

## Sustaining Standard of Living Amidst Volatile Oil Prices – Lessons from the Gulf Countries

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### Abstract

Improving living standards amidst falling oil prices among countries relying heavily on an ample supply of oil presents numerous challenges. Therefore, the relationship associated with oil price changes with identifiable metrics that explain standards of living becomes critical. The following issues are presented in this paper: the management of wealth; sustaining a standard of living; peculiarities of oil trade; oil price determination; and management and the uncharacteristic application of supply and demand. Since aspects of the world oil market remain unclear and opaque, society is in need of credible research and verifiable theory. Data relating to Kuwait over a 32-year period (1983 – 2014) were obtained. Five independent variables—investment growth, inflation, percentage change in price per barrel, unemployment, and percent change in the number of incarcerations—are regressed with a change in real GDP (dependent variable). Finally, to determine the robustness of the model, the Durbin-Watson test was used. The coefficient of determination ( $r^2$ ) suggests that 66.24% of variations in lifestyle can be explained by variations in the five independent variables ( $p < 0.01$ ). Standards of living can be sustained by increasing growth in investment, decreasing inflation, decreasing unemployment and incarcerations, and most importantly increasing the price of oil. This study places Kuwait as a proxy for the Gulf Countries and should ideally be extended to the other five Gulf Countries. Comparative studies over multiple periods of time ought to be undertaken to measure the robustness of different sustainability measures.

**Keywords:** standard of living, sustaining lifestyle, oil price volatility Gulf Countries

## Introduction

The oil market currently suffers serious contradictions. In addressing the impact of oil prices on the Indian economy, Aparna (2014) argues that an understanding of the peculiar nature of oil trade, the nature of price determination, and the uncharacteristic application of supply and demand are necessary prerequisites to explain the events that trigger major political reactions worldwide. In analyzing the consequences of oil price volatility on energy security, Bordoff and Stock (2014) contend that there is an arguably urgent need to address the concerns associated with major swings in oil prices, and furthermore it is necessary to identify those individual countries that are responsible for the staggering collapse. Appropriate policy responses are therefore required and should ideally address the concerns of Killian and Vigfusson (2014)—namely, the degree to which nations are financing their foreign policies through oil production and consumption. Indeed, oil prices have not been stable over the last five decades. Dramatic events in the seventies saw the price of crude oil at over forty dollars a barrel. The prices continued to be volatile and in the eighties fell to a low of twenty dollars a barrel. Figure 1 reflects the oil price volatility from January 1946 to April 2015. Notwithstanding the price volatility, the role of governments of both oil exporting and importing nations is to raise the living standard of their citizens.

From Figure 1, one would observe that from 1946 to the early 1970s the prices were somewhat stable. The dramatic volatility from around 1980 to 2015 is a cause for concern. Zoheir, Inderwildi and King (2014) in their seminal work, “Macroeconomic Impact of Oil Price Volatility: Mitigation and Resilience,” maintain that such swings are not compliant with economic thinking and reasoning. It is therefore not surprising that economists of oil-producing countries were not completely startled by the sudden drop in prices. The reaction of politicians in oil-producing countries of the Gulf, however, attracted much attention. Their social, economic, and political outcomes are aligned to oil production. Consistent with this, Fawad (2013) maintains that economic sustenance, political stability, social cohesiveness, and per capita growth of Gulf countries are highly positively correlated with oil prices.

