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Article

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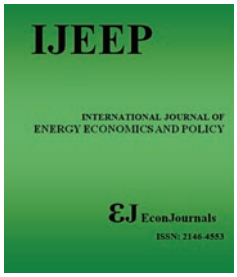

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Do the Global Oil Price Shocks Affect Somalia's Unregulated Exchange Rate Volatility?

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ABSTRACT

The aim of this study to investigate the impact of global oil price shocks on Somalia's unregulated exchange rate volatility. While employing an EGARCH model, the study found that global oil price shocks have significant effect on Somalia's unregulated exchange rate volatility. This suggests that the effect of energy shocks is global phenomenon beyond the control of any regulatory authority and/or trade treats. The results of this paper provide a notable contribution to the literature of energy economics as well as monetary economics. The research also calls for the need of reforming and re-building Somalia's foreign exchange system to withstand the unpredictable shocks of the global oil markets. Furthermore, this study implies that even in times of war and lawlessness, we cannot escape the effect of global energy price shocks. This is an interesting noble contribution that would be worth considering in the energy and economic literature.

Keywords: Exchange Rate Volatility, Global Oil Price, Unregulated Exchange Rate
JEL Classifications: E00, F31, Q43, G15, O13, P18

1. INTRODUCTION

The collapse of the Bretton Woods exchange rate system had caused bilateral exchange rates to significantly fluctuate both in real and nominal terms (Chit et al., 2010; Flood and Rose, 1999; Frömmel and Menkhoff, 2003). Though the issue of exchange rate has been given special attention globally due to its detrimental effects on the economy, it also remains a hot issue for the emerging economies (Chit et al., 2010; Prasad et al., 2003). Due to the multiple and recurrent currency crises that took place in the last two decades, exchange rates of the emerging economies have been investigated thoroughly.

To find out a common policy prescription for recurrent currency crises of the last three decades, many studies have examined the volatility of exchange rates in the context of the emerging economies (e.g. Chit et al., 2010; Devereux and Lane, 2003a; Edison and Reinhart, 2001; Edwards, 2007; Glick and Hutchison, 2005; Gregorio, Edwards, and Valdes, 2000). According to Devereux and Lane (2003), in spite of the huge efforts to investigate exchange rate volatility, the findings of Meese and Rogoff (1983), which reveal that movements in exchange rates are principally unpredictable, remain intact.

Following the collapse of the Somali central government, the country's central bank stopped functioning and as a result the national currency Somali Shilling (SOS) was being issued by nongovernmental authorities (Luther and White, 2011; Nor, 2012). After years of hardship and suffering due to lack of regulated markets that provide basic financial services, the only choice left for the Somali people was to build and develop their own financial system (Nor and Masron, 2017). This was behind the evolution of the current Somali unregulated foreign exchange (FX) market. Compared to the former Somali regulated FX market, which was properly regulated and effectively supervised by Somali Central government[1] before state's collapse in 1991, the current unregulated FX market experiences some exceptional fluctuations. Moreover, the current FX market is characterized of not having the basic principles of a FX market such as regulation, supervision, and protection (Nor and Masron, 2017).

Alternatively, as Somalia is beginning a new era wherein the economy is expected to recover from more than two decades

1 The value of the domestic currency was fairly stable and the exchange rate swings were immediately handled.

of anarchy and humanitarian crisis, the call for reforming the monetary policy and exchange rate system of the country is receiving momentum. Therefore, an empirical study that enhances the understanding of Somalia's unregulated exchange rate volatility is essential for policy makers and practitioners (traders, investors and FX market participants). This study fills this void. The purpose of this study is to examine whether Somalia's unregulated exchange rate volatility is vulnerable to global oil price shocks.

The remainder of the paper is organized as follows: Section 2 provides the literature review. In Section 3, methodology is presented. Section 4 provides Analysis of Empirical Results. Section 5 concludes the paper.

