

# Exchange Rate Volatility and Economic Growth: Evidence from Kuwait

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Received 14 September 2018 • Revised 23 October 2018 • Accepted 24 November 2018

**Abstract:** This study analyzes the effect of the nominal exchange rate, Inflation, capital stock and foreign direct Investment on economic growth in Kuwait by using time series data for the period of 1975-2015. All variables are stationary at first difference. The results show that all independent variables have a positive and significant effect on economic growth. We applied some diagnostic test such as LM and BG Test and found free from autocorrelation and heteroscedasticity. The CUSUM and CUSUMSQ tests are used to check whether the model is structurally stable and results confirm that stability of the model. Some fiscal and monetary measures are to be taken to increase the export of non-petroleum goods.

**Keywords:** Economic Growth, FDI, Inflation, Exchange Rate.

**JEL Code Classification:** F43, F35, E31, F31.

## INTRODUCTION

Education is a core of the public life, including cultural, which unites and cements the society, indicates the future development and ensures this development enables the society to have protected its competitive place in the global division of labor that maintains social stability. The system of education is a complex social instrument of solving social problems, modernization and optimization of public life, integration of the entire community, the continuity of the educational process throughout life, providing competitive advantage and appropriate future for each subject of the educational space.

The methodological basis of research are scientific notions of universal connection and mutual conditionalism of phenomena, the basis of which pedagogical artistry should be considered as a whole, which combines acting, directing skills, personal and professional quality, professional ability. For the content and structure analysis of pedagogical artistry of high schools teachers were used a system-structural, personal approach that allowed us to reflect the diversity of the studied phenomenon.

There is an immense literature on the association between exchange rate and economic growth in the economic theory. Exchange rate refers to how much foreign currencies can be acquired with respect to home currency. These rate of exchange also known as the factors of conversion. This exchange rate divided into two branches named as the nominal and actual exchange rate. Real exchange rate includes the influence of inflation while nominal have not. The nominal rate of exchange can be said in terms of multilateral and bilateral. In addition, if we found any volatility in real exchange rate then we refer it as the presence of fluctuation. We call it exchange rate regime when we categorize the exchange rate behavior into different patterns. Fix exchange rate system is one in which rate of exchange remains stable whereas, if there is the presence of fluctuation in exchange rate then it is known as a system of floating exchange rate. Managed floating exchange rate comes in between the floating and fixed exchange rate.

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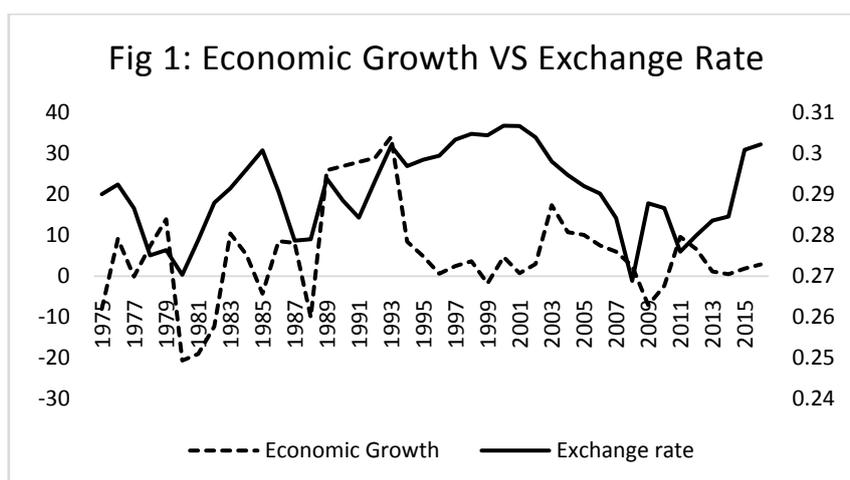
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The core purpose of this study is to analyze the exchange rate-economic growth nexus in Kuwait. Hypothetically, there is a direct association between economic growth and exchange rate suggesting depreciation in the exchange rate which tends to increase economic growth. However, Kuwait considered as an oil-based economy and has 10% reserves of the world's petroleum and further, production capacity of approximately 4 million barrels per day. Therefore, not only Kuwait retains its position as the fifth largest exporter of petroleum but also play a crucial role in OPEC over many years. More than 90% government revenue generated from the export of oil, which contains over half of Kuwait's GDP.