Figure 1. Oil price volatility Jan 1946-May 2015 (prices are reflected in US \$)



Source: Extracted from [macrotrends.net](http://macrotrends.net)

The recent impact of the decline in oil prices has reconfigured the thinking of Gulf countries, affecting their budgets and resulting in current account deficits. Moreover, Sfakianakis (2014) contends that some Gulf Countries are reported to have drawn on their foreign reserves to cover expected budget deficits as a result of volatility in oil prices. It is within this context that this study has been undertaken to illustrate the effects of oil price fluctuations on lifestyle and living standards of the citizens of the Gulf. Through oil revenues the six countries of the Gulf boast a level of infrastructural development that is second to none. Concomitantly, these countries have emerged to be financially affluent, the consequences of which resulted in placing monetary value above all else and applauding unbridled greed and rapacious consumerism at enormous social costs. Dasgupta and Heal (1979) point out that the World Bank, nongovernmental organizations, and other supranational organizations have as early as 1975 recommended that natural resource exploitation countries reap the rents from the extraction and sales of natural resources. The custodial conduct of countries in ownership of these natural resources is an area of important study. Gulf countries have over the years adopted Hartwick's Rule (1977) which suggests that the marginal rents on natural resources should be fully saved and reinvested in physical capital, infrastructure, and education. In the event of the savings being greater, economies are bound to grow at an even higher growth rate.

There is extensive research (Auty 2000, Sachs and Warner 2001) suggesting that a negative relationship exists between resource abundance and poor economic growth

indicators. This problem is commonly referred to as the paradox of plenty or simply the “resource curse hypothesis” (Sarraf and Jiwani, 2001). Nabli and Silva-Jauregui (2005) in their study, “Democracy for Better Governance and Higher Economic Growth in the MENA Region,” argue that countries richly endowed with significant natural resources tend to perform poorly in terms of economic growth, productivity, and economic development. This is a result of poor governance, pervasive corruption, and various forms of conflicts, among other things. This evidence supports the “resource curse” hypothesis. In the case of Gulf countries the effects of the curse are further exacerbated by a benevolent government that provides generous benefits also in the form of subsidies, beyond what any other country accords. Consequently, research findings by Hamilton (2009) and Acemoglu, Finkelstein, and Notowidigdo (2013) suggest high oil prices are likely to result in deteriorating national health for economies that are dependent on imported oil and gas, while for the producers, it acts as a boom. The reverse is true when the prices fall. For this reason oil and gas are often known as recession-proof commodities. Oil-producing economies have shown tendencies to gain advantage by using their bargaining power in the oil industry. Inevitably, the oil and gas sector of oil-producing economies is a major economic contributor to the national health of the economy. Heloisa (2012) contends that economic performance indicators in terms of Gross Domestic Product (GDP), inflation, investment trends in the domestic market, and budgetary trends become major indicators of living standards and sustainability. These indicators should therefore be correlated with the social development of an economy. This view is consistent with that of Sharpe et al. (2008), who argue that the future development of oil prices carries significant political, social, economic, and environmental challenges. Accordingly, Abosedra and Baghestani (2004) assert that crude oil price deteriorations create serious budgetary problems for oil-exporting countries. Acemoglu, Finkelstein, and Notowidigdo (2013) further suggest that any instability in oil prices results in innumerable social costs. These studies reflect the degree of influence caused by oil price fluctuations on the living standards of an economy. Identifying this literature gap, the study intends to examine the relationship between oil price fluctuations and living standards within economies. Hence, assumptions taken for this study emphasize oil as a commodity that has made significant contributions to the development of many economies as well as having transformed their geopolitical landscape. The world economy has also become stronger by large volumes of oil trade, owing to the oft-argued nature of oil trade being recession-free. Hence, with huge amounts of oil traded in the international markets, economies such as Saudi Arabia’s, Kuwait’s, UAE’s, and Qatar’s among others, have obtained competitive

advantages over other nations.

## **Purpose and Methodology**

The objective of this study is to define the relationship of a change in oil prices with identifiable metrics that explain standards of living. The relationship between these factors and the change in the price of oil will also be identified and explained. The Gulf countries are the focus of the study, and data relating to Kuwait will be used as a proxy to represent the Gulf countries. In order to evaluate the relationship between oil prices and living standards, the study will describe the importance of oil revenue to the Gulf economy. The study identifies the possible reasons for the current fluctuation in oil prices and its impact over the living standards within the economies of the Gulf Countries. The study places the political, social, and economic issues associated with oil price fluctuations under the spotlight. Data (identified as dependent and independent variables) for this study were obtained from several sources. These sources include:

- The Ministry of Oil in Kuwait;
- Websites such as the World Bank, Macrotrends, and IMF World Economic Outlook that carry crucial data that meet the objectives of the study;
- Several literature sources;
- Data published by the various ministries in Kuwait.