2. LITERATURE REVIEW

2.1. Exchange Rate Volatility

Financial markets are important because it's the place where funds are transferred from the surplus unit to the deficit unit (Mishkin, 2004). According to Robert Mundell, the 1999 Nobel Prize winner for Economics, the exchange rate stability is essential for the contemporary economies and it is the single factor that could lead to the collapse of a country (Chwialkowska, 1998). Similarly, Abdurahman (2005) states that an exchange rate is a barometer that measures the performance of an economy because good economies are judged on the basis of the strength of their currencies. Volatility is a measure of variation of price of a financial asset over a period of time. The volatility of exchange rate is described as a measure of the fluctuations in an exchange rate (Abdalla, 2012). As a measure of risk, exchange rate volatility increases uncertainty and thus discourages trade (Poon and Hooy, 2013). Currencies are one of the mostly traded financial assets and as currencies appreciate or depreciate in value; its volatility is a major concern among traders and investors of each country. As mentioned by Chit et al. (2010), there is no universal consensus among researchers on what are the appropriate proxies used to measure volatility of exchange rates.

The volatility of Somali exchange rate might be affected by external shocks such as oil and stock price shocks. As Somalia is a trade based economy[2], the shocks of stock markets as well as commodity markets may have an effect on the volatility of Somalia's exchange rates since shocks in these markets might be transmitted directly or indirectly to Somalia's FX market through different channels. It has been argued that due to the globalization effect, financial markets are integrated, thus, shocks and events are transmitted from a market to another (Schmukler and Vesperoni, 2006).

2.2. Oil Price Shocks

Crude oil is considered one of the pivotal commodities for the global economy and its price dynamics has influence on the economic activities of each country since it affects both real and financial sectors. Though oil price effects has recently been challenged, Aloui et al., (2013) found the existence of a significant and symmetric dependence between oil prices and exchange rates. While using monthly panel of the G7 countries, Chen and Chen (2007) suggested that exchange rates are co-integrated with real oil prices and their findings suggested that real oil prices may have been the dominant source of real exchange rate movements. Following their attempts to establish the possibility of real oil prices to forecast future real exchange return, Chen and Chen (2007) identified that panel predictive regression estimates indicate that real oil prices have significant forecasting power.

While examining the relationship between Chinese oil prices and exchange rates, the findings of Huang and GUO (2007) suggest that real oil price shocks lead to a minor appreciation of the real exchange rate in the long run due to the fact that Chinese energy needs are less dependent on imported oil compared to its trading partners. An empirical research on the relationship between Fiji islands' exchange rates and oil prices has been conducted by Narayan et al. (2008). This research uncovered that a rise in oil prices leads to an appreciation of the Fiji dollar against US dollar. Likewise, whilst developing a monetary model of exchange rates with oil prices, Lizardo and Mollick (2010) revealed that oil prices significantly explain movements in the value of the U.S. dollar against major currencies from 1970 to 2008.

Utilizing econometrics models of cointegration and causality, Chaudhuri and Daniel (1998) discovered that the non-stationary behavior of US dollar real exchange rates is due to the non-stationary behavior of real oil prices. Ghosh (2011) used GARCH and EGARCH models to examine the relationship between the nominal exchange rates of Indian rupee and oil prices, and found that an increase in the oil price return leads to the depreciation of Indian rupee. On the other hand, Ghosh (2011) concluded that positive and negative oil price shocks affect the exchange rate volatility equally in terms of magnitude. Furthermore, oil price shocks have permanent effect on exchange rate volatility.

Although Dinga and Vo (2012) did not find any interaction between oil prices and exchange rates when market is relatively calm, they have found that during the turbulent time there is bi-directional volatility interaction between the two markets. It's clear from these studies that there is correlation between exchange rate and oil price. Thus, the following hypothesis is deemed necessary; Global Oil price shocks positively affect Somalia's unregulated exchange rate volatility.

3. DATA AND EMPIRICAL METHODOLOGY

3.1. Data

This study examines the volatility of Somalia's unregulated exchange rates and whether the volatility of SOS is vulnerable to global oil price shocks. A monthly data of all variables were obtained for a period of 18 years from January 1995 to December 2012. The reason behind selecting this sample is that Somalia's exchange rates were unregulated during this period. Various sources were used for data collection including international financial statistics, Food Security and Nutrition Analysis Unit - Somalia (FSNAU), food and agriculture organization (FAO),

2 According to Leeson (2007), Somalia accounted for more than 60% of all livestock exports in East Africa in 1990s.

and data stream. Table 1 shows the variable of the study and the source for each variable.

