



Impact of the Mining and Quarrying Activity on other Economic Activities in the Emirate of Abu Dhabi

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Abstract

Statistical studies in many countries shows an existing economic activity that controls the other activities because of its size and relation with other activities in the economy. In this paper, we show the extent of the relationship of the mining and quarrying activity and its impact on the economy as well as its impact on other activities in the economy of Abu Dhabi Emirate. The mining and quarrying activity, which includes crude oil and natural gas, is the biggest economic activity in the Emirate of Abu Dhabi, based on its contribution to gross domestic product (GDP), which exceeded 50% in most of the years covered by the study. During the past years, the oil price fluctuated with significant volatility, thus affecting the value of the gross domestic product. The overall relationship was apparent between oil prices and the value of the GDP of the Emirate of Abu Dhabi. This paper aims to examine the impact of this activity on other economic activities in the Emirate of Abu Dhabi as well as its statistical relations in the economic growth and the growth of other activities. It also shows the size of this impact and the negative and the positive consequences on the Emirate's economy. The paper depends on a series of statistical data published by Statistics Centre - Abu Dhabi from the year 2000 until 2013. Moreover, it will include statistical tables showing the GDP, value of mining and quarrying activity, values of other economic activities as well as measuring the growth rates of these activities, the analysis of relationships in growth rates between economic activities and its values during the study period.

Keywords: Gross Domestic Product (GDP); Value Added; relationship.

1. Introduction

Many countries around the world have economies which are influenced by a certain activity because of its size, its relationship with other activities and the level of interdependence with other activities. This concept is evident all over the ancient and modern economies, which means that the labour force moves towards popular activities in each period, according to the specificity of each region or country. In the early years of economic development, the focus was more on the agriculture activity to provide food for the population. It was the main source of living and provided the essential input in other industries that existed at the time. However, the priorities vary according to the conditions in determining the most important activity that suits the country at that time, for example during the industrial revolution when most employment opportunities were in the manufacturing activity in most countries.

The discovery of oil and the contribution of this strategic product to economic development was significant in some developing countries. The oil revenues controlled most of the activities and these returns affected the Gulf countries, with their economies developing rapidly. The percentage contribution of the mining and quarrying activity in the GDP is very high in most oil producing countries. When oil was discovered in the United Arab Emirates, economic activities were limited to date palms and some types of fruit trees and vegetables, as well as fishing and pearling. These activities were minimal in size and the discovery of oil required many labourers to switch their attention to the new activity. Due to the large returns earned on investment in the official and popular activities associated with oil, some activities faded, such as fishing and pearling. The high growth in the oil activity

required support activities to provide services that contribute to the mining and quarrying activity, such as establishing an infrastructure of roads and ports. In addition, the development of electricity transportation, communications and other activities that provide services and the creation of a financial system that help the mining and quarrying activity to grow faster was required. All activities that would support the mining and quarrying activity to grow needed more labourers, but there were alterations in the population growth, which necessitated the economic activities to diversify the scope of work by investing to provide houses for the population. Economic activities are growing and diversifying, and now includes manufacturing activities such as petrochemicals and refining, fertilizer and other activities which either depends on the mining and quarrying activity or other manufacturing activities that are related to the growing population, such as food, drink and clothing. In this paper, we will address the impact of the mining and quarrying activity on the economy in general and on specific other activities during the period from 2000 until 2013.

2. The Mining and Quarrying Activity in the Emirate of Abu Dhabi

Oil was discovered in the Emirate of Abu Dhabi in 1958, and exports started in 1962. The importance of oil and its impact on the economy was clear from the beginning. Other economic activities began to emerge over time given its importance and the various incentives and legislation that supported its growing role and size in the economy. Mining and quarrying activity, which includes crude oil and natural gas production in the Emirate of Abu Dhabi, evolved over time in terms of the quantity and the range of products produced. The leadership of the Emirate of Abu Dhabi realized the importance of economic diversity and having a sustainable economic development without excessive dependence on the oil activity. A number of strategically important activities in the economy was identified as key pillars of future economic growth. Economic and political crises impacted on the oil sector in the past by decreasing oil revenues, thus affecting the size of this activity in the economy. Analysis of the mining and quarrying activity in terms of daily and annual production as shown in table (1) for the period 2000-2013, shows that the daily production increased from 2003 until 2008. There was a decline in the quantities produced due to lower global demand in 2008 and 2009 because of the global economic crisis. In 2000, daily production was about 1,990 thousand barrels and the quantity produced during the year, about 728,340 thousand barrels. In 2013 the production reached 2,731 thousand barrels per day and the amount of annual production was estimated at 996,928 thousand barrels. The rates of changes in the quantities of production reflect prices and global demand for crude oil.

