REAL WAGES, EXCHANGE RATE VARIATION AND DEMAND FOR RESIDENTIAL HOUSING

DAVID UMORU

Edo State University Uzairue, Iyamho, Nigeria
david.umoru@edouniversity.edu.ng

OLUWATOYIN DORCAS TEDUNJAIYE

Edo State University Uzairue, Iyamho, Nigeria

Abstract

This research estimated the effect of real wage and exchange rate fluctuation on the demand for residential housing in African countries. This paper selected ten African nations and applied pooled Mean Group (PMG) method to identify the effects of real wage and exchange rate fluctuation together with movements in interest rates on demand for residential housing among African countries between 2008 and 2020. The results display that the low level of the real wage together with FX market variation in Africa hurt the holding of residential buildings in these countries. Real wages contribute positively but less significantly to holding a residential building in Africa. In effect, when real wages are minimum and insufficient, the acquisition of residential buildings becomes unaffordable. And this could result in a cyclicality of declining purchasing power considering the upward dynamism that goes with demand for residential housing which most often in the long run, results in another round of price inflation. Variations in exchange rates had significantly hindered demand for residential housing in Africa in the period covered by the study. Interest rates also contributed significant adverse impact on holding residential housing. Changes in interest rates were found to have negatively influenced the purchase of residential properties. The reason is that with highly volatile short-term bank lending rates, the cost of acquiring a mortgage to purchase a residential building becomes highly overpriced. This in turn creates a lower demand for residential housing. The speed of adjustment of the demand for residential housing function to equilibrium in the case of disequilibrium in the short run is 72.9%. We do advocate for policies capable of removing the import-dependence status of these countries to reduce the exchange rate fluctuations and hike in inflation rates to avoid a likelihood of cyclicality considering the dynamism that goes with demand for residential housing.

1. INTRODUCTION

The drive to reduce the huge deficit in residential houses has always been on the front burner among governments in Africa, especially in sub-Saharan Africa. The construction industry which encompasses residential houses, roads, bridges, and office buildings has suffered a huge imbalance due to the fluctuation in the exchange rate which is key to the importation of building materials. Fluctuations in exchange rates represent foreign exchange risk for investors. Variability can result in big losses to an investor's investment portfolio due to uncertainties in the rate of return on investment. This is because exchange rate fluctuations affect commodity prices, thereby affecting real estate prices in developing countries. The building materials industry is a key determinant of the speed and quality of construction. Several studies conducted by Adedeji (2002), Arayela (2005), and Ogunsemi (2010) discover that materials accounted for 50-60% of building construction. Therefore, it requires serious attention, especially in the face of factors and policies that can increase prices and slow the growth of the building construction sector.

If currencies fluctuate out of control, they should affect both domestic and international prices of real estate (Omolara, 2010; Jurion, 2002). For this reason, once the price of imports is affected, real estate development is affected. The importance of analysing how a change in Ghana cedi (GH₵) to US dollar (US $) affects house prices in Ghana reveals that rising building material prices pose a significant threat to the construction industry and the cost of construction. It has led to the relinquishment of projects in Ghana (Oluwe, 2009). While real wages have been referred to as the main determinants of residential housing affordability, others have attributed the exchange rate as the main factor affecting the demand for residential housing, an indication that the foreign exchange rate makes building materials rather too costly (Oluwe, 2009; Mexon (2008); Nyok, (2007); Anosike (2009).

