

## THE MAIN DETERMINANTS OF ECONOMIC GROWTH AND THE ROLE OF NON-OIL SECTORS IN OIL COUNTRIES' ECONOMIES: THE CASE OF SAUDI ARABIA<sup>1</sup>

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### ABSTRACT

This paper examines the main determinants of economic growth in non-oil sectors so as to provide information that may be used as a resource for future strategies on economic growth in oil-dependent countries. The estimated model has non-oil exports, private investment, public investment and tourism (in addition to labour and capital) as independent variables, with economic growth (GDP) as the dependent variable. Empirical results show that the most important factors that have an effect on economic growth in the Saudi economy (in order of importance) are private investment, public investment and international tourist arrivals. Unexpectedly, exports in the non-oil sector showed a negative effect on economic growth. The results indicate that more needs to be done in the non-oil sector if the economy wants to diversify from oil as the main engine for sustainable economic growth.

**Keywords:** Economic growth, Non-oil sector, Saudi Arabia, VECM.

### INTRODUCTION

Saudi Arabia, like most oil-rich countries, is dependent on oil revenues, yet the oil and its derivatives are attained from exhaustible resources; this does not support the promotion of long-term economic stability as it means there is a reliance on foreign markets. By contrast, non-oil sectors depend on internal factors, and can be controlled by these. Tourism, for example, in the Kingdom of Saudi Arabia is a resource that is inexhaustible as it is based on pilgrimages into the country's holy regions. Oil revenues, on the other hand, stimulate booms in the natural resource sector of an economy; this leads to higher prices and thus inflation (Centre for Analysis, 2010). The tourism sector, by contrast, works to attract investments and foreign currencies (McKinnon, 1964 and Schubert et al., 2011).

Moreover, the number of workers in the oil sector does not exceed 2% of the total employment in oil-rich countries. In the Kingdom of Saudi Arabia, for example, around 1.3% of the labour force was employed in the oil sector in 2003 with a similar proportion in 2004 (Kingdom of Saudi Arabia Department of Statistics, 2012). Per the International Monetary Fund, workers in the oil and gas sector in 1989, 1999 and 2009 comprised about 1.1%, 1.6% and 1.1% of total employment respectively (Table 1). Tourism is expected to provide more than 1.5 million jobs for Saudis in 2015 and 2.2 million jobs in 2020, according to the Council of Saudi Chambers (2010). Skilled and trained personnel are required in the oil-sector, whereas the tourism sector is far more flexible and easy to deal with. It is known that the oil sector is capital intensive and uses modern technology, which affects the number of workers in this sector.

Table 1

The capital investment and employment in oil sector

Year	Oil Investment (Million Riyals)	Labour in the Oil Sector	The ratio of total employment
1989	2130	54000	1.1%
1999	13147	97000	1.6%
2009	19180	91000	1.1%

Source: The International Monetary Fund (2012).

According to the latest statistics from the World Tourism Organization in 2012, Saudi Arabia had the highest number of tourists in the Middle East in 2011 - the number of tourists at that time reached more than 17 million; by contrast, ten million tourists visited Egypt and eight million travelled to Dubai in the same year. Saudi Arabia is the largest oil exporter in the world and is home to the largest oil reserve on the planet. However, the Kingdom is not just an oil exporter; it has a promising tourism market, being the home of the holy mosques of Makkah and Medina (QTA, 2011).

For Saudi Arabia, instability of world oil prices as well as the economy's heavy reliance on oil necessitates the strengthening and development of non-oil exports to achieve a more sustainable level of growth

\* Please, note that this work is still in progress.

and development. This was highlighted in the Ninth Development Plan document (2010-2014) by the Ministry of Economy and Planning in Saudi Arabia (2012). In addition, empirical studies emphasise the positive effects non-oil exports have on economic development in the Kingdom, in that they visibly stimulate both investment and production within the country (Aljarrah, 2008). On the other hand, and in this framework, the Kingdom is facing several challenges through the heavy reliance on oil exports, which requires expanding the base of domestic production in some fields, such as agriculture, industry and services.

