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Diversification and development of the UAE's economy

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Abstract:

This contribution examines the major features of UAE's economy, its factors of strengths, underlining also its critical aspects. Furthermore, the work focuses on the crucial factors that characterize a diversified knowledge economy and indicates the policies that the economy of the United Arab Emirates must pursue in order to improve its performance and be a competitive economy at a global level. In addition, the paper seeks to identify new business areas for the diversification and development of the UAE's economy.

Keywords: diversification, knowledge economy, institutions, innovation, development

JEL Classification: O11, O14, O31, O33, O38, D83, J2

1. Introduction¹

Today the United Arab Emirates (UAE) is the second largest Arab economy and belongs to high income countries, even if the road towards this goal was different than many other countries. In fact, the UAE has not gone through the hypothetical "stages" that most developed countries seem to have experienced². Massive oil revenues have enabled the UAE to short-cut the usually difficult and lengthy process of saving and capital accumulation necessary for economic development (Shihab, 2001).

From 2000 until 2012, the UAE GDP growth rate averaged 4.7 per cent, a good performance considering the severe global economic crisis of 2009. In particular, in 2012 the economy of the United Arab Emirates has witnessed a growth of about 4 per cent despite the difficulties posed by the eurozone and the global outlook negative. Although the relative contribution of the different economic sectors to GDP has shifted considerably over the years, the oil and gas sector represents the largest share in the GDP of the United Arab Emirates, since the country is endowed with vast resources of oil and gas. So the UAE's economy has still a relatively high concentration of GDP in the oil sector and in related industries, and diversification is not fully satisfactory. Such type of economic model cannot be considered inherently sustainable in the long run, because it depends heavily on the dominant sector's fortunes in the marketplace.

Historically, the UAE, as many other economies of the GCC region, particularly the Kingdom of Saudi Arabia (KSA), Kuwait, Qatar, was very sensitive to changes in the prices of oil. On the other hand, the non-oil sectors have not fully matured and still have pervasive structural weaknesses, such as inefficiencies in labor, capital, knowledge and technology.

Taking as its starting point the Vision 2021 of the Federal Government of the UAE, which aims to transform the economy into a more skill-intensive and diversified knowledge economy, this paper examines the major features of the UAE's economy, its factors of strengths, underlining also its critical aspects. In addition, the work, focusing on the key factors that characterize a diversified knowledge economy, indicates the policies that the economy of the United Arab Emirates should pursue in order to improve its performance. Lastly, the paper attempts to identify new areas of business for the diversification and development of the UAE's economy.

2. The profile of the UAE's economy.

The world has been living the deepest economic crisis since generations. The economic crisis clearly slowed down the process of world-wide globalization³, so the standstill in the globalization process is visible in all world regions⁴.

¹ This contribution is a revised version of the speech given at the Global Business Meeting, 8-9 December 2012, in Ras Al Khaimah, United Arab Emirates. I wish to thank Dr. Ibrahim Guizani and Bruno Sergi for reading the paper and for their stimulating comments. The author remains solely responsible for the opinion expressed and any errors in the paper.

² Rostow (1960).

³ As in the prior years Singapore is the country with the highest score on economic globalization.

⁴ See KOF Index of Globalization 2013.

In the post-global crisis, the United Arab Emirates is challenged by a weaker global demand, but also by the competition from other countries and more stringent global financial markets. One of the main lessons of the recent global economic crisis for the emerging market economies, like the United Arab Emirates, is that sustained economic growth in the future would require developing a better capacity to respond to future crises through more robust regulatory systems and a more diversified economy. However, the UAE in the last decade experienced some relative improvement in its non-oil sectors, achieving the goal of being the second largest Arab economy and, very recently, the country has been ranked as the 7th strongest Asian economy.

The UAE became an independent state in 1971, with the establishment of its formal economic, social, and political institutions. The country is a federation made up of seven Emirates: Abu Dhabi, Ajman, Al Fujairah, Dubai, Ras al Khaimah, Sharjah, and Umm al Qaiwain.

This complex process of nation building was among the causes for implementing a development policy on a interventionist-redistributive model, favored by the huge oil revenues (Yousef 2004). This development policy, thanks to the oil revenues that accrued in the country since the 1970s, permitted the creation of a vast welfare system for the population of the Emirates. Thus, UEA has enjoyed a political and social stability thanks to the distribution of its huge oil revenues in the form of social and economic infrastructure, high standards of social services (health, education) (Shihab 2001). In the UAE, like other oil exporting countries of the Gulf region, the motivation for the statism of the interventionist policies was to support the emergent private sectors. This State's strategy has stimulated massive investment by some large industrial complexes for developing the productive base of the economy and to diversify the sources of income. The industrial sector has made remarkable achievements especially in terms of the increase in the number of enterprises. Industrial activities have been facilitated by competitive low labor and energy costs, favourable tax laws and political stability (Masood and Sergi 2008).