A very glaring gap that this study fills is the paucity of sufficient research that relates macroeconomic variables such as real wage, exchange rate, and inflation rate with the huge deficit being experienced in the housing sector in sub-Saharan African countries. Very few researchers such as Aibinu & Jagboro (2002) and Jagboro & Owoeye (2004) have considered similar subjects. Another important gap is that very few studies considered restricted the studies strictly to real wages and exchange rates without considering the aftermath effect which is the inflation rate. This study, however, provides a more elaborate study by including the inflation rate. More so, with the covid-19 pandemic that gripped the world in the last 2 years, few studies on this subject have become quite obsolete hence the need for a more recent study. The appropriateness of econometric tools is another very crucial gap that this study hopes to fill as most of this study did not use appropriate econometrics tools, this study shall use the panel ARDL to examine the relationships after necessary suitability tests. This study shall further examine the effects of the various determinants of the demand for residential housing in sub-Saharan African countries,

especially from the aspects of real exchange rate and real wage as well as general income level. The study is organized into five sections. The second section captures the literature review. The methodology is discussed in section three while Data Presentation and analysis are in section four. Section five is the summary, conclusion, and policy recommendation.

2. LITERATURE REVIEW

A theoretical study by Obstfeld & Rogoff (2001) shows that exchange rate fluctuations are certainly high for the local economy, both through direct and indirect effects on households and businesses. Direct impact upholds that households are less enthusiastic about exchange rate fluctuations, as consumption flexibility is more difficult and leisure consumption fluctuates. Indirect effects, on the other hand, tend to establish higher prices (risk premiums) when companies try to hedge foreign exchange risk, which can have a serious impact on overall price stability. It is assumed that. Wage determinism and assumptions about the contribution of the labor force to the proportion of gross domestic product (GDP) have changed over time and independently changed according to changes in the economic environment. We have the wage and the subsistence theories. The *wage-fund theory* upholds that wages are contingent on capital offered for workers' payment and also the size of the labor force. In effect, wages would rise if capital rises or if there is a decline in the number of effective workers.

Subsistence theories emphasize the supply aspect of the labor market, disregarding the demand aspect. They believe that changes in labor supply are the fundamental force that keeps real wages to the minimum necessary for self-sufficiency (that is, basic needs such as food and housing). An element of self-sufficiency theory manifests itself in the wealth of the country where Smith wrote that the wages paid to workers must be sufficient to support them and their families. Self-sufficient theorists argued that market prices for labor would not deviate from natural prices over the long term. If wages exceed self-sufficiency levels, the number of workers will increase and wage rates will fall. When wages fall below self-sufficiency levels, the number of workers decreases, and wage rates rise.

Many authors have examined the relationship that has existed between real wages, exchange rate fluctuation, and residential housing. While some are centered partly on the exchange rate and housing or prices of building materials others focus on the real wage rate of housing. Lim & Tsiaplias (2016) use a VAR model to examine the impact of interest rates on home prices in Australia and the United States. The results show that the relationship between home prices and income does not depend linearly on interest rates, there is a "turning point" in interest rates, and below that, a home price bubble is likely to occur. They also consider the impact of stable and volatile home price schemes on monetary policy, and the lower limit of mortgage rates to achieve long-term home price stability in the face of institutional uncertainty. To see the generality of the results, we also apply the model to

aggregated data from Australia and the United States. Loyford & Moronge (2014) established that interest rates, inflation, transaction costs, and housing demand have a significant impact on the real estate industry's performance. They have determined that interest rates are stochastic in determining the performance of the real estate market.

A study by Oladipo & Oni (2012). Akanni, Oke & Omotilewa (2014) found that Nigeria's naira exchange rate is the utmost among the issues responsible for the increasing costs of construction materials in Nigeria. The Nigerian building materials market, which has been constant for some time, has recently been price-adjusted due to factors such as exchange rates (Uwaegbulam, Alao & Badejo, 2009). As a result of excessive reliance on imports, corporate exposure to foreign exchange risk has increased (Murinde, 2003). Existing literature identifies two different types of risk in an independent exchange rate system. Transaction risk arises from the gains and losses on the settlement of foreign currency-denominated investment transactions. Real wage rates are another important macroeconomic determinant of housing demand in the sub-Saharan Africa region. Rising home prices stimulate consumer spending with a negative impact by lowering the standard of living of those who do not own a home. This study examines the impact of real wage and exchange rate fluctuations on housing demand in African countries.

