Economics Bulletin

Volume 45, Issue 1

Does global monetary policy uncertainty matter for stock market returns? The evidence of quantile regression for Africa

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Abstract

This study explores the impact of monetary policy uncertainty on stock returns in seven major African stock markets: South Africa, Egypt, Nigeria, Ghana, Kenya, Mauritius, and BRVM, using quantile regression and monthly data from August 2017 to August 2022. The results show that monetary policy uncertainty positively affects stock returns in South Africa and Egypt, positioning them as safe havens. Conversely, it negatively impacts stock returns in Nigeria, Ghana, Kenya, and Mauritius. Oil prices positively influence returns in Nigeria and Mauritius, while exchange rate appreciation boosts Nigerian stock returns. Corruption has a negligible effect on stock returns. The findings emphasize the importance of stable policies, financial resilience, and improved governance for fostering investor confidence and enhancing market performance in Africa.

In loving memory of Dr Damilola Felix Arawomo Disclaimer: This is the view of the authors and not the institution they represent.

Citation: Damilola Felix Arawomo and Richard Umeokwobi and Emmanuel Ohaegbu, (2025) "Does global monetary policy uncertainty matter for stock market returns? The evidence of quantile regression for Africa", *Economics Bulletin*, Volume 45, Issue 1, pages 210-229

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Submitted: February 16, 2023. **Published:** March 30, 2025.

1. Introduction

Low returns, inefficiency, and fragmentation have historically characterized the African stock exchange markets. However, the political and investment climate in the continent has improved over the past ten years, according to the Africa Attractive Survey (AAS) (2021). The attractiveness of the continent's investment climate has boosted the stock markets. The stock markets have benefited from the attractiveness of the investment climate to investors in the continent. Stock returns are expedient to investors because it determines the investment portfolio at a point in time. Moreover, the risk associated with various investing opportunities can be determined by stock return. Given the significance of stock returns to investors, it is important to examine the variables that are significant to it. According to the Arbitrage Pricing Theory (APT), there is a linear correlation between certain macroeconomic variables and asset returns. The three variables that were frequently used to determine the dynamics of stock returns were interest rate, exchange rate, and crude oil price.

The emerging factor that is considered important for investment decisions is global economic policy uncertainty (Kasozi, 2012). This factor is particularly important in managing the interplay between opportunities and risk. There has been a renewed interest by academia and policymakers in issues around policy uncertainty. The recent attention was an outcome of the global financial crises that occurred in the late 2000s. This led to the development of Economic Policy Uncertainty (EPU). The development of the EPU is often attributed to Baker et al., (2016). The authors utilized the newspaper coverage of policy-related issues to develop the index of EPU. Precisely, Brogaard and Detzel, (2015) described EPU as uncertain about fiscal, monetary, and regulatory. Some such events include the Eurozone crisis, the Brexit transition, the Stock market crash, the China-US trade war, and recently the COVID-19 pandemic. Since the development of the index, the value has been increasing suggesting an increase in uncertainties that can give policymakers and investors serious concerns.

It is important to characterize the channels through which uncertainty could transmit into stock market performance. Two channels have been identified in the literature: the unpredictability of the market and the reduction in market expectations (Oyewole, et al, 2022). Both macroeconomic activities and private investments are usually stifled whenever uncertainty shocks are introduced. This expectedly would cause a depletion of stock market investments and by extension a decline in stock returns. Expressed differently, policy uncertainty could impact economic activities negatively, reduce future cash flow, and eventually result in poor stock returns. The other impact of policy uncertainty on the stock market is the likelihood of dampened market expectations. The implication of dampened market expectations is high volatility in the stock market.

The purpose of the paper is to examine the effects of monetary policy uncertainty on stock returns in selected African stock markets. This becomes expedient because of the potential harm uncertainty could cause to the macroeconomic development of nations. With renewed efforts to strengthen the stock market in the continent, analyzing potential factors like uncertainty is important. Moreover, this paper can be justified on two main grounds. First, previous efforts in this regard used aggregate economic policy uncertainty (Asafo-Adje 2020; Tsai, 2017; Ko and Lee, 2015; Li et al., 2020) The present paper utilized the monetary policy uncertainty that is more pertinent to stock. Moreover, the present study adds value to the literature as it incorporated COVID-19 and after data. Previous empirical papers, especially the African based, such as Asafo-Adje 2020, Auwal and Sanusi, Seck 2017 were before the emergence of the last pandemic.

This study contributes to knowledge by focusing on monetary policy uncertainty (MPU) rather than aggregate economic policy uncertainty, making it more relevant to stock returns. It also extends the literature by incorporating post-COVID-19 data, capturing the effects of unprecedented monetary shifts. Unlike previous studies centered on developed markets, this research provides insights specific to African stock exchanges. Additionally, it highlights the transmission mechanisms of MPU through market unpredictability and dampened expectations, offering policymakers a clearer understanding of its impact. By employing advanced econometric techniques, the study enhances empirical analysis and provides valuable policy recommendations to strengthen Africa's financial markets. The section after this reviewed the previous empirical efforts on the interaction between stock returns and economic policy uncertainty. Section three graphically characterized the interaction among the variables utilized. We discussed the theoretical framework and methodology in the fourth section. The empirical analysis was presented in the fifth section, while the concluding remarks were contained in the last sections.

2. Review of Literature

Empirical research on the stock market has yielded varied results based on internal and external factors. Some studies have found mixed results on stock prices, with some focusing on sectors and firms, while others have found mixed impacts on countries. For instance, some studies have found that political risk, law and order, and bureaucratic quality are important determinants of stock market developments, as they enhance the viability of external finance. In the South African context, studies have found a relationship between investor sentiment, monetary policy uncertainty, and the stock market. In the USA, economic policy uncertainty has a significant impact on stock market volatility and liquidity. In Africa, studies have found that global Economic Policy Uncertainty (EPU) correlates with most of the stock returns of eight African countries. Researchers have also explored the relationship between inflation and stock returns, finding that the Fisher puzzle disappears. Bauer, Lakdawala, and Mueller (2021) discovered that the level of uncertainty determines the level of financial market shocks, leading to the type of policy. Goel et al (2021) found a statistically negative association between EPU and hedge momentum portfolios. The study of stock market returns and their determinants has been extensively explored in financial economics. Foundational works by Cho, Eun, and Senbet (1986) and Reinganum (1981) provided empirical frameworks for the Arbitrage Pricing Theory (APT), further solidified by Lehmann and Modest's (1988) study on its foundations. Page (1986) extended APT to emerging markets using Johannesburg Stock Exchange data, while Alagidede (2011) and Assefa and Mollick (2014) highlighted unique return characteristics and liquidity premiums in African markets. Olufemi (2017) confirmed APT's robustness in Nigeria. Beyond Africa, Basu and Chawla (2012) validated APT in India, Khudoykulov (2017) in Athens, and Kisman and Restiyanita (2015) contrasted APT with CAPM in Indonesia. Elshqirat (2019) reinforced APT's relevance in Jordan, and Maio and Philip (2015) linked macroeconomic variables to stock returns. These studies underline APT's global applicability and inform the investigation of global monetary policy uncertainty's impact on stock market returns in Africa through a quantile regression framework. Overall, the literature on stock market research offers valuable insights into the factors influencing stock prices and their impact on various sectors and firms.

