Exchange Rate Regimes, Import Prices and Foreign Reserve Holdings in Developing Countries

ABSTRACT
The objective of this study is to examine the dynamic interaction between exchange rate regimes, import prices and foreign reserve holdings in developing countries namely, Nigeria, Kenya, South Africa, Egypt, and Angola. Data for the study were obtained from on the African countries from 2006 – 2021 from *IMF and World Bank databases. The study utilized both the Panel-Generalized method of moment (P-GMM) and the Panel - ARDL. The underlying theory for the study is based on the fact that countries accumulate external reserves in order to effectively manage their exchange rate in order to effectively engage in international trade. The main finding of this study is that an effectively managed exchange rate regime results into higher accumulation of foreign exchange reserve holdings which in turn results in lower prices of imports. The study concludes that there is a dynamics interaction between exchange rate regime, import prices and foreign exchange reserves holding. On the basis of findings in this study, it is recommended that African countries should evolve and effectively manage their exchange rate regime so that they can achieve higher volume of external reserve holdings that will lead to a reduction in their import prices.*

Key words: Exchange Rate Regimes, Import Prices, Foreign Reserve Holdings, Developing Countries

1. INTRODUCTION

Exchange rate regimes (ERR) of any country represents a reflection of the choices made by countries at the time of their independence as well as a reflection of the trends in exchange rate arrangement for the advancement of macro-economic aggregates leading to a sustained economic development of such countries. According to Obadan (2009), since early globalization and emergence of financial crises represents the two developments that have conditioned type of exchange rate system adopted by countries. Nevertheless, despite the monumental benefit of globalization, bulky capital flows have resulted in currency and financial crises with resultant loses of output, investment and employment hence, ERR choice became crucial for the survival of developing countries (Ben Romdhane et al., 2022; Loukil et al., 2019; Ben Romdhane et al., 2019).

The ERR adopted by countries in today's international monetary and financial systems are remarkably different from these envisaged at the 1944 meeting at Bretton Woods establishing the IMF and the World Bank, this is because according to the Bretton wood system: Exchange rates were fixed but adjustable, this is to ensure the avoidance of undue volatility which is synonymous with floating exchange rate, as well as to prevent comparative depreciations (IMF, 2013).

The growth and size of foreign exchange reserves (FER) serves as signals for global financial markets as well as credit-worthiness. Hence the higher the value of a country's currency International Drawing Right (IDR), the more FER in the country as such, it can be seen that exchange rate most likely positively affects foreign exchange reserve (Islami & Rizki, 2018). Equally, experience of the global financial crisis has under-lined the critical role of FER as a buffer-stock to prevent external shocks. (Tran and Le 2020). FER are usually held in one or more reserve currencies mostly the US dollar and to a lesser extent the Euro (IMF report, 2013). From the fore-going it is evident that a country needs FER to conduct trade and other economic activities especially imports and to determine the price to pay for its imports at any point in time a country needs to put in place are desirable exchange regime.

According to Essein, Uyaebo & Omotosho (2017), a successful exchange rate policy should ease external and internal balances within the economy. However, currency and financial crisis of the 1990s have migrated to the polar exchange regimes (flexible or fixed exchange rates) of developing nations with monetary union. This is because intermediate regimes between the two polar regimes are considered

untenable since there these nations are indeed confronted with the dilemma of attempting to pursue exchange rate stability, capital mobility and independent monetary policy become a mirage (Obadan, 2009).

Today, experts cannot claimed to completely ascertain workable exchange rate regime for developing West African Countries especially when empirical results have shown mixed outcome about the relationship between ERR and International reserves which then gives the country a desirable trading (import) situation. The management of ERR in developing countries have been difficult especially where developing countries do not operate free floating exchange rate system.

