the communications and information sector.

*Table 6. Telecommunications Sector in the UAE (2014-2016)*

Years	Broadband Internet Lines	Mobile subscriptions	Landline
2014	1104996	16819024	2103036
2015	1243172	18276409	2268951
2016 June	1261059	19133341	2284134

Source: Ahmed Majed, UAE Economy Positive Indicators and Entrepreneurship, United Arab Emirates, Ministry of Economy, 2016.

The smart government and smart city program are two examples of technical innovation that contributed to the country's rapid rise to economic prominence on the international stage. In addition, the world's second-largest producer of semiconductors, Global Foundries, owns 100% of Mubadala. The



United Arab Emirates (UAE) is home to several cutting-edge technological research facilities, such as the Institute for Micro Systems, the Institute for Intelligent and Sustainable Systems (iSmart), and Khalifa University's Semiconductor Research Center (KSRC). In addition to promoting the ICT sector to enhance the quality of services, the ICT system seeks to encourage technological innovation via the creation of smart cities, software, and apps. Technology innovation will also be achieved through the manufacture of advanced technology in areas of global interest such as artificial intelligence, semiconductors, nanotechnology, and 3D printing, as well as the rapid adoption of future technology trends in various industries.

## 2- R&D Innovation

The United Arab Emirates has made innovation a national economic and societal value-add. Vision 2021 has made innovation one of its primary focuses and has strived to expand investment in research and development. Because research and development is the most important component of the national innovation strategy, by increasing investments in all major advanced technology sectors, namely: renewable energy, transportation, education and technology, health, water, and space, and because the strategy employs four tracks, the most important of which are (Bouazza, Ardjouman, & Abada, 2015):

- a. **Establishing a stimulating environment for innovation:** creating a legal framework and institutional framework that encourages and facilitates innovation; increasing funding for innovation incubators; emphasizing R&D; and establishing a technical infrastructure that encourages and facilitates innovation across all industries.
- b. **Developing government innovation:** state-level training and education programs in the field of innovation will be launched, and all government agencies will be directed to cut expenses by 1% to be allocated to support innovation projects. this will be accomplished by making government innovation an institutional endeavor and creating an integrated system of modern tools to help government agencies innovate.
- c. **Pushing the private sector to more innovation:** by encouraging research institutions to focus on applied research in sectors of national priority, attracting leading international companies in the field of innovation in all sectors of national priority, and motivating companies to establish innovation and scientific research centers.
- d. **Building individuals with high skills in innovation:** The government, the private sector, institutions, and the media can work together to foster a culture that encourages innovation and entrepreneurship, and respects and rewards risk-taking, by cultivating national talents and capabilities in the field of innovation, with a focus on science, engineering, and mathematics.

## A: Innovation in Renewable Energy

The United Arab Emirates (UAE) set out a new course and national strategy in 2010 with a 2021 vision of economic solutions. The new agenda focuses on topics such as maintaining social harmony and national identity, creating a dynamic and prosperous knowledge economy, providing access to world-class healthcare and education for all, creating a transparent and impartial judicial system, and ensuring environmental and economic sustainability. The latter concept emphasizes the need to make strides toward better air quality, water conservation, the use of clean energy, and the formulation of expansion strategies. It showed the individual emirates that the federal government was serious about implementing renewable energy policies and initiatives. The government of Abu Dhabi declared in 2009 that by 2020, 7% of the city's energy capacity will come from renewable sources, marking the beginning of the city's first renewable energy program. As a result, Dubai has previously stated many renewable energy objectives, but its current plans are to use 7% solar energy by 2020 and 25% solar energy by 2050. (2030). In 2016, Dubai made public its ambition to reduce its energy consumption by 75% using renewable

means by 2050. Table 7 shows how significant progress in solar and other renewable technologies, notably storage, will ultimately result in new renewable energy objectives and the energy mix of the future.