The hydrocarbon industry is one of the most important economic sectors of the economy, and since this industry is high capital intensive, the number of workers that it employs is a small fraction of the labor force. In fact, it is well known that natural resources in general, and in the specific case oil wealth *per se*, creates few jobs directly. So this is why the non-oil private sector has to address the challenge of unemployment. The UAE has also created viable small and medium enterprises in manufacturing and services⁵. At the same time, despite efforts since the 1980s to limit hiring and downsize the public sector, state bureaucracy in the UAE maintained its dominant position in the labor market⁶. Regarding such destination of human capital in public sector employment, Pissarides (2001) already argued that in the long run the most detrimental impact of the large role of government hiring is that it traps human capital in unproductive public sector jobs, thus limiting its contribution to economic growth.

The UAE's economy, like others oil exporting countries, faced considerable oil price volatility in the 1990s⁷. However, in that decade, the UAE registered a real GDP growth averaged about 7 percent. Much of this growth was created through diversification in non-oil sectors: first, in energy-intensive, petrochemicals, fertilizers, cement and aluminum, and subsequently, tourism, trade and manufacturing (Yousef 2004, 105). So the UAE has been following a largely successful diversification strategy away from oil dependency and has been equally committed to its outward-orientated growth policy. The previous vision of UAE, aimed to define the UAE's economy as a regional financial centre and international trading hub, has gradually realized. High capital productivity has filtered into high levels of gross domestic product (GDP) and the country enjoyed remarkable growth rates also in the period 2000-2005⁸. Yet, labor productivity remained relatively low in the country and total factor productivity gave a negligible contribution to economic growth⁹. Due to the lack of national high-technology sectors, UAE aimed to acquire and access foreign technology, in particular technology from the highly industrialized OECD countries, instead of generating its technology.

The labor force in the UAE is made up of more than 2.5 million employees of whom 86.5 per cent are male and 13.5 per cent are women. The labor market in UAE is based on sponsorship system or *Kafala system*.

⁵ Firms in the UAE produce many products including cement, aluminium, building and construction materials, fertilisers, foodstuffs, garments, furniture, plastics, fibreglass, jewellerys, pharmaceuticals, firefighting equipments, processed metals, etc.

⁶ Government hiring typically offers more generous wages and greater employment guarantees than the private sectors.

⁷ The sensitivity of UAE to changes in oil prices has manifested itself in growth volatilities across not just oil and gas, but also in different sectors that contribute to the bulk of economic output and employment.

⁸ Yet, Abu-Quarn and Abu-Bader (2007), for instance, showed that total factor productivity remained low and this hampered economic development in the Gulf economies and, among them, the UAE.

⁹ More specifically, the oil and gas sectors achieved gains in labor and capital productivities, whereas these gains have been absent in the other sectors (Shediak *et al.*, 2008).

Each employee must have a sponsor or *kafeel* (Shah 2006). In the private sector, each worker must have a local sponsor who is expected to have a business for which it needs workers. Instead, for those working in the public sector, the government department employing the worker is the *kafeel*. Thus, the sponsorship system is the legal channel through which expatriates obtain legal entry as guest workers in the UAE. In addition, the Emiratization process establishes a set of rules that protect the national citizens of the UAE from open competition from expatriate workers. The process sets minimum quotas of national workers for firms with 100 or more employees, enables the nationalization of particular work positions, and makes it almost impossible to fire national workers once they are employed. Emiratization is undoubtedly important for social and political and also economic reasons. The process aims at bridging the gap between the human capital needs of the private sector and the need to employ national workers. But, at the same time, it has the potential to distort incentives in the labor market, because it forces firms to hire according to a quota system, while not necessarily motivate national employees to acquire those skills required to become competitive in the private sector economy (Dubai Economic Council 2011). Definitely, together with the effects on migrants as a result of the sponsorship system, the Emiratization process adds to the labor market distortions that lower the productivity of firms and their degree of competitiveness.

Table 1 shows rates of change in the UAE at constant prices (2007) over the period 2005-2010. The rates of change are referred to the GDP of total economy, to the Value Added of Non-Oil sector and of manufacturing industries.