From the foregoing, it is clear that there is a need for proper and better ERR that will guarantee the optimal exchange reserves for the best possible trading relations for developing countries, this is because a currency misalignment can result into a host of macroeconomic draw-back for developing countries especially on the country's employment level, trade competiveness and inflationary level of the country. The study therefore has as objectives to estimate the impact of import prices and exchange rate regime on volume of foreign reserves holding among selected developing African countries. This research is divided into five sections: section two has the conceptual review, the theoretical review, the empirical review and the gap analysis. Section three involves, the theoretical framework, model specification, the estimation techniques and the data source. Section four takes care of data presentation and analysis while finally, section five is made up of summary of findings, conclusion and policy recommendations.

2. REVIEW OF LITERATURE

Various forms of ERR are open to different individual countries, they range from flexible ERR to fixed ERR with a host of other ERR falling in a continuum between the two extreme (Obadan 2009). There are many factors a country should consider before deciding on the type of ERR to adopt with pros and cons to both choices. The applicability exchange rate regime is on basis of economic shocks, and financial markets; capital flows, exchange rate risk, independence of monetary authority (Uzoma, Odungweru & Chukwuma-Ogbonna, 2021).

Empirical research regarding the relationship between FERH on import prices, (demand) in developing countries have been undertaken by different scholars, they have attributed the instability in import prices (demand) function to a number of Macroeconomic variables. However, a number of researchers have identified FERH as one very important determinant (Arize, Malindertos & Gravoyannis, 2004). Adegboye, Efuntade & Efuntade (2019) basis analysis on econometric estimations examine the relationship between external research holdings and trade in Nigeria (1981-2017). The result shows that exchange rate amongst other variables had positive impact on external. According to a World Bank report (2019), international trade activities depend largely on external reserves, however, the report noted that despite the benefits of foreign trade on external reserve, the high import dependent prevalent among developing countries has made it a constraint on FERH because it constitutes a leakage to external reserve.

To Sanusi, Meyer & Hassan (2019) FERH in Southern African countries is determined on basis of floating ERR. The findings supported work of Calvo & Reinhast (2002) that most developing economies do not operate a floating ERR as they claim but rather they vary their foreign exchange reserve to stabilize their domestic currencies during financial crises. To Olomola & Ajayi (2018), volatilities in proceeds from export and nominal exchange rate have significant effect on FERH of West African countries. The analysis was driven by panel ARDL technique.

At a disaggregated level, Olayungbo & Akinbobola (2011) found that FERH significantly influence nominal and real interest rate in Nigeria on the short-run. In their study for Pakistan (1973 – 2008), Tariq, Haq, Jan, Jehangir & Aamir (2014) found that FERH in Pakistan was informed by real exchange rate depreciation. Using Reinhart & Rogoffs new exchange rate arrangement Choi & Back (2007) found that ERR and FERH are related in an inverted U relationship. What this means in effect is that FERH are smaller under hard pegs and freely floating regimes. Gopinath, Itshoki & Rigobon (2007) estimated 0.25 as the average long-run exchange rate pass-through when imported items are not priced in dollars while if priced in dollars, it is 0.95. Abrishami & Mehrara (2002) examined the determined of import demand for

consumer, intermediate and capital goods over the period from 1971Q2 to 199Q1 using the bound test and the results showed that the parallel market exchange rate is the main determinant of import demand.

Nteegah & Okpoi (2016) analyzed external trade and implications on FERH in Nigeria using co-integration and Victor or correction mode (VEC) for the period 1980 – 2015. Their findings shows that oil and non-oil export had positive implication on foreign reserves while oil and non-oil imports retarded FERH in Nigeria. From the foregoing analysis one may conclude that lower prices for crude oil and other primary agricultural products which are the major export earner for most developing countries leads to the depletion of their FERH, making their economies to be vulnerable as trades who make use of foreign exchange for their FERH and imports will have a short supply leading to a possible increase in the prices of imports. It means that lower FERH leads to increase in the prices of imports.