3. Stylised Facts

The graph of BRVM shows that oil price was at its lowest when monetary policy uncertainty was at its highest, as at the end month of 2019. As of that period the BRVM stock index was reducing at an increasing rate, which might be because of the COVID-19 spread worldwide, and the lockdown that most economies embarked on during the period. The BRVM stock index was at its peak in 2017, while oil prices were low and monetary policy uncertainty was also low, this might be because of the Trump Election which made global oil prices fall. In summary, it was noticed that monetary policy uncertainty and the BRVM stock index had an inverse relationship.

Based on the graph of Mauritius, the stock index was at its peak, which was about the end period of 2017, which was also the period of the Trump election, as at that period oil prices showed to be lower than monetary policy uncertainty. Though monetary policy uncertainty from 2017, started increasing and reached its peak in the year 2019, which was the period when the stock market crashed, this also showed that the Mauritius stock index started reducing at that point. As of 2020 both monetary policy uncertainty and Mau stock index decreased due to the COVID-19 lockdown. Oil prices all through the period were below monetary policy uncertainty and the Mauritius stock index. It is worthwhile to note that monetary policy uncertainty and the Mauritius stock index showed a positive relationship because they both mirrored themselves all through the period of study.

The Kenya stock index was at its peak in the early month of 2021, during that period, monetary policy uncertainty was declining from its original peak, and oil price remained below both monetary policy uncertainty and the Kenya stock index, this is strong because of the recovery from the lockdown and there was a rush into the market. Around 2022, Kenya's stock index started to decline, basically can be related to the Ukraine-Russia war, which has various adverse effects on economies and trades in the world, the monetary policy uncertainty during that period showed to be increasing. In summary, monetary policy uncertainty and the Kenya stock index showed to have an inverse relationship in the scope of the study.

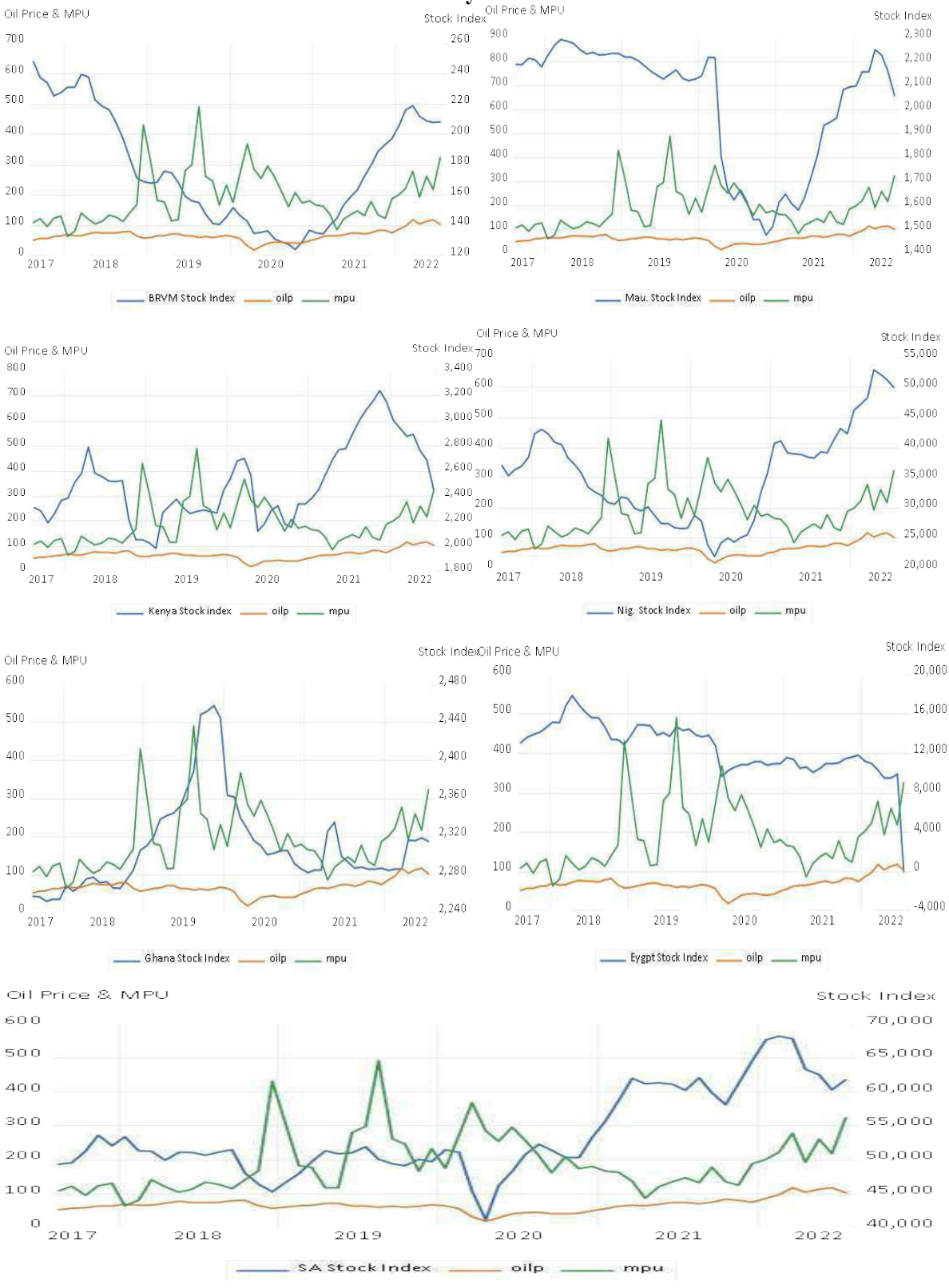
Oil price also showed to be below monetary policy uncertainty and Nigeria's stock index during the scope of study though it had a tangency with monetary policy uncertainty, as at mid-2017, which was during the major trump election. Nigeria's stock index attained its peak, in late 2021, which was after the covid-19 lockdown, and the economy was opened to transact with the outside world. It is interesting to note that the monetary policy uncertainty and the Nigeria stock index mirrored each other from the COVID-19 crisis of 2020 down to 2022, but from the year 2018 to 2020, they had an inverse relationship, that is the periods of the stock market crash and China-US trade war, that might be the reason why monetary policy uncertainty was increasing during 2018, 2019 and 2020 while Nigeria stock index was crashing during these periods.