Table (1) Crude oil production and exports values and their growth rates
(Thousand Barrels, %)

Year	Production			Export		
	Daily Average	Annual	Movement	Daily Average	Annual	Movement
2000	1,990	728,340		1,770	647,820	
2001	1,848	674,500	-7.4%	1,618	590,570	-8.8%
2002	1,735	633,275	-6.1%	1,505	549,325	-7.0%
2003	1,967	717,955	13.4%	1,762	643,130	17.1%
2004	2,170	794,220	10.6%	1,965	719,190	11.8%
2005	2,242	818,330	3.0%	2,052	749,080	4.2%
2006	2,298	838,770	2.5%	2,266	826,981	10.4%
2007	2,365	863,225	2.9%	2,233	814,939	-1.5%
2008	2,536	928,000	7.5%	2,328	852,072	4.6%
2009	2,181	795,991	-14.2%	1,953	712,994	-16.3%
2010	2,261	825,291	3.7%	2,040	744,525	4.4%
2011	2,502	913,191	10.7%	2,282	833,070	11.9%
2012	2,591	948,200	3.8%	2,387	873,515	4.9%
2013	2,731	996,928	5.1%	2,522	920,687	5.4%

Source: Statistics Centre-Abu Dhabi

*Preliminary estimates

3. The Impact of Mining and Quarrying Activity on GDP

There is a positive correlation between GDP and value added for the mining and quarrying activity during the period from 2000 until 2013. The data in table (2) shows that GDP rises when the mining and quarrying value added rises and decreases when it decreases and that was especially clear in 2001, when the value of mining and quarrying activity decreased by 12.1% from AED 90,164 million in 2000 to AED 78,580 million in 2001, while GDP decreased by 5.3% from AED 187,836 million in 2000 to AED 177,845 million in 2001. GDP increased in 2002 by 5.2% and there was a 0.8% decrease in mining and quarrying value added in the same year. The GDP increased by 16.0%, 27.6%, and 31.7% in the years 2003, 2004 and 2005 respectively while value added of mining and quarrying increased by 24.3%, 38.6%, and 45.9% respectively in the same years. The value added of mining and quarrying activity decreased from AED 412,774 million in 2008 to AED 239,006 million in 2009 and then rose to AED 317,237 million in 2010. Accordingly, the data shows that the gross domestic product fell from AED 705,159 million in 2008 to AED 535,311 million in 2009 and then increased in 2010 to reach AED 639,952 million. Finally, the percentage increase in value added of the mining and quarrying activity was 1.0% in 2013, and GDP increased by 4.8%. We conclude from the foregoing that increases and decrease in the GDP are closely correlated with the increases or decreases in value added by the mining and quarrying activity.

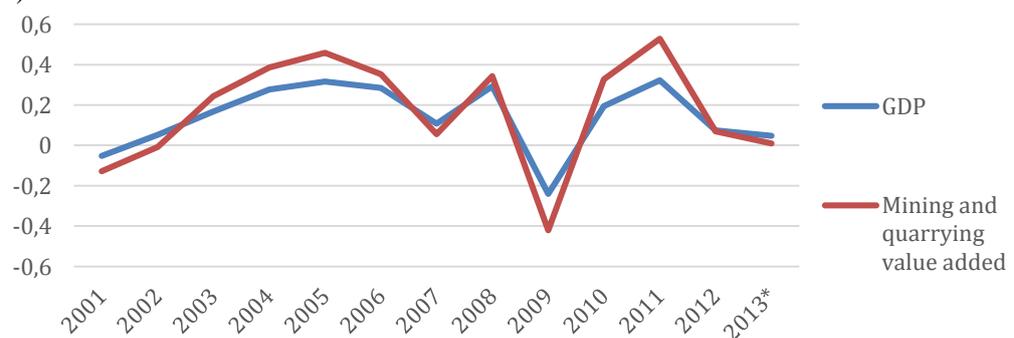
Table (2) GDP and value added of the Mining and Quarrying activity
(Million AED)

Year	GDP	Mining and quarrying
2000	187,836	90,164
2001	177,845	78,580
2002	187,018	77,387
2003	222,064	100,414
2004	291,135	147,668
2005	383,430	215,455
2006	492,249	291,464
2007	545,367	307,445
2008	705,159	412,774
2009	535,311	239,006
2010	639,952	317,237
2011	846,684	484,737
2012	909,721	518,861
2013*	953,239	523,899

