Forecasting Inflation and Exchange Rates under Financial Uncertainty: New Evidence from Nigeria

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Abstract

The increasing dealing of professional exchange rate forecaster in the financial market exposes the decision of the financial investor to financial uncertainty. Thus, this paper examines the impact of financial uncertainty on professional exchange rate forecast in Nigeria using a monthly data from the period January, 2006 to June, 2022. The paper considers monetary policy and financial uncertainty to account for different dimensions of uncertainty. Based on the Bayesian liner regression utilized, it is observed that stock market activities proxied by stock price index, improves economic performance in Nigeria. The forecasting performance is evaluated by comparing two of the most common measures to judge forecasting accuracy, Root Mean Square Errors (RMSE) and Mean Absolute Error (MAE). The result of the RSME, MAE and MAPE indicate a good accurate prediction of the model, hence, the model is perfect and no error. Therefore, the model has a good forecasting performance. However, interest rate and stock price are predicted to fall. The study concludes that past values of inflation rate, interest rate and stock market price are significant determinant for forecasting professional exchange rate in Nigeria. Policy implication from this result is that government should be prepared to combat high rate of inflation because of its negative

impact on the welfare of the populace. The investors can take advantage of future low interest rate and stock price by planning to expand their businesses. Since stock market activities improves economic performance, increasing investment will lead to increase in demand and increase in profit. Since the exchange rate is predictable, the professionals will also take advantage of this to increase their profits.

Keywords: uncertainty, heteroskedasticity, forecast, professionals.

1. Introduction

Exchange rate forecast plays a pivotal role in open economy macroeconomic models as it informed the decision process of financial market investors and of importing or exporting firms. The decision of financial market is largely exposed to uncertainty due to changes in exchange rate (Beckmann & Czuday, 2016). Financial uncertainties is financial related phenomenon that is beyond control, but still affect the decision of financial agents as they are a strong measure of the behaviour of professional forecasters (Stavrakeva & Tang, 2020). Professional forecasters are the economic agents who take the responsibility of foreseeing prices, especially in the financial market, that is, what the price likely to be in the financial markets which determine the reaction of investors in the same market. So, whatever the speculators in the financial say, will definitely inform the decision of the investors whether to invest or not. However, if speculators are expecting high level uncertainty, it will discourage investors which will in turn have a negative effect on the economy.

Theoretical and empirical evidence clearly show that studies on financial uncertainty on inflation and exchange rate forecast are still scanty and limited and most evidences in this regard is largely from developed economy (Ajayi & Mougoue, 1996, Bofinger & Schmidt, 2003, Beckmann & Czuday, 2016, Norira & Bush, 2019; Stavrakeva & Tang, 2020), but they do not provide unified information. Hence, their conclusion cannot be generalized and objectively relied on to inform policy for the Nigeria financial market investors. More so, studies on uncertainty either focused on trade or on growth (Norira & Bush, 2019); but do not consider the possibility of financial and monetary policy uncertainty on exchange rate forecast (Beckmann & Czuday, 2016). The study contributes to the literature by analyzing the role of uncertainty in exchange rate changes and professional forecast. Also, the study seeks to unravel the link between financial uncertainty and professional exchange rate forecast, in the context of important variables in

Nigeria, namely; interest rate, inflation rate. From a theoretical perspective, unexpected change in exchange rate is a result of unexpected information or changes in fundamentals. In fact, Beckmann and Czuday, (2016) opined that exchange rate forecast requires an understanding of fundamentals. This will draw attention of policy makers and government to see the need to establish strategies and policies with the sole aim of reducing changes in exchange rate.

Following this introductory part, section two deals with the literature review, methodology is in section three, result and discussion is captured in section four and finally, conclusion and recommendations.

2. Literature Review

2.1. Theoretical Review

2.1.1 Keynesian uncertainty theory

According to Keynes, uncertainty concerning the future enters into the economic scheme in two ways; first, uncertainty concerning the future of the rate of interest and second, uncertainty concerning the effect of the future course of events on the yield of investment in as-sets. While these are distinct elements of uncertainty about the future, they have analogous functions in determining, respectively, the actual rate of interest and the marginal efficiency of capital. Uncertainty concerning the future is one of the major factors determining the expectations of prospective yields of assets, and the prospective yield is one of the factors of the marginal efficiency of capital, which in turn is a factor of the rate of investment. In *The General Theory,* confidence is ''when what we expect but turning out other way.'' (p.148), and it depends on agents' experience, which might not be enough for accurate mathematical expectation (p.152). Subsequently, future is uncertain and it cannot be predicted accurately. Also, the lapse of time between moment of taking the decision and the outcome of the choice made is another source of uncertainty, due to unforeseen circumstances which might likely occur during the gap (Keynes, 1936).