Fiadzo, (2004); CHF International, (2004); Hammond, (2006); Akanni, (2006); Udosen and Akanni (2010), Buckley and Mathem (2007) on general housing conditions in Ghana and Nigeria. He devotes some research and claims that the housing investment market is badly undervalued. However, there is evidence of real estate transactions-selling and leasing. Though, since most investors in the real estate market are both foreigners and foreign Africans, most studies to date have quantitatively shown the market's performance against the exchange rates of these West African currencies. Based on this assumption, it is essential to consider how floating exchange rates affect home prices in African countries.

Akpoodje & Omojimite, (2010) reported a negative impact of exchange rate variability on imports of pool models that cover some African economies. However, the results in some countries are mixed. The non-CFA subset had a negative correlation, while the CFA subset had a positive volatility factor. While the impact of exchange rate volatility on trade may be an empirical issue, the results of empirical studies seem mixed, but theoretical in a general equilibrium model. It may also reflect the emptiness of the result. They hint at the fact that exchange rate discrepancies depend on the volatility of the underlying shock, from policy, and preference (Clark et al., 2004). Festus (2009) stated that empirical studies on the impact of exchange rates on the housing market are limited. Some studies include: Newell & Webb (2006) use semi-annual data from five real estate markets from 1985 to 1993 (UK, US, Canada, Austria, and New Zealand). We investigated the impact of exchange rate fluctuations and identified similar impacts on the stock and bond markets.

3. METHODOLOGY

The study adopted the model used by Jack, Okyere & Amoah (2019) in which they considered such variables as real estate pricing, Remittances, exchange rates, and inflation as stated below.

$$\ln repx_t = \beta_0 + \beta_1 remit_t + \beta_2 \ln exr_t + \beta\ \ln \inf_t + u_t \tag{1}$$

This study however specified its models with the inclusion of relevant variables based on our stud hypotheses as follows:

$$\ln resh_{it} = \beta_0 + \beta_1 \ln rwg_{it} + \beta_2 \ln exrv_{it} + \beta\ \ln \inf_{it} + \beta_4 \ln \mathrm{int}_{it} + u_{it} \tag{2}$$

Where nresh is the number of residential houses as a ratio to the total population of each country), rwg is the real wage rate, exr is the exchange rate, inf is the inflation rate and int is the variation in short-term interest rates. Restriction $(\beta_2, \beta_{3i}, \beta4) < 0$, $(\beta_0, and\ \beta_1) > 0$; and β_{0i} is a constant parameter. Specifying equation (2) in a panel of autoregressive distributed lag form, specifically the group of grouped means (ARDL / PMG), we have an ARDL model as thus specified:

$$nresh_{it} = \sum_{j=1}^{p} \alpha_{ij} nresh_{it-j} + \sum_{j=0}^{q} \phi_{ij} rwg_{it-j} +$$
$$\sum_{j=0}^{q} \delta_{ij} exrv_{it-j} + \sum_{j=0}^{q} \omega_{ij} \inf_{it-j} + \sum_{j=1}^{p} \lambda_{ij} \mathrm{int}_{it-j} + e_{it} \tag{3}$$

where nresh*it* signifies the dependent variable; rwgi, exrv, inf, and int signify independent variables; λij is the coefficient of the lags of nresh; δij ' denotes coefficients of present and lags of explanatory variables; and μi is the fixed effect. The ECM version of ARDL equation (3) is specified in equation (4). Hence, with an error correction coefficient, deviations generated in the short term are corrected in the long term:

$$\ln nresh_{it} = \varphi_i \left(\begin{array}{c} \ln nresh_{it-1} - \sum_{j=0}^{q} \phi_{ij} rwg_{it-j} - \\ \sum_{j=0}^{q} \delta_{ij} exrv_{it-j} - \sum_{j=0}^{q} \omega_{ij} \inf_{it-j} \end{array} \right) +$$
$$\sum_{j=1}^{p-1} \beta_{ij} \Delta \ln resh_{it-j} + \sum_{j=0}^{q-1} \phi_{ij} \Delta \ln rwg_{it-j} + \tag{4}$$
$$\sum_{j=0}^{q-1} \delta_{ij} \Delta \ln exrv_{it-j} + \sum_{j=0}^{q-1} \omega_{ij} \Delta \ln \inf_{it-j} + \sum_{j=0}^{q-1} \lambda_{ij} \Delta \ln \mathrm{int}_{it-j} + u_i + e_{it}$$

where φ_i ' is a vector of long-run coefficients; $\phi_{ij}, \delta_{ij}, \omega_{ij}, \lambda_{ij}$ epitomizes short-term coefficients. In theory, the coefficient of adjustment speed needs to be negative and statistically important for equilibrium to be restored in the long run. This research uses a panel dataset for ten African countries spanning from 2008 to 2020. The ten

countries are Nigeria, Gabon, Senegal, Mali, Benin, Cote d'Ivoire, Ghana, Guinea, Liberia, and Niger. Data were sourced from the World Bank database.

4. RESULTS AND DISCUSSION

Table 1 interprets descriptive statistics for our variables. The mean values attained are all halfway considering the maximum and minimum values. The number of residential houses is 19.02%. For the real wage rate, the mean is 22.78%, with 68.31% maximum and 4.9% minimum values being 68.31% and 4.9% respectively.

Table 1: *Summary statistics*

Variables	Obs	Mean	Std Dev	Maximum	Minimum
resh	210	19.02	7.47	40.8	9.65
rwg	210	22.78	16.64	68.31	4.9665
exrv	210	1.74731	1.0975	9.1838	1.1242
int	210	2.9778	0.54578	29.577	5.278
inf	210	6.14	6.03	23.56	0.14

Source. Authors using Eviews 10.

From table 2, all variables except INF became stationary after the first difference. INF however is stationary at all levels. Given this finding, most of the variables are integrated into order one, I (1).

Table 2: *Im, Pesaran, and Shin W-stat (IPS) panel unit root test*

Variables	At Levels		At first Difference	
	W. Statistics	Probability value	t-statistics	Probability values
nresh	-0.18364	0.4271	-18.1493	0.0000
rwg	0.09625	0.5383	-821702	0.0118
exrv	5.03674	1.0000	-4.31397	0.0000
int	1.034566	0.87656	-8.435645	0.0000
inf	-2.22325	0.0131	-7.17252	0.0000

Source. Authors using Eviews 10

The co-integration test results are presented in Table 3 and with the p-value being less than 0.05 in table 3 (for Kao residual Test), it is decided that there is a co-integration connection between the variables used. The results of the co-integration and unit root tests led us to estimate the long-term panel ARDL (Combined Mean Group) in this study.

Table 3: *Results of Pedroni panel test co-integrating*

Measure	Statistic	Prob.	Weighted Statistic	Prob.
v-Statistic	-2.172475	0.9851	-2.394182	0.9917
rho-Statistic	1.768917	0.9615	1.655483	0.9511
PP-Statistic	-4.581469	0.0000	-7.336837	0.0000

ADF-Statistic	-7.000363	0.0000	-9.521368	0.0000
Individual AR coefficients (between-dimension)				
measure		Statistic	Prob.	
rho-Statistic		3.206595	0.9993	
PP-Statistic		-9.305115	0.0000	
ADF-Statistic		-12.58637	0.0000	

Source. Authors using Eviews 10.

Tables 4 report panel ARDL estimation results with the percentage of some residential houses serving as the dependent variable for the model used.