## **Political and Social Issues Associated with Oil Price Volatility**

Rojas and Stinson (2015) maintain that the 21<sup>st</sup> century has firmly established the oil and gas industry as a critical industry; indeed, the oil industry has emerged as the main source of income for the world economy today. Rojas and Stinson (2015) further maintain that it is within this context that international dealings in commodities have become more complex as a result of oil being a strategic commodity that transcends the political, social, and economic dimensions of trade. Managing oil dependency has therefore become a critical exercise of both oil-producing and oil-consuming nations. While a fall in the price of oil sees the consuming nations gleeful, the oil-producing cartels begin to frown. Consequently, Aparna (2014) contends that addressing issues associated with lifestyle within the context of oil price volatility becomes necessary.

The fluctuation and volatility of oil prices was already presented in Figure 1. Over the course of recent months, however, oil prices have been drastically falling at a rapid pace. It is during these periods of drastic oil fluctuations that the market price of oil has considerable impact on business and

economic cycles. The fluctuation becomes an important proxy for economic slowdown of oil-producing economies. The World Bank Group (2015) argues that in non-oil-producing countries, the substantial decrease in oil prices ought to have resulted in decreased commodity prices that ideally should have been passed over to consumers. This would ideally result in economic growth.

The June 2014 statistical findings suggest that the oil price had fallen by more than 40% since the previous year. This presented no major threat to the oil-producing countries of the Gulf. January 2015, however, was the seventh consecutive month in which monthly average crude oil prices decreased, reaching a low \$48/barrel, the lowest since March 2009. One is made to believe that like all other commodities, oil prices are determined by Adam Smith's invisible hand associated with supply and demand. Consequently, the falling oil prices were the result of fluctuations in the global demand and supply. The global supply of oil was observed to have increased considerably, surpassing the current levels of global demand. As a consequence, in order to sustain the equilibrium position, prices for crude oil and oil products declined. According to Bordoff and Stock (2014), a major political reason for such increase in the supply volume was the inclusion of new producer nations including the United States.

As a major oil-consuming nation, the United States decided to considerably reduce its importation of oil from the oil-producing nations. The political reasoning for the United States to recommence its oil production in large quantities was to reduce its oil dependency on Middle East countries as a result of a weakening political and diplomatic relationship. Through this reduced dependency together with the incentives associated with its own supply, the United States is able to increase its bargaining power on other oil-producing nations. At the same time, the United States brought some order and discipline into the market (Rojas and Stinson, 2015). Outbursts reacting to such a politically motivated initiative adopted by the United States and also by a few other global powers culminated in the form of political unrest in several OECD countries. Notwithstanding this political unrest, the price reductions proved beneficial for non-oil-producing communities. Oil-exporting nations, particularly the Gulf Countries, faced a major deficit in their trade balance. To sustain the gap, these economies increased the price of oil within their domestic markets (Rojas and Stinson, 2015).

Alley et al. (2014) suggest that during the last decade, oil prices were bargained and price determination was made possible through intense negotiations within closed meetings of OPEC countries. Rivalry or conflicts soon emerged among the OPEC member countries. Following the global unrest associated with oil price fluctuations, several countries of Asia were observed to have reduced their oil subsidies also resulting