Ghana's stock index was at its peak, at the beginning of 2019, during that period monetary policy uncertainty was decreasing and oil prices showed to be below Ghana's stock index and monetary policy uncertainty. Both Ghana's stock index and monetary policy uncertainty declined during the year 2022, because of the Ukraine-Russia war. It is good to note that both Ghana's stock index and monetary policy uncertainty mirrored themselves throughout the study, this is probably because of the positive relationship that exists between them.

The graph shows that Egypt stock index had the highest value followed by monetary policy uncertainty and oil price in that order. Egypt stock index attained its peak in the last month of 2017, while monetary policy uncertainty was trying to increase. At early 2019, monetary policy uncertainty attained its peak, and Egypt stock index, was declining from its peak this might be because of the global stock market crash. The graph also shows that Egypt stock

index declined sharply in the year 2022, this might be because of the Ukraine-Russia war of 2022, and monetary policy uncertainty showed to be increasing during this period. Monetary policy uncertainty slightly mirrors Egypt stock index during the scope of study.

Figure 3.1: Stock Price of the Seven Biggest Stock Exchange Market in Africa (August 2017 to July 2022.



The graph shows that the South African index was at its peak, at the end, month of 2021. Oil prices showed to be below monetary policy uncertainty and the South African index all through the period. South African Index and monetary policy uncertainty mirrored each other from 2020 to 2022. Stock index and oil price converged at the end month of 2019, and monetary policy uncertainty and oil price converged in the mid-month of 20 From. From 2017 to 2018, the South African Index and monetary policy uncertainty mirrored themselves and converged in the beginning month of 2018.

4. Theoretical Framework and Methodology

4.1 Theoretical Framework

This paper is anchored on the Arbitrage Price Theory (APT). The theory was developed by Stephen Ross in 1976. The APT holds that several variables or theoretical market indices affect the anticipated return of a financial asset in a linear function. The sensitivity changes of any of these factors are represented by a factor-specific beta coefficient. The core of the theory is to calculate a rate of return that will be applied to precisely price assets. As a result, the asset price must match the end-of-period predicted price discounted at the rate suggested by the model. An arbitrager's task is to bring the price back into line when there is a price differential. This paper considered three important macroeconomic variables to explain the variations in stock returns in seven selected stock markets in Africa. They include monetary policy uncertainty, crude oil price, and real effective exchange rate.

4.2 Methodology

4.2.1 Model Specification

As indicated by the APT models, we specify equation (1) that expresses stock returns as a function of uncertainty monetary policy, crude oil, and the real effective exchange rate.

$$\text{StockR} = f(\text{MPU}, \text{OILP}, \text{REER}, \text{VIXIND}, \text{KAOPEN}, \text{CORRUPTION}) \quad (1)$$

Expressing equation (1) in econometric form, we obtain equation (2). Where *StockR* represents stock returns which were obtained from Bloomberg and the returns were generated, *MPU* is monetary policy uncertainty was also obtained from the US Economic policy uncertainty index, OILP is the price of crude oil (Brent crude oil), which was obtained from Bloomberg REER indicates real effective exchange rate also gotten from Bloomberg, VIXIND stands for global market volatility and KAOPEN (otherwise known as Chinn-Ito index) is an index measuring a country's degree of capital account openness, all gotten from Bloomberg. The error term in the model is represented by ε_t.

$$\text{StockR}_t = \varphi_0 + \varphi_1 \text{MPU}_t + \varphi_2 \text{OILP}_t + \varphi_3 \text{REER}_t + \varphi_4 \text{VIXIND}_t + \varphi_5 \text{KAOPEN}_t + \text{CORR}_t + \varepsilon_t \quad (2)$$

Based on apriori, mpu is meant to have a negative relationship with stockr, oilp is also meant to have a negative relationship with stockr, reer is meant to have either a positive or negative relationship with stockr, Vixind also meant to have a negative relationship with stockr. Kaopen is meant to have a positive relationship with stockr. The data for this study ranged

from august 2017 to July 2022, due to the availability of data and this span includes critical shifts in monetary policy, such as the tightening of policy by major central banks like the U.S. Federal Reserve after years of quantitative easing, which influenced global markets. Additionally, it encompasses the economic disruptions caused by the COVID-19 pandemic, a time when central banks worldwide implemented unprecedented measures, creating heightened uncertainty. This period also covers the volatility following the pandemic, including inflationary pressures and debates around monetary policy normalization. The inclusion of both pre-pandemic and post-pandemic phases provides a comprehensive view of how African stock markets responded to varying levels of global monetary policy uncertainty under different economic conditions.

4.2.3 The Quantile Regression Model

We adopted the quantile regression model, developed by Koenker and Bassett, (1978) to estimate the effects of monetary policy uncertainty on stock returns in selected African countries. Quantile regression is the best method for this analysis because it captures the varying impact of monetary policy uncertainty on stock returns across different market conditions. Unlike OLS, which estimates only the average effect, quantile regression accounts for heteroskedasticity, asymmetric shocks, and extreme market movements. This makes it ideal for financial data, ensuring robust estimates even in the presence of non-normality and outliers, and providing deeper insights into how uncertainty affects stock returns at different quantiles.

This technique allows the effects to be considered in different quantiles in the distribution of the dependent variables. In this regard, a clear picture of the relationships between the dependent and the independent variables is made obvious. This method allows a possible comparison across the spectrum of the model (Peng et al. 2019). Quantile regression allows the determination of the predictive variables on categories of quantiles of the response distribution. More explicitly, it enables a clearer explanation of the relationship between stock returns and monetary policy uncertainty. In the quantile regression model, the model is estimated by minimizing the weighted sum of absolute residuals. According to Hao and Naiman (2007), quantile regression is a logical progression from the linear regression model and is especially helpful when the researcher is interested in fully comprehending how the predictor variables affect the answer distribution.

5.0 Empirical Analysis

5.1 Preliminary Results

Table 5.1 below shows the descriptive statistics of stock prices, the mean value of the South Africa South Index was the highest with a value of 53484.6, followed by the Nigeria stock index with a value of 35020.9, and the lowest mean value was the oil price which has a mean value of 65.2. South Africa's Stock index had the highest maximum value of 68229.8, followed by Nigeria's stock index which had a maximum value of 52903.2, and the lowest maximum value was oil price with a value of 117.2. South Africa also showed to have the highest median value, which is 51237.0, also followed by the Nigerian stock index with a value of 35766.2. Oil price also had the lowest value of median which is 64.7.