As shown in Table 2, Somalia's unregulated exchange rates have fluctuated severely over the sample period. With a mean of 17725.58, standard deviation of 8695.45, and a range of 29342.00 (35,225-5,883), Somalia's unregulated exchange rate has been very volatile during the sample period. While using coefficient of variation (CV), the volatility of Somalia's exchange rate is found to be very high with CV (49%). This indicates that Somalia's national currency is suffering from high volatility. As common with most financial data, the statistics show that Somalia's unregulated exchange rates are not normally distributed; therefore, data are transferred into logarithm. The exchange rate of Somalia is found to be positively skewed (with skewness of 0.44) and characterized with low kurtosis (with coefficient of 2.02). This positive skewness indicates asymmetry in the series and the low kurtosis coefficient suggests flatness in the data. The positive skewness of Somali exchange rates suggests significant asymmetric response to positive shocks (positive news) and this is further examined by using EGARCH model.

As shown in the summary statistics, oil price have higher CV (69%), whereas food prices and global stock price (GSP) has the lowest CV. Regarding stock market indices, regional stock markets have higher CV, whereas global stock indices are with low CV. Oil and food are skewed to the right (positive). Alternatively, regional Stock indices are skewed to the right, while global stock markets are skewed to the left. Oil, food, and stock markets are characterized with low kurtosis indicating flatness in the data series. Except for regional and global stock indices, all external factors are not normally distributed as measured by Jargue-Bera statistics. In terms of statistics, apart from few factors, most of the factors share similar statistical characteristics with the exchange rate series.

Table 1: Data and sources

Variables	Proxy	Source of data
SOS	SOS/USD	FSNAU
RSP	NSE	DataStream
OP	Value of crude oil per barrel	DataStream
GSP	NYSE	DataStream
WFP	Cereal price index	FAO

RSP: Regional stock prices, OP: Oil prices, GSP: Global Stock Prices, WFP: World Food Prices, NSE: Nairobi stock exchange, NYSE: New York Stock Exchange, FSNAU: Food Security and Nutrition Analysis Unit – Somalia, FAO: Food and agriculture organization, SOS: Somali Shilling

3.2. Measurement Concerns

This study examines the volatility of Somalia's unregulated exchange rates and whether the volatility of SOS is vulnerable to global oil price shocks. To investigate these issues, this study uses monthly data of Somali exchange rates (SOS), oil price (OP), regional stock price, GSP, and world food price (WFP). While controlling the effect global and regional stock prices (RSP) and WFP, this study examines how Somalia's unregulated exchange rate is vulnerable to global oil price shocks.

This study measures the volatility of Somalia's unregulated exchange rates employing EGARCH model. This model enables to measure volatility in a systematic way, while solving asymptotic limitations associated with GARCH model. Apart from volatility, the measurement of all other variables is provided in Table 3.

3.3. Model Specification

This study examines Somalia's unregulated exchange rate volatility and whether the volatility of SOS is vulnerable to global oil price shocks. Moreover, only specifications of GARCH model are presented here and other models (EGARCH and TARCH) follow this modeling.

Variance Equation

$$\sigma_t^2 = \beta_0 + \beta_1\sigma_{t-1}^2 + \beta_2 e_{t-1}^2 + \beta_3 op + \beta_4 rsp + \beta_5 gsp + \beta_7 wfp + \mu_t \quad (1)$$

σ_t^2 = Is variance of the residual (error term) derived from the variance equation. It is also known as current month's variance or volatility of (SOS/USD);

β_0 = Is the constant;

Table 2: Descriptive statistics

Descriptive statistics	SOS	OP	WFP	KSE	NYSE
Mean±SD	17725.58±8695.446	49.39069±34.03886	135.4532±44.21916	46.06083±18.12911	6520.871±1670.741
CV (%)	49	69	33	39	26
Skewness	0.441025	0.822339	0.912608	0.257492	−0.18885
Kurtosis	2.016451	2.434528	2.548463	2.594881	2.668965
Jarque-Bera	15.70841	27.22254	31.81769	3.863974	2.270221
Probability	0.000388	0.000001	0	0.14486	0.321387