Furthermore, there are few more revenue source of Kuwait, for example, Plastic which provides 7.1% of aggregate export and an Organic compound which provides 4.8% of aggregate export. Moreover, Kuwait imports expensive commodities namely, advanced equipment and machine, motor vehicle, textile and chemicals. The export of Kuwaiti products except for oil, in the international markets, is less because Kuwaiti exports have not met the required standard. In spite of these issues, Kuwait trade balance remains positive because of key contribution of oil in total export and this thing trigger to increase economic growth.

Exchange rate and monetary policy of Kuwait has been controlled most of the period and in 1975 Kuwaiti dinar fixed to weighted currency basket against the US dollar. Furthermore, the currency loses its value when Iraq invaded Kuwait in 1990. In early 1991, the new banknotes were issued and currency reinstated to the value of the pre-invasion rate. Due to the fixed exchange rate regime, foreign commodities become less expensive; consequently, individuals move from domestic goods consumption to foreign goods. Likewise, the Kuwaiti exports become more expensive which cause the Kuwaiti export decreases. Figure 1 shows a positive relationship between Kuwaiti nominal exchange rate and economic growth.



Source: Author's Calculations

## REVIEW LITERATURE

There are debatable opinions among the researchers and academicians regarding the association between exchange rate and economic growth. As it was concluded by (Zahoor Hussain, 2009) that exchange rate implies how much individual receiving one unit of international currency with respect to one unit of domestic currency whereas volatility of exchange rate indicates supply and demand of domestic currency. In long run, it seems direct association between the volatility of exchange rate and economic growth. Mustafa, K., & Ali, S. R. (2018) also confirms the negative association between exchange rate and economic growth in Pakistan. Qichun He, (2010) finds the reasons for economic growth increases rapidly because of the fixed exchange rate policy in China. Furthermore, the author includes that fix exchange rate make the reason to increase the productivity in long run. Moreover, the same result found by (Yin-wong, 1998) but he takes five Asian countries in his research. In addition to, (Jinzhao, 2012) also affirms that there is a direct impact of real exchange rate on economic growth in China.

Some studies find <sup>1</sup>negative relationship between Economic Growth and Exchange rate while some finds <sup>2</sup>positive relationship and some studies conclude that there is no relationship between economic growth and exchange rate. Najid Ahmad, (2012) finds a direct relationship between inflation and growth.

<sup>1</sup>Danson Musyoki, (2012)

<sup>2</sup>Abu Bakaar, (2010)

The study uses the annual time series data for the time span of (1971-2011) of Pakistan. The author concludes that inflation boost not only the output level but it also increases the productivity of the economy. However, the author also mentions that inflation should be moderate otherwise consequences may be harmful. On the other hand, many studies find a direct association between inflation and economic growth (Shazad Hussain, 2011), (Nasir Iqbal, 2009), (Naseer, 2012) and (Mubarik, 2005) while other studies like (Bruno and Easterly, 1998), (Huybens, 1999), (Quartey, 2010), (Atish Gosh, 1998) and (Barro, 1995) confirms a negative relationship between these two variables like. Farhan Ahmad (2012) finds no association between inflation and economic growth.