2.1. Gaps in the Literature

The relationship between a nation's ERR, import prices and its FERH is complicated because there is a constant feedback Loop between the times variables, this is why researchers have failed to undertake a simultaneous determination of the impact of , import prices on FERH in developing countries. On that strength, this study sets out to capture the simultaneous impact of ERR, and import prices on FERH in developing countries. This study uses both the Panel ARDL and the Panel GMM simultaneously which no other researcher had adopted to the best of our knowledge. These are the gaps this study sets out to fill.

3. THEORETICAL FRAMEWORK

The theoretical starting point in the study of the relationship between ERR, import prices and FERH is the mercantilist theory which states that countries accumulate external resource holdings in order to manage effectively the exchange rate in order to trade and also gain advantage in international competitiveness. The theoretical postulations of Olomola & Ajayi (2018), Gurd (2012) and Aizenman et al (2012), it is discovered that ERR has a positive relationship with FERH, this is because every country intends to operate an that will ensure stability in its macroeconomic variables including FERH, hence in this analysis we expect in ERR > 0. In line with theories on the relationship between import price and FERH such as Nteegah & Okpoi (2016) and Abdulateef & Waheed (2010), import prices have a direct negative relationship with FERH, this is because the higher the FERH the more stable the prices of import while a scarcity of FERH leads to higher import prices because exporters would seek for alternative measures in getting foreign currency. This alternative measures in most cases are more costly than using the FERH of the country, hence IMP > 0. Other control variables used in the analysis such as interest rate (INT) and GDP are also found to be significance however, while GDP is having a positive relationship with FERH, in line with Choi, & Beak (2007) interest rate on the other hand is exhibiting a negative relationship with FERH in line with the findings of Ken, (2011).

3.1. Model Specifications

In this study, a model based on the mercantilist theory of Henry Paulson is specified as detailed in Guba (2009). FERH is modified after ERR and import prices for the ARDL estimation as follows;

FERH = f(ERR, IM, GDP INT) (1)

Equation (1) is subsequently structured following both the GMM and ARDL framework.

$\Delta FERH_t = \beta_0 + \Sigma\beta_1\Delta ERR_{t1} + \Sigma\beta_2\Delta IMP_{t-1} + \Sigma\Phi GDP + \Sigma\Phi\Delta INT + N$ (2)

The major advantage of the ARDL includes its robustness in the face of small samples, ability to accommodate different orders of integration, as well as being able to overcome the problem of autocorrelation to a large extent. The explicit from of equation (1) for our GMM model is represented as follows;

$$FERH = \propto_0 + \propto_1 IMP + \propto_2 RCH + \propto_3 INF + \propto_4 GDP + e_t \quad (3)$$

The operational GMM model for this analysis is specified in logarithm transformation to reduce the nuisance factor in the unit of measurement and to linearize the variable function given in the instruments as follows;

$$FERH(-1), IND(-1) ERR(-1) INF(-1) GDP(-1) \quad (4)$$

Where import rate (IMP), exchange rate regime (ERR), inflation rate (INF) and gross domestic product (GDP) in selected African countries at period t. $\propto$ are the parameters while e is the error term.

3.2. Estimation Techniques

In this study, two estimation technique will be utilized that is the P-ARDL and P-GMM. The ARDL procedure is relatively more efficient in small sample data size (Kakar, Kakar & Waliullah, 2010). On the other hand, the GMM estimators are well designed to correct the drawbacks of OLS simultaneity biases and endogeneity problems which is a well-known problem in financial regressions. The paper utilized E-views (10) econometric package for the estimation of both models.

3.3. Data Sources

The data used in this analysis were obtained from various sources such as IMF and world bank databases, covering the period from 2006 – 2021. The data are pooled data consisting of both cross sectional and time series data of selected developing countries in Africa including namely, Nigeria, Kenya, South Africa, Egypt, and Angola.

4. DATA PRESENTATION AND ANALYSIS

The estimates of the descriptive statistics for the study are presented in table 1 below.