The Kurtosis of the normal distribution is 3. If the kurtosis exceeds 3, the distribution is peaked (leptokurtic) but the distribution is fat (platykurtic) if the kurtosis is <3. The skewness of symmetric distribution is zero. A negative skewness means that the distribution has a long left tail, while a positive skewness means that the distribution has a long right tail.
CV: Coefficient of variation, SOS: Somali shilling, NYSE: New York Stock Exchange, WFP: World food prices, OP: Oil prices, SD: Standard deviation

Table 3: Measurement of the variables

Variable	Code	Measurement
Exchange rate of SOS	SOS	The Unregulated exchange rate between Somalia shilling and US Dollar (SOS/USD)
Oil Prices	OP	The actual price of crude oil per barrel
World Food Prices	WFP	FAO cereal price index
Regional Stock Price index	RSP	NSE
Global Stock Prices index	GSP	NYSE

SOS: Somali Shilling, NYSE: New York Stock Exchange, WFP: World Food Prices, OP: Oil prices, RSP: Regional Stock Price index, GSP: Global Stock Prices, NSE: Nairobi stock exchange

β_1, β_2,..... β_7 = are the coefficients of the ARCH and GARCH terms and external factors of the economy;

σ^2_{t-1} = Previous month's residual variance or volatility of SOS, which is also known as GARCH term;

e^2_{t-1} = Previous period's squared residual derived from the mean equation, which is also known as previous month's exchange rate information about volatility, which is also known as ARCH term;

OP = Oil prices;

RSP = Regional stock prices;

GSP = Global stock prices;

WFP = World food price

ε_t = Error term.

4. EMPIRICAL RESULTS

4.1. Tests of Unit Root Hypothesis

Augmented Dickey-Fuller (ADF) and the Phillips-Perron were used to examine the stationarity of the data. In addition, the study employed Kwiatkowski-Phillips-Schmidt-Shin (1992). As shown in Table 4, the study found that all variables are not stationary at level meaning that they are suffering from Unit Root problem. However, all variables are stationary at first difference; hence they follow Unit Root Process. This indicates that variables are integrated of order one I(1).

4.2. Results of Heteroskedasticity Test

To examine the evidence of heteroskedasticity, ARCH diagnostic test was used. The results, as reported in Table 5, provide strong evidence for rejecting the null hypothesis for the series. The results indicate the existence of ARCH effects in the residual series. To be more precise, data in level I(0) and first difference I(1) have been used. As reported in Table 6, the series provide significant evidence of heteroskedasticity in both I(0) and I(1).

Table 4: Stationary tests at level

Variables in level	ADF	PP	KPSS
SOS	−1.92	−1.54	0.07
Oil	−3.49	−3.38	0.24
Food	−2.59	−2.04	0.38
Kenya stock exchange	−2.46	−2.82	0.24
NYSE	−2.52	−2.69	0.14
Stationary tests at first difference			
SOS	−11.15	−11.05	0.91
Oil	−11.86	−11.89	0.93
Food	−7.78	−7.90	1.29
Kenya stock exchange	−13.06	−13.09	4.03
NYSE	−14.73	−14.74	0.89

1 ADF and PP t-statistic with trend have −3.44 (more than −3.44 is required) as their Engle-Granger Critical Value at 5% significance level; 2 KPSS with P<5% (<0.05) means the series is not stationary (has a unit root), whereas P value of more than 5% (>0.05) means the series is stationary (has not a unit root). NYSE: New York Stock Exchange, SOS: Somali Shilling

4.3. Results of GARCH, EGARCH and TARCH

Before providing the results of the GARCH, EGARCH, and TARCH, residuals of Somalia's unregulated exchange rates are plotted in the following figure. As shown in Figure 1, there is prolonged period of low volatility from January 1995 to 1999. Also there exists a prolonged period of high volatility from 2000 to 2002. This reveals that periods of high volatility are followed by periods of high volatility. Similarly, periods of low volatility tend to be followed by periods of low volatility. The behavior of the data suggest that the residual (error term) is conditionally heteroskedastic and therefore it can be represented by ARCH and GARCH model.

4.3.1. Results of GARCH model

To examine the effect of global oil price shocks on Somalia's unregulated exchange rate volatility, a number of GARCH models were tested. To identify the best model, several standard diagnostic methods were used. After having examined several models, the results revealed that GARCH (1,1) model fits the data well. As shown in the Table 6, exchange rate volatility of Somalia is affected by its own shocks as well as global oil price stocks. As reported in Table 6, while controlling global and RSP and WFP, the study found that oil price shocks have significant effect on exchange rate volatility. This reveals, similar to other emerging economies, Somali economy is integrating into the global economy and thus it is being affected by the global economic shocks.