Table 4: *Estimation results for the number of residential houses*

Variable	Coefficient	t-Statistic	Prob.*
cointeq01	-0.729112	-5.421082	0.0000
d(rwg)	0.073967	1.844894	0.0562
d(rwg(-1))	0.127885	0.263781	0.7931
d(exr)	-0.051960	-2.809104	0.0128
d(exr(-1))	0.005780	0.375659	0.7089
d(inf)	-0.110555	-1.907467	0.0626
d(inf(-1))	-0.028806	-0.438769	0.6628
c	5.028641	1.509000	0.1380
rwg	0.429271	4.988462	0.0000
exr	-0.003605	-4.579480	0.0000
inf	-0.089587	-3.795046	0.0004
Mean dependent var	-0.031545	S.E. of regression	0.574640

Source. Authors using Eviews 10

Among countries, the results have it that real wage impact positively and significantly on demand for residential housing during a short-term period. A 1% increase in real wage will increase the demand for residential housing by 7.3%. A plausible explanation for this finding is that in West Africa, a look at the ever-increasing population rate is a clear indication of explosive demand for residential housing and that salient economic factors such as the Real Wage rate if increased shall further increase the level of demand for residential housing among African countries (Jack et al., 2019). In effect, affordable residential housing is premised mainly on the cost of building materials which are mainly imported, this tends to deplete the purchasing power of the people even in the form of the real wage. This is particularly so because inflation is adjusted to get its values. Exchange rate devaluation had a negative and significant impact on the request for residential housing.

The long-run estimation results reveal that real wage, exchange rate, and inflation rate have a substantial long-run relationship with demand for residential housing among the countries. A 1% growth in the real wage rate will increase the demand for residential housing by 43% whereas a 1% growth in the exchange rate and Inflation rate will reduce demand for residential housing by 0.3% and 8.9%

respectively. Aside inflation rate which was hitherto not significant in the short run, the result for real wage and the exchange rate is quite similar. It further buttresses the assertion as concluded by Idoro & Jolaiya (2010) and Jack, Okyere & Amoah (2019), stating that the high rate of inflation which is an offshoot of the high exchange rate increases the costs of building materials and this will in return reduce the demand for residential housing in Africa. Exchange rate fluctuation invests in residential housing to be avoided leading to a sharp reduction in the demand for residential housing among the nations.

Table 5: *Results of cross-sectional analysis by country*

Variable	Coefficient	t-Statistic	Prob. *
Republic of Benin			
cointeq01	-1.231104	-34.32871	0.0001
d(rwg)	0.405691	1.948299	0.0601
d(inf)	-0.164271	-86.34668	0.0000
d(exr)	-0.003271	-328.6206	0.0000
d(int)	-0.2698	-24.57689	0.0000
c	17.23271	2.316533	0.1034
Côte d'Ivoire			
cointeq01	-0.742823	-17.5124	0.0004
d(rwg)	0.670627	1.46785	0.0624
d(inf)	-0.528009	-11.36912	0.0015
d(exr)	-0.007837	-54.15729	0.0000
d(int)	-0.0004951	-19.6899	0.0000
c	22.91163	0.502066	0.6502
Gabon			
cointeq01	-0.742823	-17.51124	0.0004
d(rwg)	0.670627	1.501785	0.0924
d(inf)	-0.528009	-11.36912	0.0015
d(exr)	-0.007837	-54.15729	0.0000
d(int)	-0.0500	-2.58999	0.0049
c	22.91163	0.502066	0.6502
Ghana			
cointeq01	-0.235516	-6.353702	0.0079
d(rwg)	0.072242	1.791159	0.1712
d(inf)	-0.009494	-6.349594	0.0079
d(exr)	-0.409624	-1.439619	0.2456
d(int)	-0.2569	-6.81222	0.0000
c	2.172531	0.584273	0.6001
Guinea			
cointeq01	-0.009545	-27.64677	0.0001
d(rwg)	0.303415	1.513209	0.6432
d(inf)	-0.082013	-82.78164	0.0000
d(exr)	-0.000551	-3406.194	0.0000
d(int)	-0.0025	-45.7868	0.0000
c	-0.383863	-2.418880	0.0943
Senegal			
cointeq01	-1.121950	-58.86592	0.0000
d(rwg)	0.095474	1.124073	0.3428