Source: Statistics Centre-Abu Dhabi

*Preliminary estimates

Figure (1) Value added of the Mining and Quarrying activity compared with GDP (%)



Source: Statistics Centre-Abu Dhabi

*Preliminary estimates

4. The Impact of Mining and Quarrying Activity on Non-oil GDP and Economic Diversification

The study of economic diversity and its effectiveness in the economy as well as the degree of dependence on the major source of income, requires measurement of the contribution of economic activities in the gross domestic product, on the grounds that if any country wants to diversify its sources of income it has to encourage and motivate investment in other activities in order to contribute effectively to the economy. In addition, the cash surplus earned from the main source of income should be invested in other activities to expand the productive base which is represented by the non-oil economic activities in the Emirate of Abu Dhabi. It is not necessary that all economic activities have a high comparative advantage but there must be a consideration for the improvement of other economic activities to increase production capacity and expand its base in order to create additional sources of income. The data shows that non-oil GDP was not affected by low value added in 2001, although value added of the mining and quarrying activity decreased by 12.8% while non-oil GDP rose by 1.6%. In 2002 the mining and quarrying value added decreased by 0.8% and non-oil GDP increased by 10.4%. In 2009, the mining and quarrying value added decreased by 42.1% while non-oil GDP increased by 1.3%. The main reason for this decline was the global crisis that affected all economic activities. In 2013, mining and quarrying value added increased by 1.0% while non-oil GDP rose by 9.8%. It was noted from the data that there is no relationship between growth in the non-oil GDP and the value added by the mining and quarrying activity, which means that the focus that was devoted by official authorities to establish a diversified economy, delivered the desired results. The future growth activities and sectors in the economy played an active role in supplying the productive sectors that actively contributed to the Emirate's economic growth during the study period.

Table (3) Value added by the Non-oil GDP and Mining and Quarrying activity and the percentage distribution of total GDP

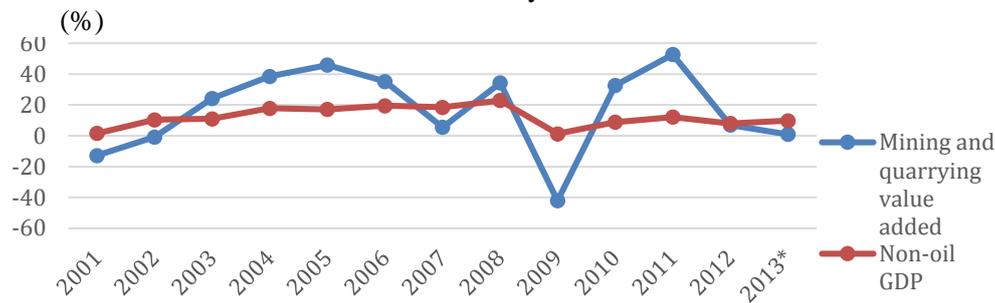
(Million AED, %)

Year	Mining and quarrying value added	% Distribution	Non-oil GDP	% Distribution
2000	90,164	48.0	97,672	52.0
2001	78,580	44.2	99,264	55.8
2002	77,387	41.4	109,631	58.6
2003	100,414	45.2	121,650	54.8
2004	147,668	50.7	143,467	49.3
2005	215,455	56.2	167,975	43.8
2006	291,464	59.2	200,785	40.8
2007	307,445	56.4	237,923	43.6
2008	412,774	58.5	292,386	41.5
2009	239,006	44.6	296,305	55.4
2010	317,237	49.6	322,715	50.4
2011	484,737	57.3	361,947	42.7
2012	518,861	57.0	390,860	43.0
2013*	523,899	55.0	429,340	45.0

Source: Statistics Centre-Abu Dhabi

*Preliminary estimates

Figure (2) Annual Growth Rates of the Non-oil GDP and value added of the Mining and Quarrying activity



Source: Statistics Centre-Abu Dhabi

*Preliminary estimates

5. Mining and Quarrying Compared with Selected Economic Activities

Table (4), contains value added data for selected economic activities. Manufacturing activity increased in 2001 along with the decline in mining and quarrying activity, while the value added of financial and insurance activity increased by 13.1%, showing that this activity was not affected by the decline in value added of mining and quarrying activity.