The probability of the jarque berra shows that the BRVM stock index, Egypt stock index, Kenya stock index, Morocco stock index, Nigeria stock index and oil price are normally distributed because their probability value is greater than 0.05, while the Mauritius stock index, south Africa stock index and Monetary Policy Uncertainty are not normally distributed because their probability value is less than 0.05. The value of the skewness shows that

BRVM stock index, Egypt stock index, Kenya stock index, Nigeria stock index, South Africa stock index, Monetary policy uncertainty and oil price are skewed to the right because they show to have a positive value while Mauritius stock index and Morocco stock index are skewed to the left because they show to have a negative skewness value. BRVM stock index, Egypt stock index, Kenya stock index, Mauritius stock index, Nigeria stock index and South Africa stock index all showed to be platykurtic when compared to a normal distribution that is they are short and flat-tailed. Monetary policy uncertainty and oil prices showed to be leptokurtic, that is, they showed to be slim with long tails when compared to a normal distribution.

Table 5.1: Descriptive Statistics

	BRVM STOCK INDEX	EGYPT STOCK INDEX	KENYA STOCK INDEX	MAURITIUS STOCK INDEX	MOROCCO STOCK INDEX	NIGERIA STOCK INDEX	SOUTH AFRICA STOCK INDEX	MPU	OILP
Mean	176.6	12786.1	2498.1	2026.0	24352.4	35020.9	53484.6	187.8	65.2
Median	168.6	12966.4	2416.4	2152.4	24178.3	35766.2	51237.0	166.5	64.7
Maximum	247.8	17842.4	3244.6	2292.4	27742.7	52903.2	68229.8	491.0	117.2
Minimum	123.8	9446.3	1983.8	1479.7	19186.2	21971.5	41158.3	63.6	18.3
Std. Dev.	37.1	2130.1	314.5	260.4	1988.6	7429.7	6239.6	85.4	18.12
Skewness	0.34	0.30	0.60	-0.89	-0.54	0.28	0.78	1.32	0.31
Kurtosis	1.74	2.07	2.52	2.15	2.96	2.42	2.78	4.95	4.34
Jarque-Bera	4.93	2.96	4.06	9.51	2.89	1.59	5.99	26.10	5.31
Probability	0.08	0.22	0.13	0.01	0.23	0.47	0.04	0.01	0.07
Observations	58	58	58	58	58	58	58	58	58

The standard deviation in the descriptive statistics shows that the Nigerian stock index had a greater deviation from its mean because it has a value of 7429.7 which was the highest standard deviation followed by the South African Stock Index, and the least is oil price which has a value of 18.3. The unit root test in table 5.2, shows that at level, Brvm, Egypt, Kenya, Mauritius, Morocco, Nigeria, South Africa, Monetary Policy uncertainty and Oil price all showed not to be stationary because all the probability values were greater than 0.05. While at first difference Brvm, Egypt, Kenya, Mauritius, Morocco, Nigeria, and South Africa, Monetary Policy uncertainty and oil price were all stationary at first difference because their probability value was all lower than 0.05. Though for our analysis we logged the variables for data transformation to normalize our data this is because the skewness is not normally distributed and the kurtosis is not approximately 3.

Table 5.2 Unit Root Test Results Table (ADF)

Null Hypothesis: the variable has a unit root										
	At Level									
		BRVM	EGYPT	KENYA	MAURITIUS	MOROCCO	NIGERIA	SOUTH AFRICA	MPU	OILP
With Constant	t-Statistic	-1.4285	-0.9211	-2.1246	-1.6406	-2.4910	-0.7876	-1.4820	-3.5674	-0.9873
	Prob.	***0.5622***	***0.7746***	***0.2360***	***0.4557***	***0.1230***	***0.8150***	***0.5356***	***0.0094***	***0.7523***
	At First Difference									
		d(BRVM)	d(EGYPT)	d(KENYA)	d(MAURITIUS)	d(MOROCCO)	d(NIGERIA)	d(SOUTH_AFRICA)	d(MPU)	d(OILP)
With Constant	t-Statistic	-4.0489	-6.1703	-5.5377	-5.0845	-5.5130	-5.0261	-5.6533	-9.3691	-5.8903
	Prob.	***0.0024***	***0.0000***	***0.0000***	***0.0001***	***0.0000***	***0.0001***	***0.0000***	***0.0000***	***0.0000***
		***	***	***	***	***	***	***	***	***

5.2 Effects of Monetary Policy Uncertainty on Stock Returns

The paper sets out to analyse the effects of monetary policy uncertainty on stock returns of selected African stock markets and accounting for some selected control variables. The results of the quantile regression estimations for the seven selected African countries are depicted in Table 5.3 to Table 5.9. The estimated coefficient of the explanatory variable was based on the 0.25 and 0.90 range for the seven countries. We begin with the variable of interest, the monetary policy uncertainty impacted stock returns differently across the selected countries. The effect of monetary policy uncertainty on the stock returns of BRVM is insignificant in all quantiles. Oil price produced negative significant effects on the higher quantiles of the stock returns of BRVM. The negative significant effects of oil prices are applied for all quantiles, but it is higher at 0.65, 0.75 and 0.99 docile, with values such as -0.719, -0.666, and -0.830 respectively. The global market's volatility has negative significant effects on the stock returns of BRVM from quantile 35 to 90.

The results indicate that no evidence was found to suggest that monetary policy uncertainty and exchange rate have a significant impact on BRVM stock returns. Expressed differently, the sub-regional stock market is less susceptible to monetary policy uncertainty. The effect of monetary policy uncertainty on the stock returns in South Africa is positively significant in the lowest quantiles up to 0.55. The relative importance of monetary policy uncertainty to South Africa's stock returns is underscored by the result. The positive impact suggests that it can lead to higher risk premiums in the stock market. Expressed differently, increasing uncertainty investors may demand higher expected returns in the stock market in South Africa.