in a great fall in demand (Alley et al., 2014). The industry dependency ratio of these countries also became a vital factor in price control. Some oil-producing economies could not sustain production at \$50. Slower growth was a result of lower profits. For the United States and for other net petroleum importers, the decline in oil price was an economic windfall. As a consequence, a huge fall in crude oil price led to another economic downfall of the Gulf economy (Bordoff and Stock, 2014). This also became a major challenge for other energy-dependent countries that were struggling to balance their financial inflows and outflows to reach the breakeven point, owing to their high percentage of production costs. Kilian and Vigfusson (2014) contend that as long as OPEC countries are establishing prices in disorganized proportions, the ill effects of a disorganized market will result in fluctuations that are not consistent with supply and demand. Libya, Iraq, Venezuela, and Russia have been hard hit by the falling prices. Hamilton (2009) points out that these countries are not in a position to sustain production costs at price levels that fall below \$80 per barrel. The rise of America as an oil-producing nation played a major role in reducing the United States' dependence on foreign-produced oil. The United States aims to significantly decrease its import quantity of crude oil while also regenerating thoughts of alternative energy sources. Supporting research and development for alternative energy sources together with its reentry into the export market, the United States will play a major role in ensuring that prices are kept down and bringing order in the volatile oil market (Rojas and Stinson 2015).

From the above discussion it can be noted that political interests to obtain competitive advantages through international trade was the key factor leading to declining oil prices in the global market. Kilian and Vigfusson (2014) argue that the stand taken by the United States cannot be condemned, particularly when oil-producing economies conducted themselves as bullies of the market. They further add that these falling prices will be short-term. Notwithstanding this, the boom-bust pattern of the international oil market brings some reorganization to the oil industry. For oil-producing nations, the governments and companies are united in actions to limit the adverse effects of price declination. It is an appropriate time for economies to take the necessary measures to address the oil industry in a manner compatible with stakeholder interests.

## **Measures of Standard of Living**

Establishing an exact quantitative measure of a standard of living is a complex exercise as it is a broad phrase that exacts a scoreboard requiring a multiplicity of relevant metrics, both objective and subjective. A utility function is usually an economist's idea of well-being and a measure of the standard of

living. This is measured in terms of pecuniary and non-pecuniary values. Dasgupta and Heal (1979) identify the rate of change in gross national income per capita, life expectancy, infant mortality rate, education, and engagement in political activism as measures of well-being. Consequently, the standard of living has come to connote several factors such as income, quality and availability of employment, poverty rate, GDP, inflation rate, quality and affordability of housing, life expectancy, incidence of disease, number of vacation days per year, cost of goods and services, national economic growth, infrastructure, and political stability (Dowrick, Dunlop and Quiggin, 2001). The ratio of gross domestic product (real GDP) to a country's population is often referred to as the GDP per capita, a conservative measure that is often used by economists to estimate the country's average standard of living. GDP per capita is biased toward economic growth as a policy objective, however, rather than striving for a balanced human development measure or indicator. Increasing growth rates have not been a true indicator of poverty alleviation and have recently been criticized by a group of social activists, including Ghosh of the United Nations Research Institute for Social Development and Marone, writing for Oxfam. A very limited number of studies evaluate the relationship existing between oil price and the living standard of an economy. Identifying this literature gap, three indicators of standard of living, GDP per capita, inflation rate, and unemployment rate, have been adopted. Notwithstanding the criticisms associated with GDP per capita as an indicator of standard of living, it can be used as a proxy. The World Bank continues to use GDP per capita as a measure of the economic health of a country and maintains that GDP is one of those vital and most commonly used economic measures that help to critically evaluate the structure of the overall growth of the country. Additionally, GDP, as a vital economic indicator is highly involved in measuring the country's productivity.