Table 1: Rates of Change at Constant (2007) Prices 2005-2010						
UAE	2005	2006	2007	2008	2009	2010
GDP Total Economy	4.9	9.8	3.2	3.2	-4.8	1.3
V.A. Non Oil Sector	6.4	9.0	9.3	6.0	-2.9	1.4
V.A. Manufacturing Industries	6.6	7.3	1.9	10.3	-14.1	6.9

Source: UAE National Bureau of Statistics, National Accounts Division

During the years preceding the global economic crisis the UAE's economy was performing fairly well. The United Arab Emirates GDP Growth Rate reached an all-time high of 9.8 percent in 2006, while in the next two years (2007 and 2008) the pace of growth has diminished to 3.2 percent at constant prices. The Non-Oil sector recorded the highest rate of growth of 9.3 percent in 2007 and a good 6.0 percent in 2008¹⁰.

Conversely, the global crisis has severely hit the UAE's economy, so the GDP contracted of 4.8 percent at constant prices in 2009, led by a remarkable fall in manufacturing, but also in real estate. The year of the crisis, i.e. 2009, hit more heavily the economy on the whole than the Non-Oil sector, which experienced a decrease of 2.9 percent. But the manufacturing industries have particularly suffered with a decrease of 14.1 percent. However, the economy regained confidence after the crisis.

In 2010 the growth of GDP was a respectable 1.3 percent at constant prices. Furthermore, as is documented in the Annual Economic Report 2012 of the UAE Ministry of Economy, during 2011 the GDP has grown in the UAE at a rate of 4.2 percent at constant prices, despite the political events in some Arab countries, the lower rate of growth of the global economy from 5.2 percent in 2010 to 3.8 percent to 2011, and the financial crisis at the Eurozone that determined a decline in the GDP rate of growth in the advanced economies to 1.6 percent. In addition, the public finance are in a good health. In 2011 the public debt was 16.9 percent of GDP, whereas the Government's fiscal budget was in surplus of 11.2 percent of GDP, but during 2012 it is improved further to 12 percent of GDP, due both to the counter cyclical policy implemented by the Government to avoid potential spillovers from conflict-stricken countries and to the boom of oil markets experienced in 2011.

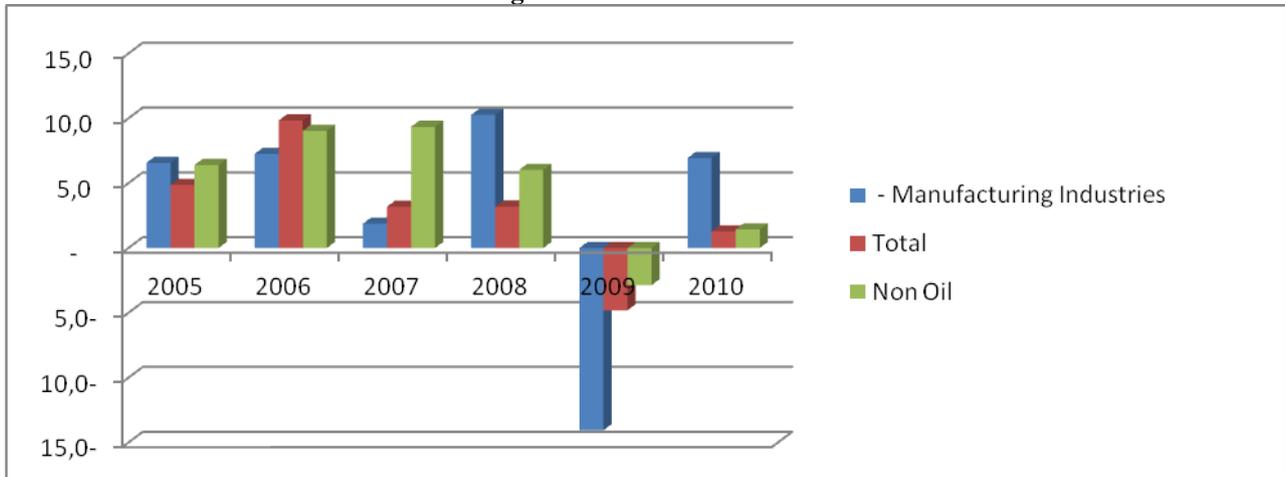
Finally, the recovery of oil prices following the global financial crisis has been helping to maintain the commercial viability. Thus, the UAE's economy has proved to be remarkably resilient to the difficulties that

¹⁰ For a quantitative analysis of the Non-Oil sector in the UAE during the period 1970-2006, Masood and Sergi (2008).

have characterized the world economy. After the 2009 crisis the UAE's Government has implemented some political reform and more investment in the less wealthy Emirates.