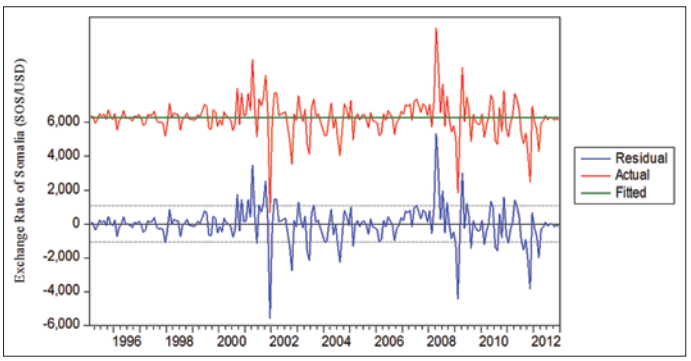
4.3.2. Results of EGARCH model

To identify the best EGARCH model, several standard diagnostic methods were used. After comparison, EGARCH (3,2) is selected as it provides the best assessment criteria. As shown in Table 6, the EGARCH model reveals that Somalia's unregulated exchange rate volatility is affected by its own shocks (past information and volatility) as well as global oil price shocks. The asymmetric term (GAMMA) is significant and negative. Since the coefficient value of the asymmetric term is significant and negative, the EGARCH (3,2) model shows the existence of asymmetric response in the data. This reveals that bad news significantly increases the volatility more than good news of the same magnitude.

4.3.3. Results of TARCH model

To discover the best TARCH model, several standard diagnostic methods were used. After analysis, TARCH (1,1) became the best fit for the data. Generally, as shown in Table 6, the TARCH model reveals that Somalia's unregulated exchange rate volatility

Figure 1: Residuals of Somalia's unregulated exchange rates



is affected by its own shocks (past information and volatility) as well as oil and stock price shocks. This TARCH model shows no evidence of leverage effect as the coefficient value of the TARCH term is negative.

4.4. Model Selection

Conditional Heteroskedasticity Models were utilized to decide whether the volatility of Somali exchange rates (SOS/USD) is largely dependent on its own shocks such as ARCH and GARCH and/or influenced by external shocks of oil and stock prices. To select the best model, the study compared the results of the models by using Akaike Information Criteria (AIC) as model selection criteria. The results of model selection criteria are reported in Table 7. As shown in the Table, EGARCH outperforms all other models. As measured by AIC, EGARCH fits to the data better than GARCH and TARCH models.

5. DISCUSSION

The purpose of this study is to examine Somalia's unregulated exchange rate volatility and whether oil price shocks affect the exchange rate volatility. The overall results indicate that Somalia's unregulated exchange rates are volatile (as measured by CV). When measured by EGARCH model, Somalia's unregulated exchange rate volatility is significantly affected by its own shocks as well as oil price shocks. The same results have been found by previous studies but in a regulated context (Abdalla, 2012; Volkov and Yuhn, 2016). Similarly, this study is in line with the findings of Zahangir Alam and Rahman (2012), who found that past volatility of exchange rate significantly affects current volatility but in a regulated environment. Alternatively, Somalia's unregulated exchange rate volatility is significantly affected by oil price shocks.

On the other side, oil price has imperative influence on the economic activities of almost every country. While investigating the effect of oil price shocks on Somalia's unregulated exchange rate volatility, this study found that oil price shocks have significant effect on Somalia's unregulated exchange rate volatility. Somalia is neither oil producer nor a big oil consumer but the volatility of its exchange rates is strongly influenced by oil prices. What is the reason for this? The answer is that as oil plays an important role in the modern economy, its price shocks send a bad signal to the producers and consumers of each market (commodity or/and financial). As a result, global markets react to this signal. Global FX market is not free from such effect. Conversely, Somalia has had very long trade relations with Saudi Arabia, Oman, and UAE and they remain important Somali trade partners. Knowing that these countries are oil producers, oil price shocks might be transferred to Somalia through different channels such as import and export.