There is immense literature confirming that foreign direct investment work as an economic engine for an economy. Many authors agree that without FDI, sustainable economic growth cannot be attained. Atef, (2015) point out that Kuwait as a semi-developed nation. The author uses the time series data and he finds the direct association between FDI and economic growth. Furthermore, he concludes that Kuwait requires more foreign investors for the development. There is a plethora of literature regarding the association between the FDI and Economic growth and everyone gave identical views about the FDI. Most of the researchers confirm that FDI helps to foster the economic growth such as; (Bhandari et al., 2007), (Won et al, c2008) and (Tiwari and Mutascu, 2010)

### DATA AND METHODOLOGY

The data from 1975 to 2015 of different variables are collected from World Development indicator (WDI). Different econometric techniques are used to analyze the annual time series data. The growth of GDP per capita (EG) taken as a proxy of economic growth and is a dependent Variable in our model. Inflation (INF), Foreign Direct Investment as a percentage of GDP (FDI), nominal exchange rate in term of US dollar (ER) and capital Stock as a proxy of Gross fixed capital formation as a percentage of GDP (CS). The Econometric model for this study is

$$\ln(EG_t) = \beta_0 + \beta_1 \ln(INF_t) + \beta_2 \ln(FDI_t) + \beta_3 \ln(ER_t) + \beta_4 \ln(CS_t) + \varepsilon_t$$

The stationary of different variables is checked with the help of the Augmented Dickey-Fuller test and results are presented in table 1.

Table 1: Stationary of Different Variables

Variables	Trend and Intercept	Intercept	Conclusion
<b>Economic Growth</b>			
Level	-1.2434 (0.8873)	-0.7380 (0.8254)	I(1)
1 <sup>st</sup> Difference	-4.0406* (0.0153)	-4.9305* (0.0028)	
<b>FDI</b>			
Level	-2.9552 (0.1571)	-2.7848 (0.0695)	I(1)
1 <sup>st</sup> Difference	-4.9379* (0.0018)	-4.8953* (0.0003)	
<b>Exchange rate</b>			
Level	-2.9675 (0.1564)	1.4427 (0.9987)	I(1)
1 <sup>st</sup> Difference	-3.5699* (0.0493)	-7.6715* (0.0000)	
<b>Capital Stock</b>			
Level	2.0746 (0.5437)	-2.1289 (0.2349)	I(1)
1 <sup>st</sup> Difference	-5.1569* (0.0000)	-5.1849* (0.0001)	
<b>Inflation</b>			
Level	-2.9280 (0.1675)	-2.7749 (0.0731)	I(1)
1 <sup>st</sup> Difference	-6.8680* (0.0000)	-6.9232* (0.0000)	
Note: * denote significance at 5% Sources: Author's Calculations			

The Augmented Dickey-Fuller test indicates that all the variables are integrated of order zero  $I(1)$ , so Ordinary Least Square (OLS) methodology is appropriate and results are presented in table 2.

Table 2: Result Of Ordinary Least Squares Method

Dependent Variable: D(GDPG)						
Method: Least Squares						
Sample:1975-2015						
Included Observations: 40						
Variable	Coefficient	Std. Error	T-Statistic	P-Value	R <sup>2</sup>	DW
Constant	3.4191	1.9594	1.7450	0.0895**	0.50	2.3428
D(INF)	0.0198	0.0057	3.459	0.0014*		
D(FDI)	0.1318	0.0689	1.9135	0.0637**		
D(ER)	3.1868	1.7579	1.8128	0.0782**		
D(CS)	1.9316	0.4712	4.0993	0.0002*		

Note: \* denote significance at 5% and \*\* denote significance at 10%

Source: Author's Calculations

The results of the Ordinary least square indicate that inflation has a direct association with the Economic Growth. One percent rise in inflation will increase the growth by 0.019%. This result is persistent with the study of Najid Ahmad (2012), Shazad Hussain (2011), Nasir Iqbal (2009), Naseer (2012) and Mubarik (2005). Another variable like foreign direct investment is positively significant which is persistent with the te studies like Atef (2015), Bhandari et al. (2007), Won et al. (2008) and Tiwari and Mutascu (2010). Moreover, the exchange rate and gross fixed capital formation are positively associated with economic growth. If the exchange rate and capital stock increase by 1% then the economic growth will be increased by 3.18 and 1.93% respectively. These outcomes support the study of Zahoor Hussain (2009), Qichun He (2010) and Abu Bakaar (2010).

The value of R<sup>2</sup> indicates that 50% variations is explained by our linear model. The value of Durbin Watson test indicates that the model is free from autocorrelations. For diagnostic checking, we use Lagrange Multiplier and Breusch-Pagan-Godfrey tests and results are presented in table 3.