Table 5.3: Results of Quantile Regression in the Different Decile for BRVM

Variables	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Dependent Variable: Instock_price							
Lnmpu	0.250	-0.014	0.340	-0.051	0.203	0.140	0.031
	(0.382)	(0.407)	(0.381)	(0.450)	(0.340)	(0.360)	(0.501)
Lnoilp	-0.383**	0.103**	-0.508**	-0.347**	-0.719**	-0.666**	-0.830**
	(0.123)	(0.063)	(0.222)	(0.134)	(0.354)	(0.288)	(0.410)
Lnexch	-0.001	0.251	0.000	0.042	0.052	-0.120	-0.181
	(0.338)	(0.360)	(0.337)	(0.398)	(0.301)	(0.319)	(0.444)
Vixind	-0.004	-0.003**	0.007**	0.005**	0.005**	-0.003***	-0.006***
	(0.006)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Cons.	0.221	-0.800	0.260	0.798	1.120	1.704	2.563
	(1.312)	(1.397)	(1.310)	(1.546)	(1.168)	(1.238)	(1.723)
Obs.	60	60	60	60	60	60	60

Table 5.4: Results of Quantile Regression in the Different Decile for South Africa

Variables	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Dependent Variable: Instock_price							
Lnmpu	0.117**	0.099**	0.185**	0.299**	-0.006	0.478	0.001
	(0.091)	(0.003)	(0.097)	(0.037)	(0.374)	(0.358)	(0.250)
Lnoilp	0.169	-0.041	-0.497	-0.400	-0.032	-0.633	0.333
	(0.647)	(0.673)	(0.884)	(0.750)	(0.831)	(0.796)	(0.555)
Lnexch	-0.774**	-0.707**	-0.895*	-0.770**	-1.198***	-1.316***	-0.911***
	(0.329)	(0.343)	(0.450)	(0.382)	(0.423)	(0.405)	(0.283)
Vixind	-0.020***	-0.021***	-0.022***	-0.024***	-0.011	-0.010	-0.008*
	(0.005)	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.005)
Kaopen	-0.095	-0.318	-0.384	-0.349	-0.196	-0.089	-0.030
	(0.305)	(0.317)	(0.417)	(0.354)	(0.392)	(0.375)	(0.262)
Corruption	0.002	0.001	0.002	0.001	0.003	0.003	0.003
	(0.003)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)
Constant	0.813	0.892	2.083	1.512	2.158	2.963*	1.209
	(1.203)	(1.252)	(1.643)	(1.395)	(1.545)	(1.480)	(1.033)
Observations	60	60	60	60	60	60	60

Exchange rate and global market volatility have negative significant effects on stock returns in South Africa. It implies that exchange rate depreciation has negatively impacted stock returns in South Africa. Also, the global market volatility impacted negatively on stock returns in South Africa. The degree of capital account openness in South Africa has an insignificant impact on stock returns. We turn to the Egypt stock market, considering the effect of monetary policy uncertainty. The result contained in Table 5.5, showed that the impact of monetary policy uncertainty on stock returns in Egypt is statistically insignificant up to 0.55 quantile, but became significant between quantile 0.65 and 0.90.

This equally suggests that monetary policy uncertainty does not play a significant role in Egypt's stock market until a higher quantile. As in the case of South Africa, monetary policy uncertainty positively impacted stock return significantly. The result equally indicates that from 0.45 quartile, the oil price has a significant negative effect on Egyptian stock returns. Similarly, the exchange rate has negative significant effects on stock returns indicating that devaluation of the exchange rate enhances stock returns in Egypt. Global market volatility does not have a significant effect on Egyptian stock returns until 0.75 quantile. Incidentally, the impact is positive. We obtained a negative significant impact of monetary policy uncertainty on stock return in Ghana. The impact of monetary policy uncertainty on stock return was, however, limited to 0.45 quantile. Indicating that the impact of monetary policy uncertainty on stock return is insignificant at higher quantile. While the exchange rate has a negative significant impact on stock returns the impact of global market volatility is positive and significant. However, the two variables were only significant up to 0.45 quantile. Corruption is found to be insignificant in stock returns.

Table 5.5: Results of Quantile Regression in the Different Decile for Egypt

Variables	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Dependent Variable: Instock_price							
Lnmp	0.313	0.261	0.465	0.428	0.572***	0.405**	0.673**
	(1.213)	(0.627)	(0.464)	(0.382)	(0.195)	(0.173)	(0.228)
Lnoilp	-1.716	-1.093	-1.394*	-1.297**	-1.305**	-1.113*	-1.892***
	(1.969)	(1.017)	(0.753)	(0.619)	(0.642)	(0.605)	(0.694)
Lnexch	-1.933	-1.665**	-1.083*	-0.837*	-0.672**	-0.319	-0.363
	(1.426)	(0.736)	(0.545)	(0.448)	(0.265)	(0.438)	(0.503)
Vixind	0.001	-0.008	0.006	0.006	0.005	0.009***	0.016**
	(0.022)	(0.011)	(0.008)	(0.007)	(0.007)	(0.003)	(0.008)
Corruption	0.001	0.002	-0.002	0.002	0.002	0.000	0.001
	(0.012)	(0.006)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Constant	6.560	4.966**	4.031**	3.501**	2.966*	2.241	3.557**
	(4.594)	(2.373)	(1.757)	(1.445)	(1.498)	(1.411)	(1.619)
Observations	60	60	60	60	60	60	60

Table 5.6 Results of Quantile Regression in the Different Decile for Nigeria

Variables	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Dependent Variable: Instock_price							
Lnmpu	-0.876*	-1.028**	-0.932**	-0.534**	-0.515**	-0.670**	-0.652**
	(0.440)	(0.453)	(0.415)	(0.252)	(0.287)	(0.251)	(0.240)
Lnoilp	0.304***	0.891***	0.733***	0.698	0.722	0.555	-0.065
	(0.031)	(0.160)	(0.180)	(0.958)	(1.033)	(0.743)	(0.720)
Lnexch	2.835	3.063	2.549	4.880**	4.763**	2.725**	2.720**
	(2.513)	(2.590)	(2.375)	(2.385)	(2.286)	(1.004)	(0.942)

Vixind	-0.009	-0.007	-0.013*	0.002	-0.016**	0.008**	0.016***
	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)	(0.003)	(0.006)
Kaopen	-0.288	-0.053	-0.191	0.011	-0.057	-0.107	-0.210
	(0.349)	(0.359)	(0.329)	(0.358)	(0.386)	(0.278)	(0.269)
Corruption	-0.024*	-0.015	-0.021	-0.024	-0.025***	-0.023**	-0.024**
	(0.014)	(0.014)	(0.013)	(0.014)	(0.006)	(0.011)	(0.011)
Constant	-6.236	-7.538	-6.074	-12.639*	-12.425*	-6.726	-5.482
	(6.237)	(6.427)	(5.893)	(6.414)	(6.914)	(4.974)	(4.820)
Observations	60	60	60	60	60	60	60

The impact of monetary policy uncertainty on Nigeria's stock return is negative and statistically significant throughout the quantiles. Indicating that monetary policy uncertainty is very important for the stock performance in the country. The oil price has a positive significant effect on stock returns below 0.45 quantile. Conversely, exchange rate appreciation is found to impact positively on stock returns in Nigeria, but at upper quantile. Global market volatility and corruption were found to have a negative but significant effect on stock returns but at a higher quantile. Ghana presented interesting results, all the four factors that have significant effects on stock returns were obtained at lower quantile. Precisely, monetary policy uncertainty produced a negative but significant effect on stock returns. Oil price and exchange rate devaluations impacted significantly on stock returns in Ghana. Why corruption produced insignificant effects on stock returns, the impact of global market volatility is positively significant.