d(inf)	-0.572765	-56.07162	0.0000
d(exr)	-0.002220	-125.9149	0.0000
d(int)	-0.4460	-24.6794	0.0000
c	19.83351	2.329544	0.1022
Liberia			
cointeq01	-1.025823	-19.63081	0.0003
d(rwg)	0.058588	0.040357	0.9703
d(inf)	-0.157150	-40.59225	0.0000
d(exr)	-0.003792	-4.770428	0.0175
d(int)	-0.001	-9.34278	0.0000
c	17.53452	0.939866	0.4166
Mali			
cointeq01	-1.310062	-33.61674	0.0001
d(rwg)	0.257988	1.457986	0.0210
d(inf)	-0.311773	-58.42605	0.0000
d(exr)	-0.003514	-298.4487	0.0000
d(int)	-0.03440	-10.4579	0.0000
c	15.20869	2.385749	0.0971
Niger			
cointeq01	-1.074898	-18.67228	0.0003
d(rwg)	0.140131	1.39272	0.0782
d(inf)	-0.121902	-159.8452	0.0000
d(exr)	-0.003304	-633.7833	0.0000
d(int)	-1.00567	-7.56265	0.0000
c	7.745673	2.378758	0.0977
Nigeria			
cointeq01	-0.518275	-14.28117	0.0007
d(rwg)	0.340412	1.09575	0.2410
d(inf)	-0.080062	-29.81381	0.0001
d(exr)	-0.003219	-89.11754	0.0000
d(int)	-0.05600	-2.46857	0.0034
c	3.261236	1.844355	0.1623

Source. Authiors using Eviews 10

5. CONCLUSION

It is a known fact that issues bothering on residential housing deficit have over time remained on the top agenda of successive governments in West Africa with many scholars giving candid advice based on study outcomes. The paper so identifies major factors that contribute to some residential housing and these include real wages and exchange rate devaluation for ten selected African from 2008 to 2020. It was found that real wages contribute positively but less significantly to holding a residential building in Africa. In effect, when real wages are minimum and insufficient, the acquisition of residential buildings becomes unaffordable. And this could result in a cyclicality of declining purchasing power considering the upward dynamism that goes with demand for residential housing which most often in the long run, results in another round of price inflation. Variations in exchange rates had significantly hindered demand for residential housing in Africa in the period covered

by the study. Interest rates also contributed significant adverse impact on holding residential housing.

Changes in interest rates were found to have negatively influenced the purchase of residential properties. The reason is that with highly volatile short-term bank lending rates, the cost of acquiring a mortgage to purchase a residential building becomes highly overpriced. This in turn creates a lower demand for residential housing. The study recommends the need for governments of Africa to boost the level of the real wage earned within their countries to enhance the demand for residential housing. Also, African nations should curtail exchange rate variations by minimizing dependence on imported items to reduce the pressure on the exchange rate as it affects demand for residential housing negatively. Lastly, there is a need to keep inflation rates low to reduce the possibility of cyclicality considering the dynamism that goes with the demand for residential housing.

REFERENCES

Adedeji, Y. M. D. (2002). Achieving affordable housing in South-West Nigeria through local building materials. *Journal of Environment and Technology,* 1(2), 15- 21.

Aibinu, A. A. & Jagboro, G. O. (2002). The effects of construction delays on project delivery in the Nigerian construction industry. *International Journal of Project Management,* 20(3), 593-599.

Akanni P. O. (2006, August). Small scale building material production in the context of the informal economy. The Professional Builders, pp. 13-18.

Akanni, P. O. Oke, A. E. & Omotilewa, O.J. (2014). Implications of the rising cost of building materials in Lagos State, Nigeria. *http://journals.sagepub.com/doi/abs*

Anosike, P. (2009). Nigerian groans at the high cost of building materials. *The Daily Sun*, pp. 38-39.