Table 1: Descriptive Statistics

Statistic	FERH	GDP	IMP	INF	RCH
Mean	28.42565	238.6697	54.88575	38.24696	102.6842
Median	30.08650	242.8515	51.66950	9.350000	79.84800
Maximum	57.58900	568.5000	123.5590	2230.000	640.0000
Minimum	2.416000	25.82600	8.329000	3.220000	5.433000
Std. Dev.	16.35431	151.5088	32.58230	248.2189	123.3549
Skewness	-0.025600	0.176265	0.339275	8.767916	2.207854
Kurtosis	1.691290	1.667261	2.100314	77.92267	8.744830
Jarque-Bera	5.717810	6.334905	4.232880	19736.37	175.0052
Probability	0.057331	0.042111	0.120460	0.000000	0.000000
Sum	2274.052	19093.58	4390.860	3059.757	8214.738
Sum Sq. Dev.	21129.61	1813439	83866.90	4867398	1202099
Total observations	80	80	80	80	80

Test of stationary of variables

The test for the presence or observe of unit root in the variables of the model D(FERH), D(GDP), D(IMP), D(ERR) is carried-out using the both the Phillip Pon (PP) and the ADF test . The results are presented in Table 2 below.

Table 2 Unit root test results for both PP and ADF

Variable	Order	PP test	P-value	Conclusion
D PERU	I (I)	31.14	0.006	Stationary
D GDP	I (I)	38.55	0.000	Stationary
D IMP	I(0)	47.93	0.000	Stationary
D ERR	I(I)	24.11	0.007	Stationary
D INF	I(0)	71.60	0.000	Stationary
Variable	Order	DF test	p. value	Conclusion
D FERH	I (I)	29.91	0.009	Stationary
D GDP	I (I)	20.83	0.023	Stationary
D IMP	I(0)	41.59	0.000	Stationary
D ERR	I(I)	25.50	0.005	Stationary
D INF	I(0)	42.15	0.000	Stationary

5% Critical value for PP and ADF 3.51

Some of the variables such as import and inflation were stationary at order "0" while the others such as foreign reserve holdings and GDP were stationary at order 1, as the PP and ADF test statistics values are greater than the critical value at 5% with the respective probabilities less the 0.05 at 5% level.

Table 3 test of co-integration of variable
The results of the co-integration test of the operational variables are shown in table 3 below:

Table 3 test of co-integration of variable

Alternative hypothesis: common AR coefs. (within-dimension)				
	Statistic	Prob.	Weighed Statistic	Prob.
Panel v-Statistic	0.622516	0.0008	0.726345	0.008
Panel Rho Statistic	2.180990	0.0004	1.385251	0.000
Panel PP-Statistic	1.455113	0.0002	0.560221	0.003
Panel ADF-Statistic	-1.628660	0.0007	0.711855	0.007
Alternative hypothesis: individual AR coefs. (between-dimension)				
Group rho-Statistic	2.286387	0.9889		
Group PP-Statistic	1.243930	0.8932		
Group ADF-Statistic	1.684157	0.9539		
Cross section specific results				

Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
Nigeria	0.156	65506862	29886889	4.00	15
Kenya	0.003	1.129006	1.00006	0.00	15
S/Africa	0.304	6.905160	7.00941	1.00	15
Egypt	0.470	30.93841	30.93841	0.00	15
Angola	-0.036	9.703489	7.259799	4.00	15
Augmented Dickey-Fuller results (parametric)					
Cross ID	AR(1)	Variance	Lag	Max lag	Obs
Nigeria	-0.246	55303427	1	--	14

Kenya	0.046	1.207868	1	--	14
S/Africa	0.364	7.285377	1	--	14
Egypt	0.349	29.65630	1	--	14
Angola	-0.315	9.478815	1	--	14

The co-integration result above clearly indicates that is a long-run relationship between the dependent variable and the independent variables. Table 4 presents the Dynamic panel GMM estimation of the model where the dependent variable is FERH. The transformation adopted is the orthogonal deviations and a constant added to the instruments list.