In the same vein, the environment where decision is made also has effect the behavior of the agents. In the Post Keynesian tradition, individual interact with environment as well as the agents, they always find a way to manage uncertainty in form of animal spirits. For Keynes (1936, p. 161) decision is not when you multiply

the weighted average of utilities by probabilities in quantitative terms, but they are obsessed by animal spirit, which signifies lack of trust and confidence in their own knowledge. Specifically, when people stage expectation about future happening, they consider other people's opinion, thereby leaving them with lack of confidence in oneself. According to Keynes, he called this "Beauty contest paradigm" (Keynes, 1936, ch.13). It is seen as it occurs and it depends on the level of belief of someone that it will occur, this is what Keynes was saying about agent's confidence. How expectation is been describe here metamorphose into focus-values conception, in which individuals the decision of individuals is based on the whether there would be profit or loss in future. Individuals' focus on future benefits shows their desire for expected outcome, while their focus on any possibility of loss is link to their potential surprise.

2.1.2 Objective vs subjective probability theory

According to Keynes, probability should be seen as a statistical frequency. Probability should consider the level of belief from every evidenced that are available, but the frequencies should be treated as a unique case of evidence (1921, p. 109). The level of the argument includes the level of the relevant evidence, the completeness level of the evidence and the balance of level of relevant knowledge and ignorance (Runde, 1990). Decision-making under uncertainty depends on how relative degree of different expected outcome are been interpreted (Fontana, and Gerrard, 2004). Therefore, mathematical expectations should not be used as a judging criterion for decision making concerned. Thus, according to Post Keynesian postulation, objective probability theory is only a welcome approximation but cannot be taken as a general theory, as it implies that people in the same situation and condition would make the same conclusion and judgment (Dow, 2014).

2.1.3 Disaster myopia hypothesis

The disaster myopia hypothesis has been introduced by Guttentag and Herring (1986) to explain why crises are a recurrent event. Under very optimistic circumstances, investors disregard any relevant information concerning the increasing degree of risk. Disaster myopia is seen a way of underestimate shocks probability, which goes up as time unfolds since the last shocks took place (Guttentag and Herring, 1986). For instance, the 2007-2008 financial crises can be taken as a case of disaster myopia in both housing and bonds markets. Disaster

myopia occurs during trade cycle in the economy, when economy is not stable. In this situation, markets are control by unrealistic good expectation about prices of asset; and investors are over confidence in their own ability about trade. It is interpreted by two behavioral heuristics; the availability heuristic and the threshold heuristic. The availability heuristic concerns with the calculation of the probability of a shock, which depends on information that is available with the occurrence and what individual can think first in their minds. The threshold heuristic occurs when probability gets a particular level, and at that level, it is been treated as zero (Guttentag & Herring, 1986). If higher market participants underestimate the probability of a low frequency but of high importance crisis, then economic system becomes more exposed (Guttentag & Herring, 1986).

2.1.4 Bayesian theory

On the other hand, the Bayesian theory refers to uncertainty as a notion that can be captured by subjective probabilities, which are adjusted for decision-weights. The theory allows individuals to incorporate their perception of reality, depending on the context. Subjective probability theory could provide a better understanding of uncertainty, but still the incorporation of the notion of weight is insufficient (Neal, 1996). The future possibilities might not be known, and therefore it would be impossible to assign subjective probabilities that sum up to 1 (Dow, 2015). Moreover, Bayesian theory assumes that individuals possess the capacity to make subjective probability estimates, so that immeasurable risk remain irrelevant, while fundamental uncertainty remains a disturbance factor (Dow, 2015).