Arayela, O. (2005). Laterite bricks: before now and hereafter. *Inaugural lecture series 40 delivered at Federal University of Technology, Akure*, 5-15.

Buckley, R. M. & Mathema, A. S. (2007). Is Accra a Superstar City? The World Bank

CHF International (2004) Strategic Assessment of the affordable housing sector in Ghana.

Clark, P., Tamirisa, N., & Wei, S-J., (2004). A new look at exchange rate volatility and trade flows, IMF Occasional Paper

Eichengreen, B., (2008). The real exchange rate and economic growth, commission on growth and development.

Festus, O.O. (2009). Exchange rate management in the face of global economic crisis: a review of Nigeria's Recent Experience. *CBN Bullion*, Volume 33, No. 3

Fiadzo, E. (2004) Estimating the determinants of housing quality: the case of Ghana. Joint Centre for housing studies, working paper series, Working Paper No. 4.

Hammond, F. (2006). Real estate resource control: policy incentives and investment for development. *RICS Research Paper Series* Vol. 6 No. 11.

Idoro G. I., & Jolaiya O. (2010). Evaluating material storage strategies and their relationship with construction project performance. Proceedings of CIB International Conference on Building Education and Research, University of Cape Town (pp. 103-113).

Jack, J. K. A. Okyere, F. & Amoah, E. K. S. (2019). Effects of exchange rate volatility on real estate prices in developing economies, a case of Ghana. *Advances in Social Sciences Research Journal, 6*(11) 268-287.

Jagboro, G. O., & Owoeye, C. O. (2004). A model for predicting the prices of building materials using the exchange rate in Nigeria. *The Malaysian Surveyor, 5*(6), 9-14.

Jorion, P. (2002). The exchange rate exposure of US multinationals, *Journal of Business*

Lim, G. & Tsiaplias, S. (2016). "non-linearity in the relationship between house prices and interest rates: *Implications for Monetary Policy*

Loyford, M. M. & Moronge, M. (2014).Effects of economic factors on the performance of real estate in Kenya, *European Journal of Business Management*

Mekson, J. (2008). Prices change of building materials in developing communities in Nigeria. *The Professional Builder*, pp. 21-27.

Murinde, V. (2003). *Macroeconomic policy modeling for developing countries,* Aldershot:Cambridge

Newell. G and Webb, B (2006) Assessing risk for international real estate investing, *Journal of Real Estate Research 11*(2)103-114

Njoku, J. (2007). Grappling with the escalating cost of construction materials. *The Vanguard*, pp. 36-37.

Obstfeld, M. & Rogoff, K. (2001). The six major puzzles in international macroeconomics: is there a common cause?" NBER macroeconomics annual, 15, Cambridge Mass: MIT Press

Ogunsemi, D.R. (2010). The use of enough quality and quantity materials for building a durable edifice. *A Lecture delivered at Campus Transformation Network, Federal University of Technology, Akure*.

Oladipo, F.O. & Oni, O. J. (2012). Review of selected macro-economic factors impacting building materials prices in developing countries – A case of Nigeria. Ethiopian. *Journal of Environmental Studies and Management, 5*(2), 131-137.

Olowe, R. (2009). Modeling naira/dollar exchange rate volatility: application of GARCH and asymmetric models, *International Review of Business Research papers 5*(3).

Omolara J. Y. (2010). Exchange rate changes and output performance in nigeria: a sectorial analysis. *Pakistan Journal of Social Sciences*, 7: 380-387. DOI: 10.3923/pjssci.2010.380.387,https://medwelljournals.com/abstract/?doi=pjssci.2010.380.387.

Udosen J. U., & Akanni P. O. (2010). A factorial analysis of building material wastage associated with construction projects. *Journal of Civil and Environmental Systems Engineering*, 11(2), 81-90.

Uwaegbulam, C. Alao, T. & Emmanuel B. E. (2009). How falling naira and others affect building materials, and construction, by stakeholders. *Retrieved from http://www.nigerianbestforum.com/index.php?topic=22680.*