Table 3: Diagnostic Tests

Item	Test Applied	CHSQ ( $\chi^2$ )	Probability value
Serial Correlation	Lagrange Multiplier Test	5.3	0.1285
Heteroscedasticity	Breusch-Pagan-Godfrey	5.3878	0.2498

Source: Author's Calculations

These results confirm that there is no serial correlation and heteroscedasticity in the model. The CUSUM and CUSUM Square test is used to check the stability of the model.

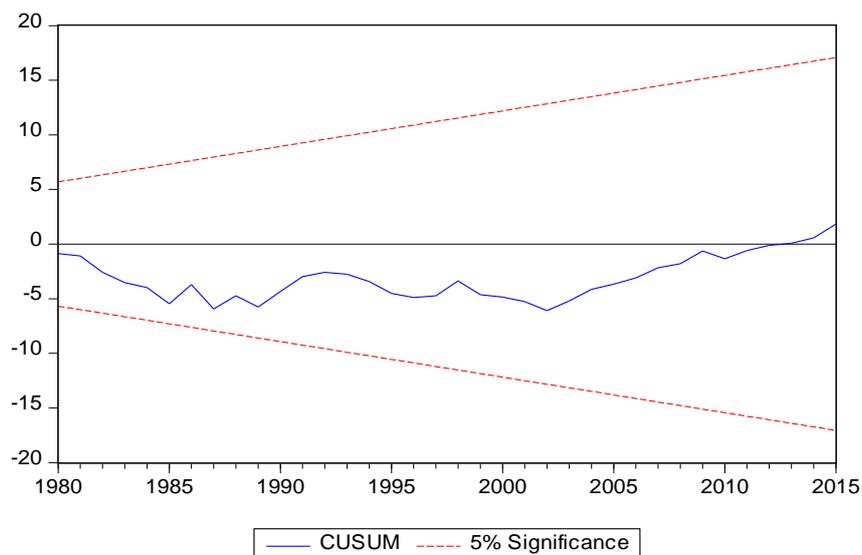


Figure 1: Plot of Cumulative Sum of Recursive Residuals  
Source: Author's Calculations

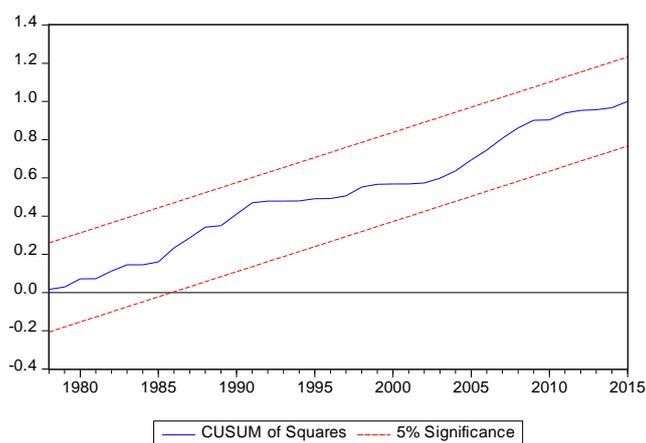


Figure 2: Plot of Cumulative Sum of Squares of Recursive Residuals

Source: Author's Calculations

The graphs show that CUSUM and CUSUM square are lying within the critical bounds so our model is structurally stable.

## CONCLUSION AND POLICY RECOMMENDATIONS

The results confirm that Exchange rate plays an important role in the economic growth of Kuwait. Kuwait has the capability to fascinate lots of investments and also has the ability to raise revenue through different sources instead of relying on oil revenues. The results of this study confirm that as nominal exchange rate increases then it lead to a significant positive effect on economic growth. Consequently, Kuwait should devalue its currency to increase export. Kuwait should increase the non-petroleum export because petroleum is considered a non-renewable asset, so an increase in non-petroleum export will increase economic growth. Thus, policymakers should make rules and regulations to foster the export area.

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