2.2   Empirical review

2.2.1 Exchange rate forecast and monetary policy

Lutz and Mark (2000) used a nonlinear econometric model to explain the observed volatility and changes in the nominal and real exchange rate over time. However, they found out that there is strong exchange rates predictability for about two to three years, but not at short range. They concluded that predictability of nominal exchange rates improves at a longer horizon. Ronald and Menkhoff (2014) demonstrate that good exchange rate forecasts are related to a proper understanding of fundamentals, specifically good interest rate forecasts. They concluded that interest rate increase relates to a currency appreciation, but only good forecasters

get expected interest rates right. Bofinger and Schmidt (2003) analyses the characteristics of professional exchange rate forecasts for the €/US-$ rate and they found that quality of forecasts produced by professional economists is rather poor and incompatible with the rational expectations hypothesis. Eze and Okotori (2021) show that there is a significant link between exchange rate forecast and monetary policy uncertainty and the link is more pronounced in the short run.

2.2.2 *Exchange rate expectations and macroeconomic uncertainty*

Obstfeld and Rogoff (1996) build a model which presents exchange rates as an asset price. The price of exchange rate shows the expectation about economic fundamentals from the perspective of fiscal and monetary policies. Similarly, Engel, Mark, and West (2007) concluded that when there is high level of economic uncertainty, economic agents adjust their expectation up, causing exchange rates to fluctuate. Baker, Bloom and Davis (2013) found out that increased in uncertainty from economic policy significantly reduces the level of real GDP, level of investment and employment level in the United States. Because the level of risk in the state will increase, greater economic policy uncertainty will have a negative impact on the level of investment and hiring in the economy. Hina and Qayyum, (2015) argued that nominal exchange rate forecasting has always been one of the most tedious tasks in economics. They used the Frankel (1979) monetary model of exchange rate to analyse the behavior of Pakistan rupee per unit of US dollar over the period of the first quarter of 1982 to last quarter of 2012. Their study shows that there is a long run cointegrating vector between fundamentals. Kandil (2004) examined the influence of exchange rate fluctuation on the growth rate of output and inflation, using the sample of 22 developing nations. He introduced rational theoretical expectation model that represent the movement in exchange rates expected and unexpected components. The study revealed that exchange rate depreciation reduces the real output growth and raises price inflation.

Haidar and Ndan (2022) found in Australia that exchange rate uncertainty plays important role in influencing inflation expectation. Reported consumer expectation rises when consumers' exchange rate outlook is uncertain. If the consumers predict high exchange rare, inflation rate will also rise. Garcia and Iskrev (2019) explore into the inflation forecast of respondent's survey of professional forecast in the Euro areas. The result indicates that oil price uncertainty plays important role in the forecast of exchange rate and inflation rate expectations.

2.2.3 Professional exchange rate forecast and stock market

Ajayi and Mougoue (1996) examined the relationship between prices of stock and exchange rates for the developed nations and found a negative short run impact on the value of domestic currency. They concluded that there is an increase price of stock. In another study, Habib and Stracca (2012), focused on increase in value of domestic currency through the US dollar in the face of uncertainty. They found that expectation from markets are exposed and significantly influenced by uncertainty which represent a change in the variable and result to forecast error even if expectation about the mean and the possible variance of the shock are correct.

3. Methodology

This study employs the Bayesian linear regression, because it is commonly utilized for prediction of stochastic process such as exchange rate uncertainty. Starting from the basic statistical specification as shown in equation 1, the Bayesian model is generated thereafter.

$$Y = X'\beta + \mu \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where Y = dependent variable ($n \times 1$)
X = the matrix of independent variable ($n \times (p+1)$)
β = vector of regressors' parameters ($(p+1) \times 1$)
ε = vector of error ($n \times 1$)
X= ($X_1, X_2\dots\dots\dots\dots X_{np}$)

In the Bayesian approach there is *a-prior*, likelihood distribution and posterior distribution. Parameter estimation by Bayesian approach is done by processing posterior distribution which multiplies the prior distribution with likelihood. In linear regression model using OLS estimation method, there is normal distributed error assumption that is $\varepsilon \sim N(0,\sigma^2)$. Since the error is normally distributed, the variables ($Y|X, \beta,\sigma^2$) are also normally distributed. Thus, the variables ($Y|X, \beta,\sigma^2$) $\sim N(X\beta,\sigma^2)$ and probability density function (pdf) of these variables are as follows:

$$p(Y|X, \beta,\sigma^2) = \frac{1}{\sqrt{2\pi\sigma^2}} exp\left[-\frac{1}{2\sigma^2}(Y - X'\beta)^T (Y - X'\beta)\right]$$
$$\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(2)$$