Table 5.7: Results of Quantile Regression in the Different Decile for Kenya

Variables	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Dependent Variable: Instock_price							
Lnmpu	0.187***	-0.039***	-0.154**	-0.063**	-0.195	-0.031	0.439
	(0.011)	(0.005)	(0.075)	(0.022)	(0.336)	(0.569)	(0.596)
Lnoilp	-0.396	0.098	0.442	0.134	0.420	0.427	-1.565
	(0.897)	(0.775)	(0.601)	(0.703)	(0.734)	(1.242)	(1.300)
Lnexch	-0.726	-1.181***	-1.369***	-1.093***	-1.026**	-0.922	-1.200
	(0.489)	(0.423)	(0.328)	(0.383)	(0.401)	(0.678)	(0.709)
Vixind	-0.020***	-0.019***	-0.021***	-0.011*	-0.013**	-0.016	-0.024**
	(0.008)	(0.006)	(0.005)	(0.006)	(0.006)	(0.010)	(0.011)
Kaopen	0.378***	0.201**	0.003	-0.044	-0.184	-0.162	0.295
	(0.126)	(0.068)	(0.286)	(0.334)	(0.349)	(0.591)	(0.618)
Corruption	0.000	0.005	0.007	0.007***	0.008***	0.007**	0.005**
	(0.009)	(0.008)	(0.006)	(0.002)	(0.002)	(0.003)	(0.002)
Constant	1.487	1.910	2.090*	2.067	1.856	1.394	5.178**
	(1.689)	(1.460)	(1.132)	(1.324)	(1.383)	(2.340)	(2.449)
Observations	60	60	60	60	60	60	60

Table 5.8 Results of Quantile Regression in the Different Decile for Ghana

VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Dependent Variable: Instock_price							
Lnmpu	-0.429*	-0.378*	-0.413**	-0.421	-0.358	-0.393	-0.555
	(0.249)	(0.203)	(0.186)	(0.252)	(0.290)	(0.389)	(0.346)
Lnoilp	-0.159***	-0.146***	-0.235***	-0.277**	-0.460	-0.606	-0.148
	(0.043)	(0.029)	(0.031)	(0.108)	(0.470)	(0.630)	(0.561)
Lnexch	-0.020***	-0.020**	-0.016**	-0.016**	-0.007	0.015	0.031
	(0.003)	(0.007)	(0.004)	(0.003)	(0.038)	(0.051)	(0.045)
Vixind	0.010**	0.023**	0.002**	0.005**	0.004	0.004	-0.003
	(0.004)	(0.009)	(0.001)	(0.002)	(0.005)	(0.007)	(0.006)
Corruption	0.001	0.001	0.001	0.001	0.001	0.003	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Constant	0.570	1.216**	1.507***	1.584**	1.881**	2.198**	1.757**
	(0.628)	(0.513)	(0.470)	(0.636)	(0.733)	(0.983)	(0.875)
Observations	60	60	60	60	60	60	60

Table 5.9: Results of Quantile Regression in the Different Decile for Mauritius

Variables	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Dependent Variable: Instock_price							
Lnmpu	-0.113	-0.017	0.012	0.024	-0.011**	-0.219**	-0.417**
	(0.569)	(0.266)	(0.238)	(0.166)	(0.001)	(0.074)	(0.133)
Lnoilp	0.219	0.029	-0.113	-0.091	-0.032	0.282**	0.725**
	(0.920)	(0.429)	(0.385)	(0.268)	(0.260)	(0.142)	(0.277)
Lnexch	-0.125	-0.297	-0.276	-0.229	-0.260	-0.280	-0.220
	(0.639)	(0.298)	(0.268)	(0.186)	(0.181)	(0.307)	(0.262)
Vixind	-0.018*	-0.008	-0.007	-0.006**	-0.006**	-0.004**	-0.006**
	(0.010)	(0.005)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)
Corruption	0.002	0.002	0.002**	0.002***	0.002***	0.002**	0.002**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.190	0.611	0.842	0.677	0.674	0.456	-0.170
	(2.097)	(0.978)	(0.877)	(0.610)	(0.592)	(1.008)	(0.859)
Observations	60	60	60	60	60	60	60

Contrary to the result obtained for Ghana, results for factors that impact stock returns in Mauritius were obtained at a higher quantile. While monetary policy uncertainty, oil price, and global market volatility significantly impacted negatively on stock returns at higher quantile, the effects of the exchange rate are insignificant. Against expectation, corruption impacted positively and significantly on stock returns.

5.3 Additional Results

The findings of the interaction of monetary policy uncertainty and other control variables on stock returns were subjected to a robustness check. In achieving this we replaced the monetary policy uncertainty with debt-to-GDP ratio and interest rate variability as factors impacting stock returns. The choice of debt-to-GDP ratio is anchored on the fiscal health concern of the hosting nation of the stock. Potential investors are often integrated into the ability of the government to meet financial obligations. Expressed differently, an increase in the country's debt could indicate higher risk assessment that can lower stock valuation and returns. The robustness check aims to verify if the new model maintains or improves its explanatory power. The estimated results from the model that included the debt-to-GDP contained in the Tables in Appendix A, retains similar explanatory power in most of some countries, except for Mauritius and Egypt. For the model that included interest rate variability as a replacement for monetary policy uncertainty, the results contained in the Tables in Appendix B, indicate lower explanatory power. The inclusion of interest rate variability lowers the explanatory powers of the variables included.

6.0 Concluding Remarks

This study examined the effects of monetary policy uncertainty on stock returns across seven leading African stock markets: South Africa, Egypt, Nigeria, Ghana, Kenya, Mauritius, and BRVM. Drawing on the Arbitrage Pricing Theory, the study employed quantile regression techniques to estimate stock returns as a function of monetary policy uncertainty, crude oil prices, exchange rates, and other relevant variables. Monthly data from August 2017 to August 2022 provided insights into the dynamics of both pre-pandemic and post-pandemic periods, enabling a detailed understanding of stock market responses under varying levels of global monetary uncertainty.