*Table 7. The Objectives for Power Generation in UAE*

Years	United Arab Emirates	Abu Dhabi	Dubai
2020		7% renewable sources (solar), 19% nuclear	7% renewable sources
2021	24% total energy mix from clean energy		
2030			25% renewable sources (solar), 7% nuclear
2050			75% of energy needs will be met from clean sources

Source:

Case Study on Policy Reforms to Promote Renewable Energy in the United Arab Emirates, United Nations Development Account project on promoting renewable energy investments for climate change mitigation and sustainable development, 2018. <https://archive.unescwa.org>

### 3- Labor Market Innovation

The employment economy in the UAE has benefitted from technological advancements. Some of these impacts are: The need for highly skilled employees to operate machinery has increased. Most of the technological advancements that have transformed the labor market have been brought from the United Kingdom and the United States. Because of this, the economy has been able to produce additional employment (Obaideen et al., 2021). As a leader, Non-oil exports now account for the lion's share of GDP because of technological advancements in the manufacturing and construction industries.

### 4- Education Innovation.

To change the equations of the national economy and push it away from dependence on oil resources and achieve an advanced scientific, technical and knowledge leap for the UAE in the coming years, and reach a high-level educational system, some measures have been adopted:

- a. In 2011, the UAE adopted the Education Agenda until 2020, which included 10 main objectives, a set of initiatives to be achieved, implementation plans for each initiative, and a time for its completion, including the project to license educational bodies in public and private schools at the state level.
- b. Linking education and its outputs to the knowledge economy and the needs of the labor market.
- c. General, higher, and university education programs accounted for (20%) of the total allocations of the general budget of the Union for the year (2015) worth (9.4) billion dirhams.
- d. The country has attracted the most prestigious international universities in the United States of America and Europe to open accredited branches in the country through partnership and twinning agreements, turning it into an academic center of attraction for thousands of students in the region and the world.
- e. - Establishment of the Commission for Academic Accreditation.
- f. Establishing the National Authority for Scientific Research to encourage scientific research and develop plans for research and innovations and link them to the needs of society.





- g. **Transportation Innovation:** The United Arab Emirates has some of the world's most advanced transportation infrastructure. Most importantly, it has extensive expertise in national airlines, and many national corporations have been successful in operating a wide range of operations (ground handling, cargo, travel, and others) at 75 different international airports across the world. The United Arab Emirates (UAE) also has a significant marine presence, with 65 ports across 6 continents (Miller & Verhoeven, 2020). As a company, NIS is committed to advancing transportation innovation via the development and deployment of unmanned vehicles such as drones, trains, and airplanes. It also requires the creation of an infrastructure for charging electric vehicles, the manufacturing and maintenance of aircraft components, and the use of ecologically friendly air and sea transportation (Al-Abd, Mezher, & Al-Saleh, 2012).
- h. **Foreign Direct Investment:** FDI is an important factor in the economy of innovative solutions to reduce dependence on natural resources and diversify its economy in the long term. The UAE government aims to build a sustainable knowledge-based economy, as foreseen in the UAE Vision 2021. "United in knowledge", that is, in creating a sustainable and diversified economy, stimulating entrepreneurship, and attracting foreign direct investment. Accordingly, FDI is envisaged as one of the pillars of the structural transformation of the economy (Mina, 2014). Several legislative changes have been implemented to further open the economy to FDI and create a more favorable environment for foreign investors, including the enactment of FDI legislation and extensive amendments to the Commercial Companies Act.

*Table 8. Foreign Direct Investment Flows to the UAE (2016-2020)*

Years	FDI inflows (USD billion)		FDI balance (billion US dollars)	
	In UAE	Abroad	In UAE	Abroad
2016	9.6	15.7	119.1	110.5
2017	10.4	14.1	121.6	124.4
2018	10.4	15.1	127.9	166.8
2019	17.9	21.2	131.0	184.8
2020	19.9	18.9	150.9	203.7

Source: TRADE POLICY REVIEW, REPORT BY THE SECRETARIAT, UNITED ARAB EMIRATES, 2022.