Table 4: GMM estimation

Variable	Coefficient	Std. or	t-statistic	Prob.
GDP(-1)	-0.040972	0.018406	-2.226003	0.0004
IMP(-1)	0.241718	0.098285	2.459348	0.0005
INF(-1)	-0.026727	0.003921	-6.816208	0.0000
ERR(-1)	-0.015469	0.009139	-1.692583	0.0003
Effects Specification				
Cross-section fixed (orthogonal deviations)				
Mean dependent var	-1.726471	S.D dep var	7.565545	
S.E. of regression	7.272583	SS resid	3490.771	
J-statistic	19.72811	Instrument rank	5	
Prob(J-statistic)	0.000009			

The GMM estimates for the analysis is presented in table 4.5 above. From the table it can be seen that all the variables used in the analysis are all significant at 5% except ERR which is significant at 10%. As well, all the variables used in the analysis exhibited significant negative relationship with the dependent variable (FERH) except IMP which exhibited a positive relationship with FERH. Specifically, ERR is observed to be statistically significant at 10% but having a negative relationship with FERH, this is in sharp contrast to similar findings by Kalu, Ugwu, Ndubuaku & Ifeanyi (2019) as a result, a 1% increase in ERR leads to a 0.01% decrease in FERH in the selected African countries within the period under study. The possible explanation for this is that the results are on the short run where currencies of developing countries are tied to the currencies of the developed countries such as the US Dollar. As well, most West African countries are highly import dependent.

As well, the variable INF is statistically significant at 5% however, it exhibited a negative relationship with FERH indicating that a 1% increase in INF leads to a 0.23% decrease in FERH within the period under study in line with the findings of Hanson, Efang, Umoh and Akpan, (2020). The variable GDP, although statistically significant at 5% exhibited a negative relationship with FERH within the period under study, thus, a 1% increase in GDP leads to a 0.05% decrease in FERH, this is in sharp contrast to earlier findings by Hanson et al, (2020). However, one can explain this scenario by the fact that the types of

imports actually enhanced economic growth such as industrial equipment and IT equipment. Our final variable which is IMP is statistically significant at 5% exhibiting a negative sign in line with earlier finding by Nteegah & Opkoi (2016). We must however note that our interpretation is for the short-run while utilizing the *ceteris perabos* postulation. The J-statistics which is a test of the validity (Joint significance) our instrument clearly indicates that the instruments used in the study is valid since the J-state value of approximately 13.61 with a p-value of 0.0002 is significant at less than 5%.

Model 2. Panel Autoregressive distributed Lag (P-ARDL)

The descriptive statistics and other diagnostic test for this study have already been presented using Table 4.1, 4.2, and 4.3 in the early part of this section. **Table 5** P-ARDL estimation for our model and the selected ARD model is the order: ARDL (1, 2, 2, 2, 2).

Table 5: P-ARDL Estimation Results

Variable	Coefficient	Std. or	Prob.
Long Run Equation			
GDP	0.097744	0.018267	0.0000
IMP	0.373360	0.045439	0.0000
INF	0.066661	0.039441	0.0996
ERR	-0.060936	0.019126	0.0030
Short Run Equation			
COINTEQ01	-0.490936	0.298702	0.1090
D(GDP)	0.067767	0.028337	0.0221
D(GDP(-1))	-0.061636	0.097529	0.5314
D(IMP)	-0.299217	0.074682	0.0003
D(IMP(-1))	0.005925	0.135355	0.9653
D(INF)	0.034465	0.292085	0.9067
D(ERR)	0.378687	0.581451	0.5190
D(ERR(-1))	0.334025	0.529263	0.5320
Mean dependent var	0.456376	S.D. dependent var	4.979800
S.E. of regression	4.544741	Akaike info criterion	4.754664
Sum squared resid	743.5680	Schwarz criterion	6.064779
Log likelihood	-146.1866	Hannan-Quinn criter.	5.279926