Figure 1 expresses through histograms the rates of change contained in Table 1.

Figure 1



Source: Author's elaboration on data of Table 1

The UAE's economy is continuing to rely on the hydrocarbons sector to drive growth¹¹, but the non-oil sector is going to become increasingly important, especially in the near future when several major industrial projects will come on stream. In fact, the large projects include the petrochemicals city, Al Gharbia Chemicals Industrial City (Chemaweyaata), which is due for completion in 2015 (a business of USD20bln), but also the considerable expansion of Emirates Aluminium (EMAL)¹² by the end of 2014.

In the post 2009 recovery, the major drivers of the non-oil sectors have become trade¹³, tourism, logistics and manufacturing. However, the road of UAE towards a diversified knowledge economy is not completed yet, so the next section examines the characteristics of a knowledge economy and the ways of achieving a knowledge economy diversified and well developed.

3. Towards a diversified knowledge economy.

Diversification is important to promote economic development, to create job opportunities for a rapidly growing local workforce, but also to reduce or spread the risk of a high economic concentration, which makes an economy vulnerable to external events, such as changes in the price of the dominant commodity. An increased economic diversification can improve the performance of the economy, minimize volatility and facilitate the path of sustainable development. More specifically, overall volatility and its ensuing spillover effects can be mitigated with the effective development and diversification of high-value-added production, but also by an increase in exports of goods and services of high quality.

It is well known that modern growth economics has focused on technological innovations and high-technology research and development as the engine factors for economic growth. In particular, endogenous growth theory has highlighted the importance of technological progress and factor productivity (Helpman, 2004). Other lines of research also emphasized the role of institutions as a fundamental cause of long-run growth (Acemoglu, Johnson and Robinson 2005). Recent development experiences suggest that an appropriate business environment is among the key ingredients of sustainable development.

The UAE 2021 vision, recently taken by the Federal Government, looks at innovation and knowledge as the key drivers of the economy¹⁴. Government policies, incorporated into the UAE 2021 vision of the

¹¹ The hydrocarbon economy continues to account for approximately 80 percent of total government revenues.

¹² This expansion will boost annual aluminum capacity to 1.3mln tonnes/year.

¹³ The trade balance achieved a huge surplus and it represents 23.5 percent of the GDP (UAE Ministry of Economy, 2012).

¹⁴ Innovation and knowledge-based economies are characterized by a good healthcare system, a highly performing education system and proper policies and regulations. In other words, the innovation driven economies are the ones with the highest levels of prosperity. EEC (2011).

economy based on innovation and knowledge, constitute an important step towards a diversified knowledge economy and a new growth model, but these policies should aim at creating an appropriate business environment and also an integrated set of soft and hard institutions. UAE, in fact, does not rank well in protecting investors and on contract enforcement.

The Emirate that reached the most visible result in the diversification of the economy is Dubai. In the last decade, Dubai has become a major international service economy and has established itself as a regional center for finance, real estate development, shopping, tourism, exports and re-exports. Dubai experienced, for instance, the development of the Jebel Ali port and harbor, various “free zones” (i.e., enterprise zones) throughout the city, and extensive real estate complexes catering to the travel and tourism industry¹⁵.

Dubai has followed an economic developmental model which is strongly pro-business, emphasizes market liberalism and economic openness, embraces globalization, while at the same time refraining from challenging the traditional neo-patrimonial leadership structure in the country. As such, the “Dubai model” has so far been distinctly different from economic models applied in the other Gulf Cooperation Council (GCC) economies¹⁶. Dubai is now seen as a model for the other Emirates and for the Gulf countries.

The global financial crisis has cast doubt over the traditional model of growth. The argument that improvements in knowledge are a primary source of growth has become more compelling. The idea that creating a knowledge society, based on learning and focused on absorb, adapt and produce knowledge, provides markedly different points of view on development strategies than those obtained by the traditional model, which has centered the attention on increase in capital and the efficient allocation of resources. The accumulation of knowledge is inherently associated with externalities (knowledge spillovers)¹⁷, since knowledge is basically a public good (Foray, 2004). But the scientific and technological knowledge does not spread evenly across all sectors of the economy, thus, there are discontinuities of a different type from sector to sector (Schilirò, 2010). In this diversity with regard to the dissemination and development of knowledge between sectors of the economy of a country, the demand certainly plays an important role in driving companies to focus on those activities and products that give a higher expected return.