Based on the probability density function above, the likelihood function of these variables are as follows:

$$p(\pmb{Y}|\pmb{X}, \pmb{\beta}, \sigma^2) = \prod_{i=1}^{n} \frac{1}{\sqrt{2\pi\sigma^2}} exp\left[-\frac{1}{2\sigma^2}(Y - X'\beta)^T (Y - X'\beta)\right]$$

………………………...(3)

$$p(\pmb{Y}|\pmb{X}, \pmb{\beta}, \sigma^2) = (\sigma^2)^{-n/2} exp\left[-\frac{1}{2\sigma^2}(Y - X'\beta)^T (Y - X\beta)\right] \dots$$

…….(4)

$$p(\pmb{Y}|\pmb{X}, \pmb{\beta}, \sigma^2)\,\delta(\sigma^2)^{-\frac{v}{2}} exp\left[-\frac{vs^2}{2\sigma^2}\right] \times (\sigma^2)^{-n/2} exp\left[-\frac{1}{2\sigma^2}(Y - X'\beta)^T (Y - X'\beta)\right]$$

…(5)

There are several prior distributions that can be used in Bayesian approach of linear regression model, one of which is the distribution of prior conjugate. Estimation of regression model with Bayesian approach can be done by iterating at Marginal posterior. Posterior is calculated by multiplying the prior distribution and likelihood function.

$$\text{Posterior } \delta \text{ Likelihood} \times Prior$$

$$p(\beta, \sigma^2|Y, X)\,\delta\,P(\pmb{Y}|\pmb{X}, \pmb{\beta}, \sigma^2)p(\sigma^2)p(\beta|\sigma^2)$$
$$(\beta, \sigma^2|Y, X)\delta(\sigma^2)^{-n/2}exp\left[-\frac{1}{2\sigma^2}(Y - X'\beta)^T (Y - X\beta)\right] \times (\sigma^2)^{-(\frac{v}{2}+1)}$$
$$exp\,exp\,(-\frac{vs^2}{2\sigma^2}) \times (\sigma^2)^{-k/2}exp \qquad\qquad \left[-\frac{1}{2\sigma^2}(\beta - \mu)^T \pi(\beta - \mu)\right]$$

…………………………………………………… (6)

The process of obtaining the estimation of regression model parameters with Bayesian approach can be done by using MCMC (Markov Chain Monte Carlo) algorithm. One of the commonly used algorithms in MCMC is Gibbs Sampling. In other not to run a spurious regression, interest rate, price, inflation and exchange rate are subjected to various tests, such as the heteroskedasticity test, residual test and LM test.

Explanation of variables in the Bayesian linear regression model

The Bayesian linear regression model was formulated using the probability distribution. The response, $(\pmb{Y}|\pmb{X}, \pmb{\beta}, \sigma^2)$ is not an estimation from a single value, but

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an assumed value that is drawn from a probability distribution. The Bayesian linear regression model with the response sampled from the normal distribution is (Y/X, β,σ^2) ~ N($X\beta,\sigma^2$). The main aim of Bayesian is not to find the single best value but to determine the posterior distribution for the model parameters.

Priors: A prior knowledge and idea about what the model parameter entails was included in the model. However, this is against the frequentist approach which assumed that necessary information about the parameters should be known or gotten from the data. Thus, if there is no useful information ahead of time, we can use non- informative priors for the parameters such as a normal distribution.

Posteriors: The essence of Bayesian linear regression is a distribution of possible model parameters according to the data and the priors. This help to measure our uncertainty in the model.

The likelihood of $\beta 1, \ldots \ldots \beta n$ represent the product of each likelihood
$p(\beta,\sigma^2|Y,X)\delta$ P(Y/X,
β,σ^2)$p(\sigma^2)p(\beta|\sigma^2), \beta 1$ *is the independent from each other*.
Combination of two conditional probability:
$p(\beta,\sigma^2|Y,X)$ δ P($Y|X$, β,σ^2)$p(\sigma^2)p(\beta|\sigma^2)$

Combining the two using conditional probability, we will get the same joint prior distribution.