In construction activity, any external factors will not impact in the same year because of multi-year construction projects. The projects are accomplished through a tender process and the duration is agreed upon in advance, which means that any external influence in a given year have an impact on construction activity in subsequent years. When considering this we do not find any decrease in this activity in the years that followed the decrease in the value added of mining and quarrying activity, but on the contrary, there was a rise in the construction activity. This was clear in 2009 when despite of the financial crisis, the value added for this activity did not fall in the same year, while the growth rate slowed in 2010 and was less than 1% in 2011 and negative in 2012. Construction activity increased in 2013 at lower rates compared with the years before 2009. Growth rates of manufacturing activity increased when the activity of mining and quarrying increases and decreased together with mining and quarrying activity. In 2009 there was a big drop when both manufacturing activity and mining and quarrying activity decreased by 23.3% and 42.1% respectively. As for the financial and insurance activity, it was found that it was not affected by changes in mining and quarrying activity. It recorded an increase in all years except the period of economic crisis when it decreased by 2.7% in 2010. Other activities increased in 2010 by 19.4% for the manufacturing activity, 4.4% for construction and 32.7% for the activity of mining and quarrying.

Table (4) Value added of selected economic activities

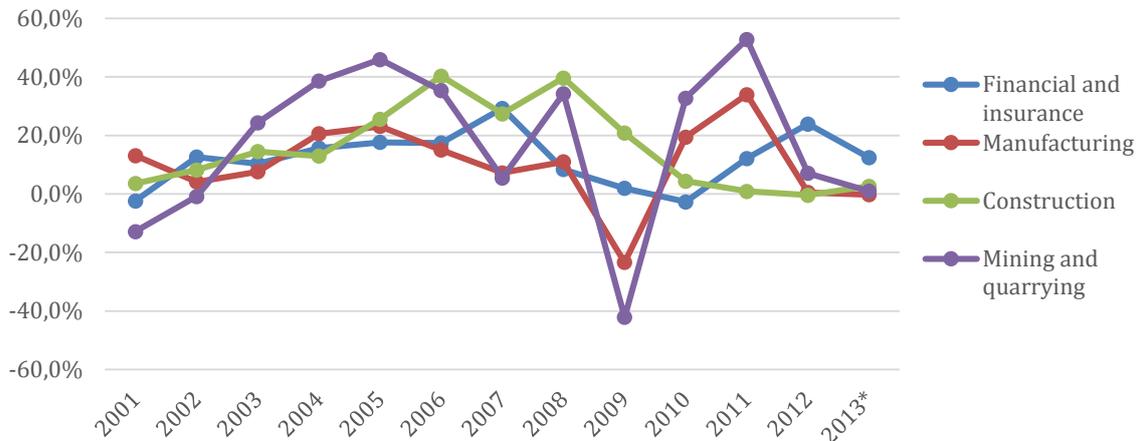
(Million AED)

Year	Financial and insurance	Manufacturing	Construction	Mining and quarrying
2000	10.900	15.196	14.471	90.164
2001	10.639	17.186	14.988	78.580
2002	11.984	17.897	16.215	77.387
2003	13.222	19.257	18.563	100.414
2004	15.292	23.219	20.964	147.668
2005	17.988	28.584	26.321	215.455
2006	21.119	32.879	36.922	291.464
2007	27.294	35.244	47.036	307.445
2008	29.575	39.118	65.655	412.774
2009	30.154	29.990	79.310	239.006
2010	29.332	35.813	82.781	317.237
2011	32.885	47.967	83.516	484.737
2012	40.742	48.208	83.153	518.861
2013*	45.799	48.101	85.358	523.899

Source: Statistics Centre-Abu Dhabi

*Preliminary estimates

Figure (3) Growth Rates of Value Added of Selected Economic Activities (%)



Source: Statistics Centre-Abu Dhabi

*Preliminary estimates

6. Conclusions

The value added for the mining and quarrying activity increased at an annual average rate of 18.1% from 2001 to 2013 contributing significantly to the rising value of the gross domestic product in the Emirate of Abu Dhabi. Value added for the mining and quarrying activity contributed more than 50 % to GDP in most years. As a result this activity had a significant impact on the size of GDP and the GDP growth rate which increases when the value added for the mining and quarrying activity increase and vice versa.

There is no relationship between the non-oil GDP and the value added for the mining and quarrying activity. Thus, the results showed that the non-oil GDP was not affected by the value added for the mining and quarrying activity whether increasing or decreasing. However, there is a relationship between mining and quarrying activity and manufacturing activity but this relationship fades when integrating the manufacturing activities with the non-oil GDP.

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