From the table above it may be noticed that the model selection method is the Akaike info criterion (AIC) while the dynamic regressors (2 lags automated) GDP, IMP, INF, ERR while FERH it is the dependent variable, we have only two models available where we selected model one which is the best model. The selected ARDL model is ARDL (1, 2, 2, 2, 2). From Table 4.7 the cointegration factor value of -1.8043

with a P-value of 0.081 for the short-run analysis which is also synonymous with EC term which is statistically significant at 10% has the right sign which is a negative sign showing that about 3.4% of the discrepancy between the actual and equilibrium FERH is connected annually across the chosen county.

From the analysis GDP is significant both on the short-run and the long-run having positive sign in both cases in line with the findings of Hanson, et al (2020). On the other hand, import prices is statistically significant at both the short run and on the long-run exhibiting a negative relationship with the dependent variable on the short-run while on the long-run it has a positive significant impact at less than 1% meaning that a one percent (1%) combined increase in import rate will lead to a 3.6% increase in FERH in the selected Africa countries in line with the findings of Hanson, et al (2020). Both INF and ERR are not statistically significant in the short-run but both of them are statistically significant on the long-run. INF had a negative relationship with FERH in the short-run while it has a positive relationship on the long-run indicating that a 1% increase in INF leads to a 1.1% increase in FERH within the period under review in line with findings by Nguyen,Nguyen and Hoang (2019). Finally, exchange rate (ERR) have a positive relationship with FERH in the short-run while it changed to a negative relationship on the long-run indicating that a 1% increase in ERR leads to a 0.4% decrease in FERH among the selected countries within the period under study in line with similar studies with Kalu et al (2019). Table 6 report estimates of the speed of adjustment among individual countries.

Table 6: Individual country speed of Adjustment

1. Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.497879	0.027260	-18.26426	0.0004
D(GDP)	0.202841	0.002071	97.95465	0.0000
D(GDP(-1))	-0.754512	0.005041	-149.6822	0.0000
D(IMP)	-0.397914	0.004802	-82.87127	0.0000
D(IMP(-1))	0.110213	0.006448	17.09316	0.0004
D(INF)	-0.058326	0.001655	-35.25115	0.0001
D(INF(-1))	-0.179955	0.000872	-206.4830	0.0000
D(RCH)	0.040072	0.001584	25.30439	0.0001
D(RCH(-1))	-0.289223	0.001913	-151.1890	0.0000
C	8.862218	3.654442	2.425053	0.0937

2. *Kenya*

Variable	Coefficient	Std. Error	t-Statistic	Prob
COINTEQ01	-0.497879	0.027260	-18.26426	0.00
D(GDP)	0.202841	0.002071	97.95465	0.00
D(GDP(-1))	-0.754512	0.005041	-149.6822	0.00
D(IMP)	-0.397914	0.004802	-82.87127	0.00
D(IMP(-1))	0.110213	0.006448	17.09316	0.00
D(INF)	-0.058326	0.001655	-35.25115	0.00
D(INF(-1))	-0.179955	0.000872	-206.4830	0.00
D(RCH)	0.040072	0.001584	25.30439	0.00
D(RCH(-1))	-0.289223	0.001913	-151.1890	0.00
C	8.862218	3.654442	2.425053	0.09

3. South Africa

Variable	Coefficient	Std. Error	t-Statistic	Prob
COINTEQ01	-0.497879	0.027260	-18.26426	0.00
D(GDP)	0.202841	0.002071	97.95465	0.00
D(GDP(-1))	-0.754512	0.005041	-149.6822	0.00
D(IMP)	-0.397914	0.004802	-82.87127	0.00
D(IMP(-1))	0.110213	0.006448	17.09316	0.00
D(INF)	-0.058326	0.001655	-35.25115	0.00
D(INF(-1))	-0.179955	0.000872	-206.4830	0.00
D(RCH)	0.040072	0.001584	25.30439	0.00
D(RCH(-1))	-0.289223	0.001913	-151.1890	0.00
C	8.862218	3.654442	2.425053	0.09