The main objective of this paper is to identify the main determinants of economic growth in non-oil sectors in the largest country exporter of oil in the world: The Kingdom of Saudi Arabia. The analysis covers the period 1970-2011 and addresses the following research questions (1) what is the role of key non-oil sectors, such as tourism and private investment, to the economy of Saudi Arabia?; (2) What are the main determinants of economic growth in the last 40 years

## LITERATURE REVIEW

There is an enormous amount of research in the field of economic growth. Empirical and theoretical studies have been conducted in order to identify the factors that contribute to such expansion in growth (see for example, Baro and Sala-i-Martin, 1995; Piazzolo, 2006; Baro, 1996; Asheghian, 2011 and Prochniak, 2011). However, not all of these factors can be important and influential in oil economies; the specificity of these nations in their excessive dependence on a single product significantly affects the economy through higher prices lowering the opportunity to compete with the economies of other countries.

Exports are the main factors affecting oil-rich countries, given such countries' dependence on the export of oil and its derivatives. Exports are the primary determinant of economic growth, as identified by many empirical studies (including the Classical and Keynesian growth models) in developing and oil-rich countries (Workie, 2005).

Studies addressing the determinants of economic growth in oil-producing countries have tended to focus on the export variables, especially oil exports (see for instance, Safdari et al., 2011; Konya, 2004; Anman, 2004; and Asseery & Al-Sheikh, 2004). Oil-rich countries have, in turn, been criticized for overly relying on oil-exports. Such criticism stems from the fact that this reliance might affect other types of exports due to neglect of the country's infrastructure whilst narrowly focusing on the transfer of technology for oil purposes only. In this framework, there are a great number of articles that have attempted to examine the impact of non-oil exports on growth, but their results have been mixed. Evidence from Iran, an oil-rich country, revealed a negative relationship between non-oil exports and economic growth (Ali & Nasrollahi, 2010). Moreover, an additional study on developing nations by Griffin (1989) confirmed that there is a weak relationship between exports and economic growth in developing countries; these nations need to stay away from dependence on primary exports and the development of manufacturing processes in order to enhance growth, as such a dependence would require substantial investment in infrastructure. Conversely, there have been several studies in oil-rich countries (see for example, Aljarrah, (2008) for Saudi Arabia and Okodua, (2013) for Nigeria), that have argued that there is a positive relationship between non-oil exports and economic growth. Olayiwola & Okodua (2013) also recommended that governments should encourage non-oil exports in order to increase FDI and contribute to the economic growth in these countries. Overall, this relationship (between non-oil exports and economic growth) is still not clear.

Although exports play an important role in boosting growth, they are not the sole contributing factor. Studies show that public investment is another key factor affecting economic growth (see for example, Hammond & Thompson, (2006), Vu Le & Suruga, (2005) and Gwartney et al., (1998)). On the other hand, this argument is contrary to some studies, which see public investment as having a negative effect on growth and leads to the crowding-out of private investment. (e.g. Aschauer, 1989; Everhart & Sumlinski, 2001; Cavallo & Daude, 2011; Swaby, 2007; and Devarajan et al., 1996). In developing countries, Pritchett (1996) confirms that directed public investments with non-productive purposes weakens its significance.

In oil-rich countries, private investment plays a prominent role in stimulating economic growth. Unfortunately, the influence of private investment on growth has not received the attention it deserves. In countries like Saudi Arabia, for example, the contribution of the private sector in GDP for the year 2012, at constant prices, reached 58.2%, according to the Central Department of Statistics and Information. This also supports a recent study in 2014 by the International Monetary Fund (Alshahrani & Alsadiq), which has shown that there is a positive effect from private investment on economic growth in Saudi Arabia. There are several studies in both developed and developing countries supporting this approach (see for example, Prochniak, 2011; Dobronogov & Iqbal, 2005; and Chen & Feng, 2000).