The findings reveal distinct patterns in how monetary policy uncertainty impacts stock markets in different countries. In South Africa, monetary policy uncertainty was positively correlated with stock returns at lower quantiles, suggesting that during periods of heightened uncertainty, South Africa's stable political environment and well-developed financial markets attract investment, driving up stock returns. Similarly, Egypt exhibited a delayed but statistically significant positive relationship between monetary policy uncertainty and stock returns at higher quantiles. This positions Egypt, alongside South Africa, as a potential safe haven within the African context, attracting capital during times of global uncertainty.

Conversely, monetary policy uncertainty negatively impacted stock returns in Nigeria, Ghana, Kenya, and Mauritius, highlighting these markets' vulnerability to unpredictable monetary environments. Oil prices also had varied effects, negatively influencing stock returns in most markets, with the exception of Nigeria and Mauritius. In Nigeria, the oil sector's critical role means that rising oil prices boost government revenues and stimulate economic activity, thereby improving stock market performance. Mauritius, on the other hand, may benefit indirectly from oil price dynamics through trade and investment linkages. To strengthen these positive effects, Nigeria should diversify its economy and reduce its dependency on oil, while Mauritius could further integrate into global trade networks.

The study also found that exchange rate appreciation positively influenced stock returns in Nigeria, reflecting the role of a stable and strengthening currency in attracting foreign investment. An appreciating Naira can make Nigerian assets more attractive to international investors, enhancing stock market participation. However, corruption's influence on stock returns was found to be negligible in most cases, suggesting that while it remains a concern for broader economic governance, it may not directly drive stock market performance in the countries studied.

In summary, the results underscore the importance of stable macroeconomic policies, financial market resilience, and regulatory transparency in enhancing investor confidence across African stock markets. South Africa and Egypt should continue to sustain their safe-haven status by maintaining strong regulatory frameworks and resilient financial systems. Nigeria should capitalize on favorable oil prices and exchange rate dynamics while addressing structural challenges and diversifying its economy. Tackling corruption and improving governance could further boost investor confidence across the continent, fostering robust and sustainable stock market performance despite global monetary uncertainties.

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Appendix A: Results of Quantile Regression when Debt ss Share of GDP replaces Monetary Policy Uncertainty

Table A.1: Results of Quantile Regression in the Different Decile for BRVM

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Debt	0.844***	0.898***	0.919***	0.807***	0.620**	0.003
	(0.221)	(0.155)	(0.182)	(0.191)	(0.299)	(0.432)
Lnoilp	-0.453	-0.718**	-0.822**	-0.873**	-0.924*	-0.834
	(0.396)	(0.279)	(0.327)	(0.343)	(0.537)	(0.775)
Lnexch	-0.453	-0.502**	-0.458*	-0.477*	-0.352	-0.130
	(0.310)	(0.218)	(0.255)	(0.268)	(0.420)	(0.606)
Vixind	-0.014**	-0.014***	-0.009*	-0.009*	-0.007	-0.004
	(0.006)	(0.004)	(0.005)	(0.005)	(0.008)	(0.012)
Constant	0.900	1.588**	1.654*	2.022**	2.170	2.527
	(1.125)	(0.792)	(0.928)	(0.975)	(1.525)	(2.201)
Observations	60	60	60	60	60	60

Table A.2: Results of Quantile Regression in the Different Decile for Mauritius

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Debt	0.009	0.008	-0.003	0.000	0.001	-0.001	-0.011
	(0.017)	(0.012)	(0.007)	(0.005)	(0.006)	(0.007)	(0.011)
Lnoilp	0.016	0.010	-0.094	-0.055	-0.056	0.157	-0.016
	(0.615)	(0.430)	(0.252)	(0.168)	(0.204)	(0.253)	(0.379)
Lnexch	-0.070	-0.092	-0.290	-0.199	-0.167	-0.368	-0.684
	(0.756)	(0.528)	(0.310)	(0.206)	(0.250)	(0.311)	(0.466)
Vixind	-0.016*	-0.006	-0.007*	-0.005*	-0.005	-0.006	-0.009
	(0.010)	(0.007)	(0.004)	(0.003)	(0.003)	(0.004)	(0.006)
Corruption	0.002	0.001	0.002**	0.002***	0.002***	0.002**	0.003**
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.081	0.045	0.918	0.566	0.504	0.474	1.764
	(2.541)	(1.773)	(1.040)	(0.692)	(0.840)	(1.046)	(1.564)
Observations	60	60	60	60	60	60	60

Table A.3: Results of Quantile Regression in the Different Decile for South Africa

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Debt	0.024	0.011	0.003	0.034***	0.014**	-0.053**	0.045**
	(0.032)	(0.037)	(0.048)	(0.008)	(0.007)	(0.019)	(0.019)
Lnoilp	-0.049	0.113	0.014	0.222	0.089	-0.397	0.284
	(0.452)	(0.525)	(0.686)	(0.680)	(0.666)	(0.692)	(0.273)
Lnexch	-0.768***	-0.631*	-0.834*	-1.190***	-1.580***	-1.102**	-1.049***
	(0.276)	(0.321)	(0.419)	(0.415)	(0.407)	(0.423)	(0.167)
Vixind	-0.020***	-0.019***	-0.023***	-0.021***	-0.017**	-0.004	-0.014***
	(0.005)	(0.006)	(0.008)	(0.008)	(0.007)	(0.008)	(0.003)
Kaopen	-0.235	-0.172	-0.232	-0.006	-0.111	-0.348	0.152
	(0.280)	(0.325)	(0.425)	(0.421)	(0.413)	(0.428)	(0.169)
Corruption	0.001	0.002	0.002	0.005	0.005	0.011**	0.006***
	(0.003)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.002)
Constant	1.185	0.766	1.437	1.891	2.692*	2.607*	1.673***
	(1.005)	(1.166)	(1.525)	(1.511)	(1.482)	(1.538)	(0.606)
Observations	60	60	60	60	60	60	60

Table A.4: Results of Quantile Regression in the Different Decile for Egypt

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Debt	-0.024	-0.140	0.049	0.104	0.103	0.153	0.227
	(0.519)	(0.268)	(0.221)	(0.164)	(0.200)	(0.171)	(0.194)
Lnoilp	-1.589	-0.833	-0.804	-1.125**	-1.017*	-1.050**	-0.627
	(1.341)	(0.693)	(0.570)	(0.424)	(0.517)	(0.443)	(0.500)
Lnexch	-2.044	-1.444*	-1.147*	-0.655	-0.440	-0.334	0.665
	(1.434)	(0.741)	(0.610)	(0.453)	(0.553)	(0.474)	(0.535)
Vixind	0.005	-0.001	-0.004	0.009	0.009	0.009	0.013*
	(0.021)	(0.011)	(0.009)	(0.007)	(0.008)	(0.007)	(0.008)
Corruption	0.002	0.006	-0.000	-0.003	-0.005	-0.007	-0.015*
	(0.022)	(0.011)	(0.009)	(0.007)	(0.008)	(0.007)	(0.008)
Constant	7.141	4.883*	3.806*	3.369*	2.774	2.539	-0.345
	(5.331)	(2.753)	(2.267)	(1.685)	(2.055)	(1.760)	(1.989)
Observations	60	60	60	60	60	60	60