Monthly data on the nominal bilateral exchange rate (naira-dollar), inflation rate, interest rate and other variables are obtained from the Central Bank of Nigeria online databank available at wwwcenvbank.org. The dataset span 2006M01 to 2022M10. Exchange rate is measured as rate of dollar to naira, interest and inflation rates are measured in percentage, while stock market price is measured as millions of naira. Data employed were analyzed using linear regression modelling with Bayesian approach estimation.

4. Results and Discussion

4.1. Descriptive Statistics

Prior to conducting regression analysis of the model specified in equations 4, 5 and 6, it is vital to have an understanding of the characteristics of the series.

Table 1 provides the summary of the descriptive statistics of the series. The average naira-dollar exchange rate was 225.05 within the period under investigation. The minimum and maximum exchange rate was around 116.79 and 436.12 respectively. This implies that Naira exceeded hundred-naira mark for an exchange of one dollar between 2006 and 2022, while the peak was over 300 naira. This outcome has important implication for forecast professional because it implies that the processional may likely find it easy to profess that exchange rate will be on the high side in the future. However, by how much higher may not be easily speculated and that is the essence of this research work.

Unlike large variation between the minimum and maximum exchange rate, there was a slight variation in interest rate as the minimum was 14.6 and maximum was 19.6 percent.

Table 1: Summary of the Descriptive Statistics

Varaibles	Mean	Max	Min	Std. Dev.	Skew	Kurt	J-Bera	Obs
Exchange Rate	225.05	436.12	116.79	98.93	0.68	1.98	24.40*	202
Interest Rate	16.05	19.66	11.13	2.02	-1.08	3.64	42.60*	202
Inflation Rate	11.97	21.09	3.00	3.71	0.07	2.60	1.48	202
Stock Price	33372.95	65652.38	19851.89	9917.96	0.87	3.17	26.02*	202

Note: Exchange Rate is the price quotation of dollar in terms of naira, interest rate is the monetary policy rate while inflation rate is the percentage change in consumer price index. Stock price is the index of prices of stocks quoted on the floor of Nigeria Stock Exchange.
* p<0.01

However, similar behaviour to exchange rate can be observed in the case of interest rate, inflation rate and stock price index where the respective minimum and maximum were 11.13 and 19.66, 3.00 and 21.09 and 19851.89 and 65652.38. What this implies for this study is perhaps to check whether the maximum-minimum variation in variables such as interest rate, inflation rate and stock price index can be responsible for the maximum-minimum variation in exchange rate. If this is true, then these two variables may likely predict variation in exchange rate more than interest rate. Nevertheless, there appears not to be large dispersion around the mean as the standard deviation is less than the mean in the case of each variable. This absence of large dispersion around the mean provides possibility to employ

the Baysian linear regression. However, if its noted that the Jacque-Bera values indicate that all the variables except inflation rate are not normally distributed. This should not be a problem because the technique of estimation employed is capable of dealing with series that are not normally distributed.

Next is to examine possible association between pairs of these variables. The correlation matrix presented in Table 2 suggests that although these series are assiciated in some sense, the association is not strong. Meanwhile, it must be noted that inflation rate and exchange rate are negatively associated, while stock price and inflation rate are negatively association, albeit weak. Since there is no strong association among the variables, it is possible to include all the independent variables in the model at once.

Table 2*: **Pairwise correlation**

	Exchange Rate	Inflation Rate	Interest Rate	Stock Price
Exchange Rate	1.00			
Inflation Rate	-0.66*	1.00		
Interest Rate	0.67*	-0.39*	1.00	
Stock Price	0.13	-0.37*	-0.13	1.00

Note: Exchange Rate is the price quotation of dollar in terms of Naira, interest rate is the monetary policy rate, while inflation rate is the percentage change in consumer price index. Stock price is the index of prices of stocks quoted on the floor of Nigeria Stock Exchange.
* p<0.01

4.2. Preliminary tests

Owing the fact that data on the variables are obtained from the secondary source, it is inevitable that the series will not be stationary at level. The method to be adopted is grounded on the assumption that the series are stationary so as to ensure the efficiency of the parameters. Hence the first step is to examine the level at which each of the variables is stationary.