As globalization of world markets increase, the integration and connection among economies increase as well. Globalization played a crucial role in facilitating such integration, hence according to Heakal (2013), markets all over the world are achieving greater efficiency due to information technology. As information is disseminated in an effective and faster means, prices adjust more rapidly to news (Heakal, 2013). Due to globalization and its effect, economies in Sub-Saharan Africa such as Somalia are integrating into global economy more than expected (OECD, 2010). Consequently, shocks in the global oil markets may perhaps be transferred to the FX markets of the emerging economies via globalization.

Since Somalia is an open economy in which most of the necessities are imported, the effect of oil prices shocks is obvious. Due to the

Table 5: ARCH test for the unregulated exchange rates of Somalia

Statistics	Data in the Level I (0)		Data in 1st Difference I (1)	
	Obs*R-squared	Prob. Chi-square (2)	Obs*R-squared	Prob. Chi-square (2)
ARCH test statistics	202.0607***	0.0000	4.784882*	0.0914

1 H_0: There are no ARCH effects in the residual series. 2***Indicates significant at 1% significant level, **indicates significant at 5% significant level, and *indicates significant at 10% significant level

Table 6: Output of GARCH, EGARCH, and TARCH model estimation

Model	GARCH (1,1)		EGARCH (3,2)		TARCH (1,1)	
Variable	Coefficient	P	Coefficient	P	Coefficient	P
C	0.00004	0.030	−24.1713	0	−0.000002	0.519
ARCH(−1)	0.053346	0.024	0.544911	0.010	0.050576	0.003
ARCH(−2)	-	-	0.505039	0.191	-	-
ARCH(−3)	-	-	0.377988	0.122	-	-
Asymmetry (GAMMA)	-	-	−0.07051	0.046	-	-
Leverage effect (Threshold)	-	-	-	-	−0.122137	0.000
GARCH(−1)	0.876169	0.000	−1.42851	0.000	1.004365	0.000
GARCH(−2)	-	-	−0.56591	0.000	-	-
D (LOP)	−0.000778	0.034	3.500803	0.002	0.000465	0.030
D (LNYSE)	−0.001606	0.273	7.439009	0.000	0.001011	0.008
D (LKSE)	−0.002106	0.000	0.97517	0.573	−0.000153	0.556
D (LWFP)	0.003629	0.001	1.528269	0.665	0.000155	0.645
Diagnostics						
ARCH LM Test	7.357 (0.289)		1.320 (0.970)		4.053 (0.669)	
Serial Correlation Test	Q-Stat (lag 12) = 0.453		Q-Stat (lag 12) = 0.868		Q-Stat (lag 12) = 0.319	
Normality Test	22.715 (0.000)		10.583 (0.004)		20.884 (0.000)	

Table 7: Model comparison

Model	Estimations with explanatory variables
	AIC
GARCH	−4.7179
EGARCH	−4.8736
TARCH	−4.7738

AIC: Akaike Information Criteria

transportation and communication technology advancements, the world markets are linked where events and shocks in one market are transmitted through various channels. In the case of Somalia, transmission can take place through trade channel as well as financial sector channels. Apart from Somalia's dependence on imports, there is another important economic factor that makes Somalia's link to the world markets even greater. This is due to Somalia's remittance. Remittance is an important economic factor in Somalia since it plays a crucial role in both household income and development. Remittance constitutes one third of Somali GDP, an estimated amount of $2 billion annually (Avis and Herbert, 2016; Leeson, 2007; Wilson, 2016). Majority of the remittances come from North America and Europe because a significant number of Somali people have settled in those continents. Remittance is then used to support families and friends living in the country. What this shows is that Somalia's openness to the global markets and its relative dependence on foreign imports and remittances are possible reasons behind the influence of global oil price shocks on the volatility of Somali unregulated exchange rates. Foreign Aid might be another channel that can link Somalia to global oil markets because major players of the global oil markets provide continuous technical and development aid assistance to Somalia.