As observed from the literature survey, oil price fluctuations impose a non-linear influence on real GDP within the global context. The sensitivity of an increase in oil prices is considered to be more significant than a decrease in oil prices. Consequently, the impact of oil price increase on GDP is comparatively higher than a decrease in oil prices. Within the context of oil-importing countries, higher oil prices impose a negative impact on the economic health of the country (Kilian and Vigfusson, 2014). On the contrary, it has also been stated that lowering the oil price leads to increased consumer power parity and thus, it has a positive impact on domestic consumers. To be precise, oil-producing economies such as Kuwait are likely to witness a dual effect on the rise of oil prices when importing and exporting. For instance, people who are living in Kuwait have benefited from lower oil prices that boost industrialization and contribute to sustainable innovation



capacity in oil rich Gulf Countries. Concomitantly, price increases in the international market facilitate inflow of foreign direct investment (FDI) in the country. Oil-importing nations are more likely to face the burden of increased spending within the economy and hence shall be challenged by rising inflation rates (Killian, 2007).

The second indicator of the standard of living is the inflation rate. A literature review suggests that identifying the causes of inflation is critical for the development of the country's economy. The growth of an economy entails the capacity to increase production of goods and services. The objective of policymakers is to ensure that the price of goods and services are stable. The fundamental reason for this is to establish sustainable standards of living. Sfakianakis (2014) identifies inflation as a factor that contributes to some form of instability in the economy. The overriding characteristic that presents high inflation rates is world commodity price volatility that includes the price of energy. Theoretically, inflation is described as the sustained increase in the general level of price of goods and other commodities and is presented as an annual percentage increase. High inflation results in lower purchasing power and lower value of money. Generally, higher oil prices contribute to higher inflation rates for net oil-importing countries and lower rates for net exporting countries.

The third indicator of the standard of living relates to employment or more specifically unemployment levels. Unemployment is perhaps the most widely suggestive indicator of the labor market and GDP. The basic assumption is that a lower rate of unemployment results in higher GDP and wellbeing. Hence, the unemployment rate is often regarded as an important indicator to evaluate the future growth of economies. Unemployment as a variable provides information relative to wealth and the strength of the economy.

If financial well-being entails happiness of citizens of a country, policymakers require tangible measures for wellbeing. There is no consensus as to what entails the best measure. Real GDP is the most widely followed metric for assessing the performance of an economy and measures the market value of goods and services produced within a country within a given period. This is consistent with the views of Dasgupta and Weale (1992) who argue that GDP per capita is the most commonly used indicator to compare living standards among countries. While GDP per capita is a flow concept, it may be used as a measure of a stock concept too. Change in real GDP was used as a measure for the standard of living. Table 1 presents alternative measures of standard of living and authors that espouse them.

Table 1. Alternative measures of standard of living

Author	Measurement
Simon Kuznets (1965)	Real GDP per capita - The inflation-adjusted value.
John Talberth, Clifford Cobb, and Noah Slattery (2007)	GPI: The Genuine Progress Indicator
Elizabeth A Stanton (2007)	HDI: The Human Development Index
Marque-Luisa Miringoff (1999)	Index of Social Health

### Dependent and independent variables and the model

The following variables over a 32-year period (1983 – 2014), relating to Kuwait as a proxy for the Gulf countries, were obtained from various sources identified in the previous section. The data pertinent to this study are presented in Table 2.

Table 2. Dependent and independent variables

Symbol	Variable	Brief Discussion
Y'	Dependent Variable Standard of Living measured by Real GDP Growth rate	GDP as a measure of a nation's economy essentially measures the buying power of a nation over a given time period. As GDP increases, the overall standard of living is said to rise. There are few shortcomings associated with the use of GDP as a measure of living standard. For example, GDP does not provide an indication of the quality of goods purchased. The consumption of cheap, inexpensive, low-quality, and short-lived products purchased repeatedly ideally increases GDP at the cost of waste and inefficiency. That being said, GDP continues to be the best indicator of a nation's overall standard of living.
X <sub>1</sub>	Independent Variable 1 Investment growth (one- year lagged data)	The country's growth in investment in the previous year was regressed with the current real GDP growth. This is based on the assumption that the impact of the benefits of the investment is felt in subsequent years.
X <sub>2</sub>	Independent Variable 2 Inflation %	The impact of oil price trends is reflected in the consumer price index.
X <sub>3</sub>	Independent Variable 3 % Δ Price per barrel	Lower oil prices directionally benefit struggling economies. Declining oil prices pose economic and other risks to oil-producing nations.
X <sub>4</sub>	Independent Variable 4 Unemployment %	Unemployment is a variable that affects standard of living. The degree to which unemployment has an impact on standard of living is tested in this study.
X <sub>5</sub>	Independent Variable 5 % Δ in the number of incarceration	This study also tests the relationship between the number of incarcerations and the standard of living. Ideally, higher incarceration levels would be consistent with lower standards of living. Incarceration might be connected to economic inequality. Incarceration is a proxy data for the social ills in society.