There are a least four approaches available to test for the unit root of a series. These approaches are Dickey-Fuller (DF), Augmented Dickey Fuller (ADF), Phillip-Peron (PP) and KPSS. Experience has shown that in most cases the approaches give similar result. Consequence upon this, and owing to limited space, the ADF and PP results are presented. The results of the tests indicate that, the ADF test and

the PP test both show a close order of integration, with the only difference being the interest rate and stock price which have a separate integration order, but still at acceptable order. Trending variable (exchange rate) was evaluated with trend and intercept, while other variables were better tested with intercepts because of no trend which evidences fast reversal during the study period. The result shows that exchange rate and inflation rate are stationary at first difference, that is, they are integrated of order 1 (I(1)).

Table 3: The Result of Stationarity Tests

Test Type		Augmented Dickey-Fuller			Phillips-Perron		
Variable		Level (t-Stat)	1st Diff (t-Stat)	Decision	Level (t-Stat)	1st Diff (t-Stat)	Decision
Exchange Rate		-0.281	--9.677***	*I*(1)	0.291	-7.681***	*I*(1)
Interest Rate		-0.906	-17.919***	*I*(1)	-1.209	-17.678***	*I*(0)
Inflation Rate		-1.815	-7.941***	*I*(1)	-1.349	-11.820***	*I*(1)
Stock Price		-3.072**		*I*(0)	-2.324	-12.381***	*I*(1)
Critical Values	1 % level	-3.463			-3.463		
	5 % level	-2.876			-2.876		
	10 %level	-2.575			-2.574		

Note: Exchange Rate is the price quotation of dollar in terms of naira, interest rate is the monetary policy rate while inflation rate is the percentage change in consumer price index. Stock price is the index of prices of stocks quoted on the floor of Nigeria Stock Exchange. *** p<0.01, ** p<0.05, * p<0.1

The unit root test decision, however, is inconclusive for interest rate and stock price since both tests of ADF and PP performed different integrating order, but still at integrated order one. Since the maximum integration order for the series are one, we then apply the Bayesian approach method. The Bayesian approach views parameters as a random variable, so that the value is not a single value (Permai & Tanty, 2018).

4.4.   Bayesian Linear Regression

The purpose of the BVAR models is to improve forecasting performance by allowing some tradeoff between oversimplification and over fitting (Todd, 1984,

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Litterman, 1984). The problem of oversimplification arises when trying to forecast the macroeconomic series as univariate processes (ARMA processes, random walks). In this research, multiple linear regression modeling analysis with Bayesian parameter estimation is used. The prior distribution used in this study is the student's t distribution for the β parameter and the Gamma inverse distribution for the parameter. Gibbs Sampler using the Markov Chain Monte Carlo (MCMC) method was employed as the algorithm. Iteration used as many as 10000 with Burn in at 500 and thin of 1.

Table 5: Linear regression model using Bayesian approach

	Coefficient	Std. Error	z-Statistic	Prob.
Exchange rate(-1)	0.991	0.007	141.571	0.000
Interest Rate(-1)	-0.001	0.0008	-1.252	0.265
Inflation Rate(-1)	0.002	0.001	2.187	0.029
Stock Price(-1)	-0.007	0.008	-0.869	0.385
Constant	0.128	0.099	1.289	0.198
R-squared	0.896	Mean dependent var		5.328
Adjusted R-squared	0.825	S.D. dependent var		0.420
S.E. of regression	0.027	Sum squared resid		0.138
Durbin-Watson stat	2.049			

Table 5 shows statistically significant coefficients of the lagged value of exchange rate at 1 percent level. This suggests that, in Nigeria, the exchange rate value of the past years has a significant impact on the current period. Specifically, if exchange rate depreciates last year, there I it is the case that exchange rate will depreciate further this year. It turns out that a 1% depreciation this year will lead to almost 1|% depreciation next year. Lagged interest rate does not affect current exchange rate, even though a negative effect is shown. This could imply that the monetary policy rate set by the Central Bank has no effect on exchange rate. It could also suggest that change in interest rate does not influence those factors that could cause changes in exchange rate. Such factors include foreign direct investment and portfolio investment.