Recent interest from researchers concerning the relationship between international tourism and economic growth has increased considerably. Tourism is recognized as having a positive impact on long-term economic growth in three ways: firstly, it is one of the most important sources of foreign exchange for many developing nations as well as for developed nations. Secondly, tourism plays an important role in stimulating infrastructure investment and competition between local and international firms in the field of tourism. Thirdly,

tourism contributes to the creation of employment and to an increase in income (see Schubert et al., 2011; Cortés-jiménez & Pulina, 2006; and Tiwari, 2011).

A study by Sequeira & Maças Nunes, (2008) showed the significant contribution of tourism to economic growth. In recent years, both low-income and high-income countries (e.g. Norway, Singapore and the USA) focus on economic policies that promote international tourism as a potential source of economic expansion. Recent international tourism-related empirical studies include: Cortés-jiménez & Pulina (2006) for Spain and Italy, Tiwari (2011) for India, China, Pakistan and Russia, Chatziantoniou et al. (2012) for France, Italy, Spain and Greece and Schubert et al. (2011) for a small tropical island. These authors have analysed the possible relationship between tourism and economic growth but only a few found evidence of the long-term effect from this sector on economic growth. In oil-rich countries, several studies (for example, Tiwari, 2011 and Brau et al., 2006), see tourism as very important, and are of the opinion that countries that depend on international tourist arrivals are inclined to grow more dramatically as compared to oil-producing countries.

Finally, economic growth depends on many other variables. Economic theories have focused on the role of labour, physical capital, investments, government spending, human capital and technical progress during the process of economic growth. While various studies have addressed these, they have also taken into account the impact of numerous additional factors, such as: financial developments, openness (Chen & Feng, 2000), foreign direct investment (FDI) (Hsiao, 2006; Asheghian, 2011 and Tiwari, 2011) and human capital and innovation (Teixeira & Fortuna, 2004). Given the difficulty of examining all the variables in economic theories and empirical studies as delimiters for economic growth and given the specificity of the Saudi economy as a representative case of oil economies as well as the difficulty in accessing some of the data (such as technology-related information), the following variables are assessed in the Saudi Arabia economic growth model for this study: non-oil exports, tourism, investment (both private and public), in addition to labour and capital.

### METHOD OF STUDY AND MODEL SPECIFICATION

**Method of study:** Data for this study was obtained from the Saudi Arabian Monetary Agency (SAMA), the International Monetary Fund database (IMF) as well as the Saudi Commission for Tourism and Antiquities (Scta). Variables have been calculated in real terms using the GDP-deflator (1999 = 100).

To achieve the objectives of this research a time-series econometric approach was applied to determine the short and long-term relationship between economic growth and the various determinants under study. Data analysis methods is similar to those used by Kogid et al., (2010). The study starts with the concept of time series stationary, followed by main stationary tests, as represented in Dickey-Fuller (DF) for unit roots, and the Augmented Dickey-Fuller (ADF) test. Secondly, it tests co-integration of time-series according to the Johansen test to discover the relationship between the variables and economic growth in the long-term, as well as the Error Correction Model (ECM), to find out the relationship between selected variables and economic growth in the short-term.

**Model Specification:** In general, investigating the effect of selected variables on economic growth in the Saudi economy can be illustrated as follow:

$$Y = \alpha + \beta_1L + \beta_2K + \beta_3X + \beta_4T + \varepsilon \tag{1}$$

In order to achieve the objectives of the study model (1) was be expanded as follows:

- Focus on non-oil exports ( $X_N$ ) in order to isolate the effects of any external influences on the Saudi economy.
- Replace a variable of capital by total investment or gross fixed capital formation due to the lack of data on capital.
- Division of investment to public investment (PG) and private investment (PI) in non-oil sector, in order to assess their relative importance in economic growth.
- Focus on employment in the non-oil sector.
- Use religious tourism between 1970 and 1989 due to the lack of data on the arrival of tourists in Saudi Arabia within these periods of time.