## Statement of Hypothesis

The following hypotheses are tested:

- H<sub>1</sub> : There is a positive relationship between investment and real GDP growth;
- H<sub>2</sub> : There is a negative relationship between inflation and real GDP growth;
- H<sub>3</sub> : There is a positive relationship between price per barrel of oil and real GDP growth;
- H<sub>4</sub> : There is a negative relationship between unemployment and real GDP growth;
- H<sub>5</sub> : There is a negative relationship between the level of incarcerations and real GDP growth;

## Regression Model

The prediction of the standard of living measured by real GDP growth rate  $Y'$  (the dependent variable) is accomplished by the following regression model:

$$Y'_i = b_0 + b_1X_{1i} + b_2X_{2i} + \dots + b_5X_{5i} + e \quad (\text{Equation 1})$$

Where the "b" values are referred to as the regression weights or coefficients and  $e$  is the error estimation. These values are computed in a manner that minimizes the sum of the square:

$$\sum_{i=1}^n (Y_i - Y')^2 \quad (\text{Equation 2})$$

Based on the models cited in equations 1 and 2, the following statistical findings emerged: (Table 3). The equation predicting growth in GDP is given as follows:

$$Y'_i = 17.8226 + 0.9025 \text{ growth in investment} - 3.44 \text{ inflation} + 0.689 \text{ price per barrel} - 7.497 \text{ unemployment} - 0.011 \text{ incarcerations.}$$

## Results

Table 3. Regression statistics

Summary Output					
Regression Statistics					
Multiple R	0.813896				
R Square	0.662427				
Adjusted R Square	0.597509				
Standard Error	3.28744				
Observations	32				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	
Regression	5	55139.25	11027.85	10.20408	1.70164E-05
Residual	26	28098.97	1080.73		
Total	31	83238.22			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	17.8226	3.14754	5.662379	5.91E-06	
Investment Growth $X_1$	0.902519	4.674418	0.193076	0.8484	Not significant
Inflation (%) $X_2$	-3.44071	2.021289	-1.70224	0.10064	Not significant
% $\Delta$ Price per barrel $X_3$	0.689475	0.384219	1.794481	0.084373	Not significant
Unemployment % $X_4$	-7.49743	1.287107	-5.82503	3.87E-06	Significant
% $\Delta$ in incarcerations $X_5$	-0.01162	0.009477	-1.22651	0.230999	Not significant

The relatively large coefficient of determination ( $r^2$ ) in the model, namely 66.24%, suggests that 66.24% of changes in lifestyle can be explained by the five independent variables ( $X_1$  to  $X_5$ ) where the p value is less than 0.01. Investment ( $X_1$ ) and price per barrel ( $X_3$ ) are both positively correlated with GDP growth rates; the higher the price of oil, the higher the growth in GDP of oil producing countries. Inflation ( $X_2$ ), unemployment ( $X_4$ ), and number of incarcerations ( $X_5$ ) are negatively correlated with growth in GDP. Low inflation, low unemployment rates, and low number of incarcerations result in higher growth in GDP and vice versa.

Sustaining lifestyle and standard of living amidst falling prices of oil and consistent with boom periods in oil production and higher oil prices requires increasing growth in investment and decreasing inflation, unemployment, and incarcerations. Incarceration is a proxy for social ills in society. Investment

growth is critical for economic growth. The economy's investment growth in infrastructure, education, and health, among other things, presents opportunities for further growth and development. It is therefore not surprising that economists tend to provide investment growth rates as a key determinant of economic growth and ultimately growth in GDP.