The past value of inflation rate is a significant predicting determinant of the current value of exchange rate in the country. Therefore, as inflation rate increases, the current value exchange rate will increase, holding other determinants constant. The

resultant effect of this is that, there will be a general rise in the price of commodities and services if exchange rate increases, thus it erodes the real wage of the people and in turn increases poverty rate and hinder the achievement of sustainable economic growth and development in the long run. This finding is consistent with Frimpong and Adam (2010), Sheefeni and Ocran (2013) who found that there is positive and significant long run relationship between domestic prices and exchange rate exist; implying that long run exchange rate pass-through in Nigeria is zero indicating that the purchasing power parity theory does not hold, with regard to the price level, in the context of Nigeria.

Furthermore, the Keynesian money demand theorist observes that, as interest rate grow, more costs are incurred to keep money, and therefore, less money is used for idle balances; potentially leading to an increase in the exchange rate. But the past value of interest rate is negative and insignificant predicting determinant of the current value of exchange rate in Nigeria. At the same time, the coefficient of stock price is negatively insignificant which implies that stock price negatively predicts exchange rate. This is inconsistent with financial market theory of development that stock markets will improve economic growth to the degree based on how integrated they are into an 'institutional matrix' such as exchange rate that sends signals to decision makers who would look for growth opportunities.

Table 5: Forecast Evaluation

Variable	Inc. obs.	RMSE	MAE	MAPE	Theil
Exchange rate	10	419.25	419.19	100.00	101.31
Inflation rate	10	18.35	18.24	100.00	25.97
Interest rate	10	12.01	12.01	100.00	81.96
Stock price	10	49027.95	48957.66	100.00	21.02

Note: RMSE: Root Mean Square Error; MAE: Mean Absolute Error; MAPE: Mean Absolute Percentage Error; and Theil: Theil inequality coefficient

This estimation checks the model in term of forecasting performance. The forecasting performance is evaluated by comparing two of the most common measures to judge forecasting accuracy, root mean square errors (RMSE) and mean absolute error (MAE). The result of the RSME, MAE and MAPE indicate a good accurate prediction of the model, hence, the model is perfect and no error. Therefore, the model has a good forecasting performance.