Hence, these take an extended economic growth function as follows (see Table 2):

$$Y = \alpha + \beta_1L_N + \beta_2PG + \beta_3PI + \beta_4X_N + \beta_5T + \varepsilon \tag{2}$$

Table 2  
Definition of Variables

Variables	Definition
Y	Real GDP of the non-oil sector
X <sub>N</sub>	Real non-oil exports
PI	Real private investment (non-oil sector)
PG	Real public investment (non-oil sector)
Ln	Total labour forces in non-oil sector
T	Total international tourist arrivals

To examine the short-term relationship between the dependent variable and the independent variables, the study uses the Vector Error Correction Models (VECM) derived from the VAR model, hence, Equation 3:

$$\Delta Y = \alpha_0 + \sum_{j=1}^n b_j \Delta Y_{t-j} + \sum_{j=0}^n c_j \Delta Ln_{t-j} + \sum_{j=0}^n d_j \Delta Xn_{t-j} + \sum_{j=0}^n e_j \Delta PG_{t-j} + \sum_{j=0}^n f_j \Delta PI_{t-j} + \sum_{j=0}^n g_j \Delta T_{t-j} + e_{t-1} + u_t \quad (3)$$

**EMPIRICAL RESULTS AND FINDING**

**The unit root test:** the test of the unit root based on ADF, as illustrated in Table 3, suggests that all six variables are stationary at first difference I (1), which means that there is a possibility of achieving co-integration relationships between economic growth and selected variables. The appropriate gap has been identified in the Augmented Dickey Fuller (ADF) test on the basis of the standard (Schwarz) criterion.

Table 3  
Tests for unit root (ADF)

Variable Definition	Symbols	Level	First Difference
Economic growth in non-oil sector	GDPn	-5.94**	-7.19**
Employment in non-oil sector	Ln	-3.44	-6.63**
Private investment	PI	-1.58	-6.02**
Public investment	PG	-0.10	-3.55**
Non-oil exports	Xn	-2.23	-4.11**
International tourist arrivals	T	-2.24	-7.00**

\*Significance at 10% and \*\* significance at 5%. The lag length is based on the Schwarz Info Criterion (SIC). Critical values (with linear trend): at the 5% and 10% are 3.54 and 3.20, respectively.

**Co-integration Test**

**Johansen approach:** as mentioned before, this research uses non-oil sectors alone to assess the impact of these variables on economic growth. These variables private investment (PI), public investment (PG), non-oil exports (Xn), tourism (T) and labour in non-oil sector (Ln). The Johansen approach was used to examine the relationships between all variables and economic growth in the long run and the short run.

Having proven the results of unit root tests for Augmented Dickey-Fuller (ADF), time-series variables were integrated into the first difference. The following table presents the results for the Johansen co-integration tests, which proved the existence of a complementary relationship between all variables under study.

Table 4  
Johansen Co-integration Test Results

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical value	Prob.
Non*	0.976630	280.5305	103.8473	0.0000
At most 1*	0.922362	160.3294	76.97277	0.0000
At most 2*	0.708565	78.54689	54.07904	0.0001
At most 3*	0.588067	39.09290	35.19275	0.0180
At most 4*	0.201102	10.71224	20.26184	0.5700
At most 5*	0.104377	3.527554	9.164546	0.4870

  

Hypothesized No. of CE(s)	Eigen value	Max-eigen Statistic	0.05 Critical value	Prob.
Non*	0.976630	120.2012	40.95680	0.0000
At most 1*	0.922362	81.78246	34.80587	0.0000

At most 2*	0.708565	39.45400	28.58808	0.0014
At most 3*	0.588067	28.38066	22.29962	0.0063
At most 4*	0.201102	7.184685	15.89210	0.6469
At most 5*	0.104377	3.527554	9.164546	0.4870

\*Trace test indicates 4 cointegrating eqn(s) at the 5% level, and the Max-eigenvalue test refer that there are 4 cointegrating eqn(s) at the 5% level. \*: Rejection of the null hypothesis of no co-integration at 5% level.