6. CONCLUSIONS AND POLICY IMPLICATIONS

This study examines whether Somalia's unregulated exchange rate volatility is vulnerable to global oil price shocks. After analysis, the study established some imperative conclusions such as the fact that Somali exchange rate volatility is significantly affected by its own shocks. Also, one of the essential deductions of this study is that global oil price shocks have significant effect on the volatility of Somalia's unregulated exchange rates. These results imply that while Somalia's unregulated exchange rate has not been adequately regulated, its volatility has been affected by the global oil price shocks via different channels including trade and remittance. This study facilitates both policy makers and practitioners to understand the nature and operations of Somalia's unregulated exchange rate volatility in an effective and systematic manner.

6.1. Policy Implications

This study found that Somalia's unregulated exchange rate volatility is significantly affected by global oil price shocks. These results imply that exchange rate stability may seldom be achieved in Somalia even if the market is regulated as global oil price shocks have imperative effects on exchange rate volatility. Since global oil prices are not controlled by Somali authority, any monetary policy initiative may rarely help accomplish exchange rate stability in this country as long as the global oil price shocks have a significant effect on the exchange rate volatility. Moreover, this significant relationship indicates that there may possibly be exchange rate instability without changing the basics of the national monetary policy and money supply rationality. Further, the findings of this study highlight that exchange rate stability may perhaps be lost due to global oil price shocks and this will ultimately affect the purchasing power of the poor and low income households that have been suffering from prolonged conflicts and poor economic condition. Finally, one of the implications of this study is that global oil price changes have powerful spillover effect on the prices of basic necessities via exchange rates.

There are several suggestions that can help mitigate the effect of global oil price shocks on Somalia's unregulated exchange rate volatility. One way is to reduce dependence on imports because if the country is fully dependent on imports and there are global oil price shocks, this could lead the country into a crisis. The current total dependence on imports should be reduced. Consequently, the government should adapt in-ward oriented policies that support import reduction and decrease of dependence on foreign goods in particular necessities.

Furthermore, this study provides special contribution to FX market participants such as traders, investors and currency traders as the study found that Somali exchange rate volatility is affected by global oil price shocks. These results assist market participants to understand Somali exchange rates and its volatility comprehensively. In addition, this can help traders and investors to effectively manage exchange rate risk, whereas currency traders can effectively manage their currency portfolios. Alternatively, this will help policy makers to understand Somalia's unregulated exchange rate behavior, which in turn will help them in the process of reforming the exchange rate market and its policies.

Lastly, the findings of this study entail that even in times of war and lawlessness none can run away the inevitable effects of global energy price shocks. This is another fascinating knowledge contribution of this study.

6.2. Limitations and Future Directions

Although this study has provided some novel contribution in the context of Somalia's unregulated exchange rate volatility, it's not free from limitations. Some of the limitations were manageable, while others were out of hand. There are data limitations is Africa in general and Somalia in particular. According to Shortland (2012), many studies have been conducted on the history of political violence and state failures in the context of Somalia but Somali economy is not well documented due to lack of data. Most of the available data are either outdated or not organized. To overcome this limitation, this study collected data from all available sources and in all forms (hardcopy and softcopy). To ensure the quality of the data, the study utilized monthly data that have been used previously by other researchers. Somalia's unregulated exchange rates and unregulated commodity prices are collected by FSNAU. FSNAU[3] is an international agent managed by the FAO of the United Nations. FSNAU collects market data throughout Somalia on a weekly basis but publishes monthly

3 http://www.fsnau.org/ids/index.php

data. Data collected by this agent have been used by previous researchers (see for example Ali and Churchill-Smith (2011); Little (2012); Maxwell and Fitzpatrick (2012); Majid and McDowell (2012); Wilson (2016); Sandstrom and Juhola (2016); Roeder Jr (2016); Rubin (2016); Kinyoki et al. (2015); Luther (2015); Shortland (2012)). Furthermore, the data collected by FSNAU is relied on by different national and international organizations. United Nations Office for the Coordination of Humanitarian Affairs utilizes data collected by FSNAU for their livelihood and market analysis.

On the other hand, this study used a monthly data to examine the volatility of Somalia's unregulated exchange rates. Nevertheless, the use of high frequency data such as daily data may provide additional volatility features. Hence, future research should consider this regard. Finally, this study has collected data from Mogadishu's FX market but investigating the effect of global oil price shocks on exchange rate volatility of other Somali cities may provide interesting results. Thus, future studies should examine different FX markets in the country to investigate if these markets react to global oil price shocks similarly.

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