As for Table (25), the net inflows of GDP represent: The United Arab Emirates witnessed a significant increase in net inflows from foreign direct investment, as it reached 2000 about (-0.485281533) billion dollars, with a negative growth rate of (-0.01%) until it reached in 2004 (6.767152113) billion dollars, which is the highest increase and a growth rate of (49.4%). Then the ratio ranged between high and low and reached 2020 (5.540874712) billion dollars, with a growth rate of (22.6%). It indicates the great importance of investments as a source of financing for its development projects, technology transfer, and employment to achieve economic and social progress, increase exports and diversify sources of income, and therefore it has worked to issue many legislations and laws that stimulate local investment and attract foreign investment and is working to draw a unified strategy for these investments according to the capabilities available to them.

The United Arab Emirates economy has been bolstered by the country's numerous international investors. Foreign direct investments from the United States and the United Kingdom were particularly large and beneficial to the development of the nation. The federal government of the UAE has a surplus of income above expenditures. The government was able to utilize the surplus to make up for deficits



that had been covered in earlier years, particularly in 2001 and 2003. The government project has come a long way since 2005. The government had a surplus in the budget that year. Their trade surplus in 2012 was \$82 billion, an all-time high (Alam, Sadekin, & Saha, 2022).

*Table 9. Foreign Direct Investment, Net Inflows of the United Arab Emirates (1998-2020) (% of GDP)*

Year	Net FDI Inflows	year	Net FDI Inflows	Year	Net FDI Inflows
1997	0.294815986	2005	6.034816041	2013	2.503133911
1998	0.340485312	2006	5.765437532	2014	2.746345355
1999	-1.166835786	2007	5.500439717	2015	2.387619324
2000	-0.485281533	2008	1.604874609	2016	2.690073033
2001	1.14589217	2009	0.447367364	2017	2.685185459
2002	0.086781366	2010	3.035594892	2018	2.45971482
2003	3.422662713	2011	2.039574748	2019	4.284274398
2004	6.767152113	2012	2.55389516	2020	5.540874712


Source: World Bank - Net FDI Inflows <https://data.albankaldawli.org/indicator/BX.GSR.CCIS.CD>

## 5. Conclusions and Discussion

The economy of innovative solutions has become an essential role in the process of growth and economic progress of society and is more influential than other factors (material and moral), especially as it constitutes an economic resource for the state. The UAE is one of the countries that encouraged development and innovation and provided the necessary means, financing, and support to reach what it has reached today, as it has reached prestigious ranks of innovation through science, knowledge, and the use of technology, as well as in the field of research and development. Creating job opportunities and providing support to the poorest groups by investing in social programs and providing social and health facilities and infrastructure. Macro stability is the most important precondition for the success of the economy of innovative solutions. Instability is in the macroeconomy, which is characterized by runaway inflation and high unemployment. During periods of slow economic growth, unemployment rates rise and the general level of prices decreases. The UAE has adopted sound scientific foundations to implement innovative solutions to ensure positive results. Therefore, it is necessary to pay attention to the economy of innovative solutions, as it is the basic basis for launching the education system at all its stages in the success of development plans based on the results of information technology. It should also benefit from the UAE and its scientific experience, and this will help in achieving advanced ranks and scientific standing at the level of the Arab world and the level of the world as well. In addition, it is necessary to take advantage of the UAE's experience in research and development advancement and try to take the experience of the Arab Emirates and apply it in developing countries, as it is close in terms of economic conditions to it. On the other hand, work should be done to create human capital and develop it with high quality and great capabilities through training and development, because human capital is still the cornerstone of building an economy of innovative solutions, the information society, on the one hand, and is the pillar for economic institutions, their growth, and success. Finally, we must focus on the economy of innovative solutions that can contribute to achieving development and providing jobs for many newcomers to the labor market. Enhancing the role of the non-oil private sector, increasing efficiency in the exploitation of resources, and strengthening the foundations of sustainable economic growth in it.

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