The results suggest that there is more than one co-integrating vectors; there are in fact three co-integrating vectors between economic growth (GDP) and other variables. Hence, existence of a long-term relationship among economic variables; the equation for the joint integration between the dependent variable and the independent variables could be clarified in the following table:

Table 5  
Determinants of Economic Growth in Non-oil sector

Variables	Coefficient	Standard Error	t-Ratio
Ln	0.014407	0.00092	15.6
PG	0.098558	0.01358	7.25
PI	0.302124	0.02097	14.4
X <sub>N</sub>	- 0.223472	0.03855	5.79
T	0.002246	0.00042	5.34

Table 5 shows that the effects of the labour force, private investment, public investment and tourism on economic growth are positive and are statistically significant at 5%. Interestingly, there is a negative impact of non-oil exports on economic growth; this is statistically significant, at 5%.

**Error Correction Model (ECM):** the test results from the cointegration of the Johansen approach showed that there was a long-term relationship between the GDPn and its determinants. Thus, the next step, the relationship between these variables in the short-term and the results, are shown in Table 6.

Table 6  
Vector Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic
EC <sub>t-1</sub>	-0.509180	0.14436	-3.52724
D (GDPn(-1))	-0.180308	0.15055	-1.19766
D (Ln(-1))	0.000481	0.00401	0.11975
D (PG(-1))	-0.168724	0.13942	-1.21021
D (PI(-1))	0.265230	0.18505	1.43331
D (X <sub>n</sub> (-1))	-0.145668	0.21115	-0.68987
D (T(-1))	0.000143	0.00049	0.29141
C	-150.9911	385.703	-0.39147
R-squared	0.46		
F-statistic	3.23		

The previous estimated model shows the results of estimating via the vector error correction model (VECM) for the short-term relationship between the dependent variable and the independent variables, specifically: the value of the F-statistic (3.23), in addition to the error correction coefficient (EC<sub>t-1</sub>) is statistically highly significant, as is its negative sign, and this is consistent with the method of error correction. R-squared is 0.46; hence the ECM explains 46% of the systemic variation in the dependent variable.

### DISCUSSION AND CONCLUSION

The main objective of this paper was to identify the key determinants of economic growth in non-oil sectors of oil-rich countries. A unit root test, based on the Augmented Dickey Fuller (ADF), showed that the time series data used for each variable are stationary at the first differences I (1). The co-integration technique based on the Johansen’s approach indicates that there is evidence of the existence of co-integration between the variables. Thus, a long-term relationship was found between these variables.

A major contribution of this article is that it shows the importance of non-oil sectors such as tourism and private investment to future strategies for economic growth in oil-rich countries. It also highlights the

importance of separating the economic entity (particularly in oil-rich countries) into two main parts: oil and non-oil.

The results of this study relate primarily to private investment; its strong influence on economic growth in non-oil sectors was clearly identified. The impact of private investment is followed by the influence of the public sector and tourism. Unexpectedly, the non-oil exports in the Saudi economy are negative and statistically significant, which means that the growth in non-oil exports in Saudi's economy leads to a decrease in growth.

This study's results have exposed the positive impact of labour force and capital on economic growth that is compatible with economic theory.

Tourism has, overall, performed below expectations, thereby throwing into question its efficiency and effectiveness in supporting the economic growth of the Kingdom. Nonetheless, this does not mean it should be ignored, but should be supported to achieve the desired outcome.

It can also be concluded that the Saudi economy should focus on non-oil sectors for many reasons, not least of which is the fact that these sectors are far easier to control, given that price rises in oil exports have far less bearing on them

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