A country that is hydrocarbon-rich is not predestinated to economic concentration. Norway, for example, produces an amount of oil per day exceeded only by Saudi Arabia, yet it has been able to adequately distribute its GDP across a variety of productive economic sectors, and its revenues from oil and gas make up only approximately a quarter of its domestic output. Canada is another economy, rich of natural resources, that have successfully diversified its economy.

Of course, diversification implies a structural change of the economy. Structural change usually refers to profound changes in the composition of employment and in the relative contribution of primary, secondary and tertiary sectors to aggregate growth (Schilirò 2012). Consequently, structural change implies agriculture transformation, industrialization, urbanization, changes in the production structure and in domestic demand, foreign trade and finance. To have a more diversified economy it is necessary to invest in productive sectors which can sustain, with their high levels of productivity, real growth in the long-term, as well as the development of new knowledge and technology. But also, it would be appropriate to foster the growth of the external sector when it promotes diversification, i.e., the export of a wide range of goods and services with high added value to a wide range of destinations.

Moreover, knowledge and skills have become the global currency of 21st century economies. With the globalization and with the related fully mobile capital, there is no reason for countries to limit themselves to patterns dictated by endowments, as conventionally defined; more important is the endowment of knowledge and entrepreneurship. A major focus of policy should be on how to enhance and shape such endowments. Therefore, it is rationale to move in the direction and to implement a new development model for the UAE, which involves a more diversified knowledge-based economy.

As it is written in the UAE Vision 2021¹⁸, the main target of an economy that aims to compete in the global markets is to become a more skill-intensive and diversified knowledge economy. The State, however,

¹⁵ Dubai Economic Council (2011).

¹⁶ The Gulf Cooperation Council (GCC) economies are Bahrain, Kuwait, Oman, Qatar, the Kingdom of Saudi Arabia (KSA), and the United Arab Emirates. These economies are rich in hydrocarbons (oil and gas). However, recently the GCC states seem to be embracing the “Dubai model” of development making significant investments to establish economic activities with the aim of attracting foreign firms and individual investors: financial institutions, office facilities, free zones, airports, harbors, and, above all, tourism.

¹⁷ Romer (1986).

¹⁸ UEA Vision 2021 states that the aim is to build a Knowledge-based Economy and to strengthen the competitiveness of the Emirates and all this requires three thrust areas: i) The first is to promote the participation of national manpower by

has an important and useful role to play in promoting industrial diversification, upgrading and implementing policies to assist firms in these processes.

Knowledge economies, unlike economies that depend on finite natural resources, rely on the potentially unlimited creativity and talents of its people to generate economic value. Constructing a knowledge driven economy requires new skills, new ideas and a high level of creativity from a high-trained, flexible and adaptable workforce.

According to the World Bank the four pillars of a knowledge economy are: economic incentive and institutional regime; education and human resources; the innovation system; information and communication technology (ICT). But, ultimately, a knowledge-based economy is characterized by an ecosystem of interconnected elements and networks that allows a country to generate, adopt, adapt, diffuse and commercialize knowledge-intensive products and services. Making effective use of knowledge in an economy requires the development of appropriate policies, institutions, investments, and coordination across these four pillars. Therefore, knowledge economies are increasingly based on intangible assets that foster economic development. The transformation towards knowledge economies will necessarily determine a shift in the proportion of national income towards knowledge-based industries, but also a change in the percentage of the workforce employed in knowledge-based jobs and in the ratio of firms using new technologies to innovate; however, the institutional setting is also very important to achieve a knowledge-based economy (Schilirò 2012).

If we want identify the key drivers of UAE's competitiveness in the long run, which constitute also the main factors for the development of the GCC region, we must concentrate on knowledge, education, institutions (i.e. institutional arrangements and regulatory policies), technology (i.e. new equipment and organizational capacity), environment, entrepreneurial skills.