4. Egypt

Variable	Coefficient	Std. Error	t-Statistic	Prob
COINTEQ01	-0.060356	0.006782	-8.898885	0.00
D(GDP)	0.250535	0.037039	6.764142	0.00
D(GDP(-1))	-0.046045	0.029576	-1.556839	0.21
D(IMP)	-0.359157	0.157953	-2.273819	0.10
D(IMP(-1))	0.559443	0.065281	8.569769	0.00
D(INF)	0.734936	0.323158	2.274235	0.10
D(INF(-1))	-0.381090	0.081860	-4.655408	0.01
D(RCH)	4.187351	7.338730	0.570582	0.60
D(RCH(-1))	3.098910	9.165599	0.338102	0.75
C	-11.00752	69.28693	-0.158869	0.88

5. Angola

Variable	Coefficient	Std. Error	t-Statistic	Prc
COINTEQ01	-0.817473	0.042120	-19.40829	0.0
D(GDP)	0.128494	0.001786	71.92691	0.0
D(GDP(-1))	0.086440	0.002522	34.26948	0.0
D(IMP)	-0.143562	0.006591	-21.78238	0.0
D(IMP(-1))	-0.042001	0.003205	-13.10495	0.0
D(INF)	0.163980	0.005559	29.49826	0.0
D(INF(-1))	0.049412	0.020139	2.453561	0.0
D(RCH)	0.302172	0.012336	24.49508	0.0
D(RCH(-1))	0.166051	0.007117	23.33076	0.0
C	10.57120	11.35224	0.931199	0.4

The tables above shows the speed of adjustment of individual countries within the short-run. From the table Angola has the fastest speed of adjustment with a coefficient of 81% indicating the speed of adjustment to the long-run to be approximately 9.2% compared to Nigeria that0.6%

5. CONCLUSION

The rationale for this study is to determine the impact of exchange rate regimes and import prices on FERH in selected developing African countries. From both the short-run and long-run estimates of both the P-GMM and P-ARDL, there is a clear indication that the variables selected are adequate for the analysis, specifically both estimation technique demonstration a negative relationship between IMP and

FERH on the short-run, however the variable exhibited a positive relationship with the dependent variable on the long-run in line with similar findings in other developing countries (Nteegah & Okpoi, 2016). ERR had a positive sign in our P-ARDL but negative sign in the P-GMM which represented the short-run relationship. The positive sign of exchange rate regime of the selected African countries indicates that ERR positively influence foreign exchange reserve holdings of the countries and this directly increases the price level of imports. The results have shown that exchange rate regime could impact positively and negatively on foreign reserve holdings of the selected countries. The study further revealed that INF exhibited a negative relationship in the short-run for both the P-GMM and P-ARDL estimates while it exhibited a positive relationship on the long-run in. GDP which is also one of our explanatory variables exhibited a negative relationship with FERH for both the P-GMM and P-ARDL model on the short-run while it exhibited a positive relationship on the long-run after necessary adjustments in line with the studies of Hanson et al (2020).

From the results, African countries should implement and adopt an effective ERR that can boost FERH which is one of the indicators of credit worthiness of a country. As well, it will enable them to effectively and efficiently participate in and achieve the objectives international trade. As well, since the price of imports have a negative relationship with FERH it is recommended that African countries should adopt policies to increase their foreign reserve holdings so that their cost of importations would be lower. Although one may note that on the short-run their level of imports has a negative relationship with foreign reserve holdings, as such, it is further recommended that the selected countries should reduce their imports foods items to enable them build-up higher levels of FERH.

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