Figure 1: Actual and Forecast values arising from the model

Exchange rate forecast graph   Inflation rate forecast graph
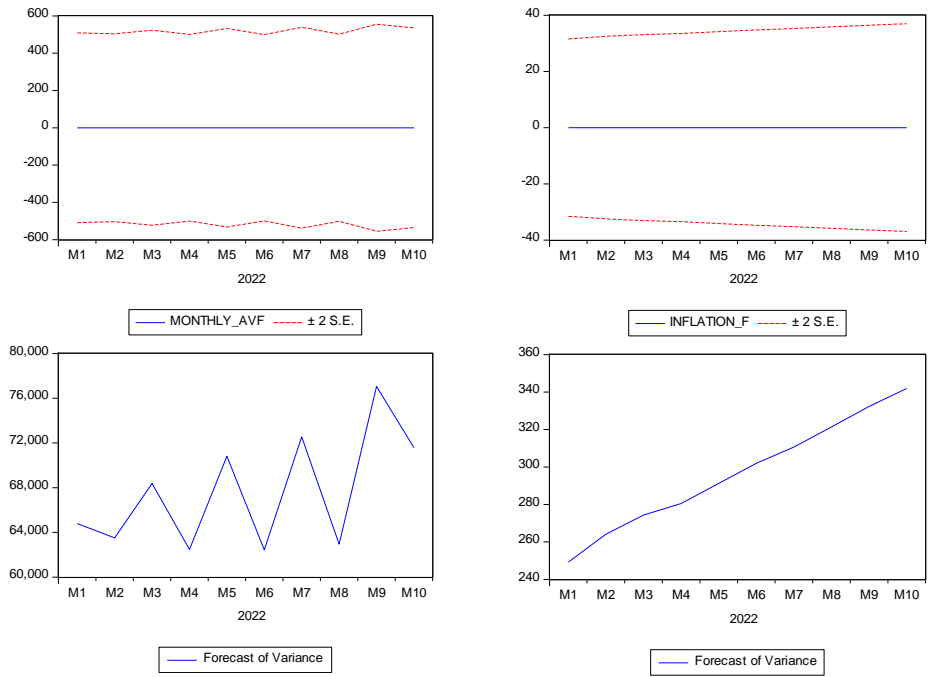
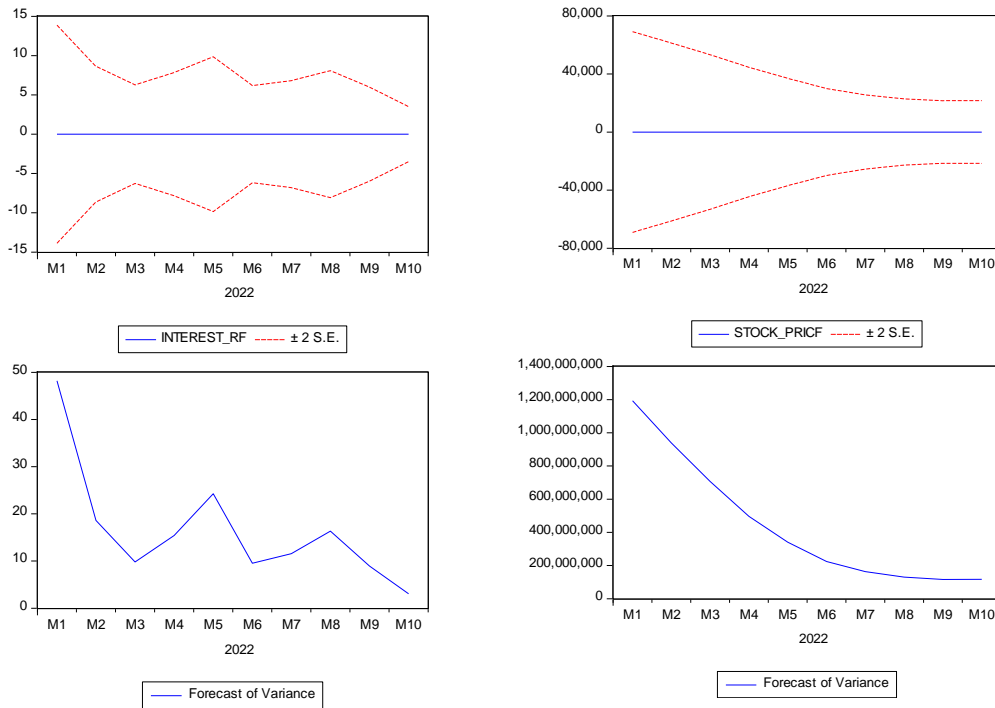Interest rate forecast graph   Stock price forecast graph

Figure 1 shows a large deviation between the forecast and actual values. The essence of this is to forecast what the future will be for each variable. Hence, exchange rate and inflation rate are forecasted to continue to increase in the country, while interest rate and stock price will continue to decrease.

5.   Conclusion and Policy implications

Financial uncertainty is financial related phenomenon that are beyond control, but still affect the decision of financial agents; that is, affect the decision of business owners, government as well as how it affect the financial speculators. However, professional forecasters are the economic agents who take the responsibility of foreseeing prices, especially in the financial market that is, what the price likely to be in the financial market which determine the reaction of investors in the same market. Thus, this study examined how financial uncertainty is affected by unstable exchange rates, stock prices, inflation rates and interest rates. Theoretical arguments, however, suggests that future is uncertain and it cannot be predicted accurately. Also, the lapse of time between moment of taking the decision and the outcome of the choice made is another source of uncertainty, due to unforeseen

circumstances which might likely occur during the gap. This study, thus, contributes to the literature by empirically investigating the impact of financial uncertainty on professional exchange rate forecast in Nigeria. On the basis of these findings in previous subsection, the study concludes that the past value of inflation rate, interest rate and stock market price are significant determinant for forecasting professional exchange rate in the country. Stock price has been identified by this study as one of the proxies of financial uncertainty, which serves as a major determinant of professional exchange rate forecast, thus, to maintain stable stock price, monetary authorities can best promote financial stability and economy growth by making a firm commitment, in order to maintain price stability.

Hence, the recommended that the financial market must reflect market realities to ensure that exchange rate rates forecast is relatively stable, so as to promote efficiency in distribution and allocation of resources, as well as promote productivity and growth in Nigeria. The purpose of professional forecasters is to achieve accurate value with what they forecast or predicts. Additionally, this research work suggests that exchange rate has to be competitive to attract foreign investors in Nigeria. That is, exchange rate should, and indeed, must reflect market realities to promote efficiency in resource allocation and productivity growth.

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