Education, in particular, is an important and necessary condition to enhance human capital and it is also a key driver for the growth in the UAE and the whole region¹⁹. The education system is crucial in the knowledge economy since it can inculcate attitudes toward change and skills of learning. It is also important to promote higher education, in particular doctoral university courses in engineering and applied sciences, that can favor the development and application of new technologies. However, education – specifically high quality education – is a variable that takes a long time to achieve results²⁰. Moreover, education is obviously linked to the skills of the workforce and, consequently, it is important for employment. Employment and the slow job growth is a major problem also in the UEA. The unemployment, in fact, is defying the economic and political stability in the MENA region. Today, the total population of UAE is almost 8 million and it is growing at a rapid rate, but only 15-20 percent are the citizens of United Arab Emirates. In addition, of this population roughly 70 percent is estimated to be male and 30 percent female, while the total median age of the people of UAE is around 30 years, which means that most of the population is young²¹. However, employment in the UEA is distributed quite unevenly. The majority of the workforce is employed in sectors that are relatively less economically productive and of secondary strategic importance in sustainable development—such as construction and utilities, government, and other services in traditional sectors. This means that a majority of workers are employed in sectors that are supporting other economic sectors, rather than driving growth themselves. Since the most important determinant of a country's future prosperity is its ability to achieve and maintain high productivity levels, it is necessary to make deep changes in the labor markets of the UAE. This can be done, firstly, by overcoming the wage gap between the public and private sector that makes Emirati favor public sector employment; secondly, by changing the perceived labor market inflexibility and its links to the imposition of the quota (*sponsorship* or *Kafala system*). Thirdly, by rebalancing the disproportionately large volume of low skill workers as a result of entrepreneurs that favor low cost labor intensive industries as opposed to high value-added skill driven ones (Dubai Economic Council 2011). But, above all, to create employment it is necessary to convert knowledge and skills into jobs. This requires to develop a better understanding of those skills that drive strong and sustainable economic and social outcomes, which allow to translate technological progress into productivity growth. It requires to develop effective labor-markets that

linking education with market needs in high value sectors. ii) The second is to develop a regulatory framework to support key economic sectors and to encourage emerging sectors by modernizing the legislative framework governing the economic activities. iii) The third is to promote the policy of scientific research – both research for knowledge and applied research – in line with the economic priorities of the Emirates and contribute to the development of a core group of committed UAE national researchers.

¹⁹ As it is argued in the seminal papers on human capital by Schultz (1960) and Becker (1962).

²⁰ An efficient education system must entail a life-long learning for improving human capital.

²¹ In 2012 the median age of the EU-27's population is around 40 years.

use these skill potential, but also better governance arrangements. Lastly, globalization is changing the distribution of world jobs to reflect stronger emerging market economic growth and new business opportunities. Rising the investments and the levels of education will create an increasing array of higher skilled employees and better-paid individuals²².

Technology is also a strategic driver for the growth and competitiveness. Technological change in particular is a crucial element to boost Total Factor Productivity (TFP) and, consequently, economic growth (Helpman 2004). Poor economic diversification – reliance on a single economic sector – tends to have an unfavorable effect on the productivity and competitiveness of the economy. In addition, poor diversification limits the possibility to expand the technology frontier. Moreover, technological knowledge now disperses globally in less than a year, thus it needs to be continually produced. Developing new and better technologies becomes a primary goal of an economy based on knowledge and innovation.

Environment constitutes a qualitative element of the growth process. In UAE, there is a too great consumption of energy, in particular oil, given its low cost, but also of gas, that, despite the wide internal production, is also imported by Qatar²³. But these natural resources are limited and their high consumption has negative effects on the environment, so a new model of growth should aim at adopting alternative renewable resources. Moving towards a *green economy* may represent a rational and feasible solution, although it is costly at least in the short run²⁴.

Entrepreneurial skills are another basic element for developing a knowledge economy. It is not easy to create entrepreneurship in a society. Entrepreneurs are a unique group of people. Usually these people display leadership, persuasion, personal accountability, goal orientation, and interpersonal skills. One important thing to be done to favor entrepreneurship is to create an economic environment where the business culture is welcomed, but also where the behavior towards taking responsibility and risk is looked positively.

In a sense, today UAE is already a diversified economy, where non-oil sectors account for about 70 percent of the GDP. Massive investment has been made in infrastructure in the region, in terms of tourism, real estate and leisure, in order to diversify the economy. The richest states of Abu Dhabi and Dubai have benefited from the majority of this. However, the poorer northern emirates have also been developed, with grants from Federal Government, by supporting the growth of residential and commercial properties, road and service networks.

In the country, trade has a strategic role (for instance, the ports of UAE account for 61 percent in trade volume among GCC countries), the industrial sector contributes to more than 27 percent, where in particular the contribution of the manufacturing sector to the GDP of 2011 has been equal to 9.1 percent; the construction and building sector has represented the 11.4 percent of the GDP in 2011. Instead the group of the service activities recorded a contribution to the GDP of 45 percent in 2011. Tourism in particular has become very important, in fact, the UAE ranks first in the Middle East for having the travel and tourism industry's most advanced.