Inflation in this study was found to have a negative impact on growth rates and subsequently reduce living standards together with the efficiency with which productive factors are put to use. Notwithstanding this, Mallik and Chowdhury (2001) found that there exists a long-run positive relationship between GDP growth rate and inflation for Bangladesh, India, Pakistan, and Sri Lanka. Inflation was found to be helpful toward growth initiatives. The negative relationship in this study can best be explained in terms of the Gulf Countries' benevolent conduct in sustaining living standards during increase in price levels of goods and services. Empirical studies on the relationship between inflation, interest rate, real GDP, money supply, and exchange rates are still in the infancy stage in the Gulf States, and therefore a more detailed study is recommended.

In this study, the average percentage change in the price per barrel of oil had a positive impact on GDP growth rates. This is not unusual for oil-producing countries. A fall in oil prices results in a fall in GDP growth rates as well. High levels of incarceration as a proxy for social ills and other corruption-related crimes reduce economic growth and subsequently living standards. A sustained increase in incarceration rates resulting from several social ills has broader implications, not only for the criminal justice system, but also for the broader economy as well (Kirchhoff 2010). Unemployment also has a major negative impact on growth rates.

Finally, to determine the robustness of the model, the Durbin-Watson test was used. The test statistic of the Durbin-Watson procedure is known as  $D$  and was calculated as follows:

$$D = \frac{\sum_{t=2}^n (e_t - e_{t-1})^2}{\sum_{t=1}^n e_t^2} \quad (\text{Equation 3})$$

$H_0 : \rho = 0$  (There exists no serial correlation)

$H_1 : \rho \neq 0$  (There is a positive serial correlation)

Table 4. Durbin-Watson calculation

<b>Durbin-Watson Calculations</b>	
Sum of squared differences of residuals	1,282,841
Sum of squared residuals	971,849
<i>k</i> Number of dependent variables	5
<i>n</i> Sample size	32
$d_L$	1.11
$d_U$	1.82
Durbin Watson Statistic	1.32
$\alpha$	0.05
Accept $H_0$	

For  $n=32$ ,  $k=5$  and  $\alpha=.05$ ,  $D_L = 1.11$  and  $D_U = 1.82$ . Since  $D_L < d < D_U$  we accept the null hypothesis that there is no significant serial correlation.

## Conclusion

The study, sustaining standard of living amidst volatile oil prices - lessons from the Gulf Countries, identifies oil shocks and their effect on economic variables. The creation of wealth is the fundamental mission of all economies and is key to the impact that an economy has on its population. The actions that economies take and choices they make in managing wealth have direct and indirect impacts on the personal well-being of the citizens of the country. Consequently, in determining lifestyle and living standards, economies are required to ensure that economic growth is a priority and is sustained. Countries relying wholly on high oil prices and ample supply of oil and gas, are required to monitor the volatility of prices and ensure that sustainable consumption associated with a living standard becomes a central focus for national and international policy. The prospect of these economies sustaining or improving on living standards amidst falling oil prices becomes low. Best practice standards that have been established in oil producing economies may ideally suit successful and well-resourced producers. However, the same initiatives may be inappropriate for the Gulf Countries that have navigated a standard of living for their citizens through their benevolent conduct. To address this challenge, this study identified five independent variables—

investment, inflation, price per barrel, unemployment, and number of incarcerations—that were regressed with the change in real GDP. The findings of the study suggest that standards of living in Gulf countries can be sustained by an increased growth in investment, decreased inflation, decreased unemployment and incarcerations, and most importantly increased price of oil. While managing high growth rates over time will sustain better lifestyles, the task becomes enormous particularly when standards of living are dependent on a single commodity whose price is subjected to constant volatility.

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