The structure of the investment distribution shows that in 2011 the share of the investment of the private sector compared to domestic investment was 71.3 percent, while there was a minor contribution of investment by the government (20.2 percent) and the public sector (8.6 percent) over the total domestic investments (UAE Ministry of Economy 2012).

Regarding education and employment, in the UAE more than a third of women, between the ages of 18 and 23 years, pursue tertiary degrees and graduate degree programs. Many of these economically literate female graduates earn degrees in the natural sciences and technology, offering recruiting potential for companies.

The 2013 federal budget policy, aiming at zero-deficit, prioritizes health, education, social welfare and the development of government services; in particular to education is allocated the largest single share.

Furthermore, regarding the knowledge-based economic sectors the Emirate of Abu Dhabi through its Government-owned Mubadala Development Company founded Masdar, a corporation for the evolving global energy market. In particular with the two business units, Masdar Clean Energy and Masdar City, the company

²² A principal reason for a supply short-fall beyond increased demand is that deficient or inappropriate education or training reduces the pool of potential employees in many emerging markets.

²³ Krane (2012) argues that Abu Dhabi's renewable Energy plan is not economically convenient, but it may have the positive effect of reducing fuel consumption in conventional power plants, which will cut carbon emissions and burning of expensive backup fuels.

²⁴ For an analysis and solutions regarding the environment and the tourism sector in UAE, see Vij and Vij (2012).

According to IMF (2013), in the Oil exporters countries of the MENA region economic growth is projected to fall to 3.2 percent in 2013 as oil production growth pauses against a backdrop of relatively weak global oil demand. To address their medium-term challenges, the oil exporters need to continue with reforms that increase the pace of economic diversification and support job creation. The former will require continued infrastructure investment and further improvements in the business climate, while the latter will require enhancing education and training, improving job placement services, and reviewing the incentives for working in the private relative to the public sector (IMF 2013, 61).

Although the UAE is in a relative better economic condition of many of the Oil exporters countries of the region, some of these advices fit perfectly to the situation of the country as, for instance, the condition of the labor market and the type of reforms to increase the economic diversification.

Looking to the future, by 2030 emerging markets are expected to produce 70 percent of world GDP growth. The United Arab Emirates can be a protagonist of this expected forthcoming scenario. All depends by the trajectory that the UAE's economy will follow in the next future. The UEA Vision 2021 already designs a well-defined path towards a diversified knowledge economy, but, as it has been argued in the preceding section, the UAE's economy must fulfill certain conditions and it should identify new areas of business for its diversification.

Production and entrepreneurship have changed in surprising ways over the past thirty years. A crucial factor of this change is the huge shift of economic power made possible by technology, especially from internet. Today, technology makes it easy to create a business, even of large dimensions, without the large initial capital that was once required. This is another unforeseen aspect of the knowledge economy. Furthermore, technological change has determined a generational gap. Entrepreneurs, who are aged around thirty years, are the first generation digital and global together. In the United States, the young entrepreneurs under the age of forty who create companies have now become a widespread reality. These young entrepreneurs are at ease with new technologies, emerging markets and the globalized economic system, but also use the social network for their business.

It is now clear that to develop a diversified economy based on knowledge is essential to strengthen the link between innovation, education, learning and human capital. The ability to multiply the value of the resources invested in research is typical of economies based on knowledge and innovation. This ability comes from the interaction between research, innovation and finance, which is not always easy to achieve. Certainly, institutions and policy coordination in order to encourage innovation are key factors to attain the goal (Schilirò 2010).

In Cambridge (UK), the University with its knowledge especially in the areas of software and environmental sciences, but also with its ability to combine nanotechnology with the bio-sciences, has been able to develop new business through innovative start-ups. This case constitutes, therefore, an example of collaboration between university, applied research and industry that has been successful. UAE could pursue a similar pattern. Produce and combine heterogenous technologies is proving to be a successful move in the global market. Still, this production model does not preclude that the companies of the Emirates, especially small and medium-sized enterprises, can continue to produce the products in which they have vocational skills. In this latter case, what is important is their ability to continuously innovate their products and to maintain the high quality of goods, which must be placed mainly on foreign markets, given the limited size of the domestic market²⁸.

Among the business sectors, tourism is already an important sector of the UAE's economy. In 2011, 8.2 million overseas visitors sought out the UAE as a holiday destination. Only the contribution of Hotel and Restaurant sector to total GDP in 2011 has been equal to 2 percent. Since several years, in Dubai the authorities have considered international tourism as a core element in their programme of economic diversification. Tourism is closely tied to advances in transport and easy access by air, the UAE is able today to provide an appropriate and modern communications infrastructure, with the civil aviation industry that has progressed at speed. However, the UAE must try to maintain an high growth of the UAE as touristic destination, by increasing the length of stay, filling expensive hotels and leisure venues, but it should also strive to establish a tourism industry that is economically and environmentally sustainable. Unfortunately, the UAE is generating the highest carbon footprints per capita in the world. So the growth out of proportion of tourism will lead to environment deterioration, which, in turn, spoils the natural beauty of the destination, thus becoming an

²⁸ The experience of the Italian medium size enterprises that have become multinationals and that have followed a peculiar model of innovation and internationalization can be illuminating. (Schilirò, 2011).

unattractive choice for the potential tourist²⁹. A development model of tourism that goes towards the green economy is, therefore, consistent with the economic needs and the environment.

Another important aspect of a diversified knowledge economy is that knowledge not only is produced, but also exported. The export of knowledge and culture, which results in royalties, sale of brands, professional and technical services to businesses, has become an important economic phenomenon. For instance, during the last years in the U.S., services exports have increased considerably. Knowledge is not anymore necessarily conveyed in most products, but in intangible exports. Companies that are successful in global markets are those that sell knowledge in the form of product design, process organization, dislocation of the functions appropriate to the times and places of the customers. In future, more and more this knowledge will be sold directly and less and less in the form of goods.

Therefore, the UAE's economy should orientate itself towards innovative industrial sectors and professional and technical services and foster the intangible exports. Among the new business activities to be promoted in the UAE, in order to diversify the economy in the direction of a knowledge economy, we can mention: business services, higher education, R&D laboratories and firms to develop new technologies.

In conclusion, the UAE's economy, to become a diversified and competitive economy, must have new businesses in the Schumpeterian sense, that is, radical innovators capable of integrating heterogeneous technologies and use the best scientific and technological research, but also should produce and export immaterial assets.

Conclusions.

This contribution has emphasized the key factors that characterize a diversified knowledge economy, but also it has indicated the policies that the United Arab Emirates should pursue in order to diversify and develop its economy and improve its performance at a global level.

The economy of the United Arab Emirates will continue to rely on the hydrocarbons sector to drive growth, but the non-oil sector is becoming increasingly important, thanks also to the major industrial projects that will come on stream in the next years and to its [2021 Vision](#), which aims to place innovation, research, science and technology at the centre of a knowledge-based, highly productive and competitive economy. UAE remains the top destination for foreign capital in the GCC region. Since 2009, global banks have actually increased lending to the United Arab Emirates, notwithstanding already high exposures. Moreover, the UAE in general, and Abu Dhabi in particular, have extensive sovereign wealth funds (SWFs), established to secure and maintain the future welfare of Emiratis, playing also a leading role in the development and governance of the industry.

Despite all of that UAE's Government should improve the regulatory systems, as it has been argued in the previous sections. More should be done, especially regarding the overall investment regime that remains restrictive. The objective of macroeconomic stability, through effective monetary, fiscal and exchange rate control policies, is also essential to implement structural reforms and to facilitate the action of investors. Although, in the current economic scenario, it is possible that there could be problems of increasing financing costs due to the increased global risk aversion influenced by the geopolitical tensions in the neighboring countries and the financial problems in the euro-area.

The functioning of labor market must be improved, so to make possible to create more productive employment. Also, total factor productivity must be increased to foster growth. In addition, the gender gap must be passed within a period of time not too long and the young generations should find more opportunities for entrepreneurship and business activities.

Since the key drivers of a developed knowledge economy are technology, innovation and high-quality education, then research and development must be at the centre of government policies of the UAE, as well as higher education. But also, the environmental policy is another important aspect for implementing a new growth model.

Finally, the new areas of business should be identified in the innovative industrial activities and innovative services, professional and technical, whose products and services, with high knowledge-intensive, must be allocated not only to domestic market, but predominantly to foreign markets.

²⁹ The relation between tourism development and environment in the UAE has been analyzed by Vij and Vij (2012), where they examine the attempts made by the UAE Government and major tourism stakeholders to deal with the current situation, but also they try to single out the optimal methodologies for carbon mitigation in the UAE.

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