Table A.5: Results of Quantile Regression in the Different Decile for Kenya

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Debt	0.076	0.083	0.089	0.074	0.147**	0.114	0.133
	(0.083)	(0.064)	(0.062)	(0.050)	(0.063)	(0.111)	(0.116)
Lnoilp	-0.704	-0.245	-0.217	-0.231	-0.074	0.261	-1.048
	(0.779)	(0.596)	(0.580)	(0.465)	(0.593)	(1.040)	(1.087)
Lnexch	-1.061*	-1.427***	-1.473***	-1.346***	-1.570***	-1.299	-1.953**
	(0.588)	(0.450)	(0.438)	(0.351)	(0.448)	(0.786)	(0.822)
Vixind	-0.020**	-0.020***	-0.013**	-0.009**	-0.015**	-0.015	-0.021*
	(0.008)	(0.006)	(0.006)	(0.005)	(0.006)	(0.010)	(0.011)
Kaopen	0.389	0.189	-0.093	-0.214	-0.262	-0.216	0.060
	(0.441)	(0.338)	(0.329)	(0.263)	(0.336)	(0.590)	(0.616)
Corruption	0.002	0.007	0.013	0.014**	0.017**	0.012	0.016
	(0.011)	(0.008)	(0.008)	(0.006)	(0.008)	(0.014)	(0.015)
Constant	2.981	2.876*	3.188**	3.174***	3.189**	2.048	6.055**
	(1.954)	(1.496)	(1.456)	(1.166)	(1.488)	(2.611)	(2.729)
Observations	60	60	60	60	60	60	60

Table A.6: Results of Quantile Regression in the Different Decile for Ghana

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Debt	0.002	-0.004	-0.002	0.001	-0.002	-0.006	-0.002
	(0.010)	(0.007)	(0.007)	(0.010)	(0.011)	(0.014)	(0.015)
Lnoilp	-0.342	-0.475**	-0.622***	-0.902***	-0.768**	-0.753*	-1.182**
	(0.334)	(0.235)	(0.228)	(0.335)	(0.362)	(0.440)	(0.465)
Lnexch	-0.010	-0.002	-0.204***	-0.008	0.201***	0.119***	0.140***
	(0.037)	(0.026)	(0.025)	(0.037)	(0.040)	(0.049)	(0.052)
Vixind	-0.000	-0.004	-0.000	0.004	0.022***	0.001	-0.200***
	(0.006)	(0.004)	(0.004)	(0.006)	(0.006)	(0.007)	(0.008)
corruption	0.002	0.002	0.001	0.001	0.001	0.002	0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Constant	0.727	1.164**	1.454***	2.069***	1.811**	1.773*	2.783***
	(0.711)	(0.502)	(0.486)	(0.714)	(0.772)	(0.937)	(0.992)
Observations	60	60	60	60	60	60	60

Table A.7: Results of Quantile Regression in the Different Decile for Nigeria

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Debt	-0.153	-0.158	-0.300	-0.341	-0.400***	-0.388***	-0.336***
	(0.328)	(0.363)	(0.300)	(0.300)	(0.105)	(0.142)	(0.136)
Lnoilp	-0.139	-0.888	-0.193	-0.324	-0.542**	-0.053**	-0.887***
	(0.768)	(0.851)	(0.702)	(0.703)	(0.214)	(0.022)	(0.188)
Lnexch	3.480	2.783	2.123	3.783	3.964	3.069	0.691
	(2.693)	(2.982)	(2.462)	(2.465)	(2.503)	(2.809)	(2.761)

Vixind	-0.011	-0.025***	0.023**	0.021**	0.023**	0.026***	0.025***
	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Kaopen	0.022	-0.412	-0.217	-0.344	-0.340	-0.222	-0.161
	(0.377)	(0.417)	(0.344)	(0.345)	(0.350)	(0.393)	(0.386)
corruption	-0.011	-0.025	-0.014	-0.026*	-0.029**	-0.120***	-0.104***
	(0.015)	(0.016)	(0.013)	(0.014)	(0.014)	(0.015)	(0.015)
Constant	-8.106	-5.005	-4.768	-8.645	-8.450	-7.478	-3.320
	(6.940)	(7.686)	(6.344)	(6.354)	(6.450)	(7.240)	(7.115)
Observations	60	60	60	60	60	60	60

Appendix B: Results of Quantile Regression when Interest Rate Variability replaces Monetary Policy Uncertainty in the baseline model.

Table B.1: Results of Quantile Regression in the Different Decile for BRVM

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Intrbr	0.034	0.012	0.031	0.023	0.029	0.023	0.002
	(0.033)	(0.032)	(0.030)	(0.032)	(0.026)	(0.027)	(0.039)
lnoilp	0.005	-0.139	-0.509	-0.289	-0.374	-0.751*	-0.792
	(0.478)	(0.464)	(0.437)	(0.467)	(0.382)	(0.389)	(0.567)
lnexch	-0.110	0.198	-0.116	0.043	0.006	-0.177	-0.158
	(0.364)	(0.353)	(0.333)	(0.356)	(0.291)	(0.296)	(0.432)
vixind	-0.001	0.001	0.009	0.005	0.005	-0.001	-0.005
	(0.007)	(0.007)	(0.006)	(0.007)	(0.005)	(0.006)	(0.008)
Constant	0.030	-0.165	1.231	0.561	0.847	2.268*	2.486
	(1.391)	(1.350)	(1.272)	(1.359)	(1.111)	(1.132)	(1.650)
Observations	60	60	60	60	60	60	60

Table B.2: Results of Quantile Regression in the Different Decile for Mauritania

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
intrma	0.051	0.033	-0.017	-0.002	0.006	0.064	0.073
	(0.204)	(0.134)	(0.090)	(0.065)	(0.074)	(0.087)	(0.141)
lnoilp	0.015	-0.060	-0.091	-0.062	-0.044	0.112	0.273
	(0.555)	(0.366)	(0.245)	(0.178)	(0.202)	(0.238)	(0.385)
lnexch	-0.104	-0.349	-0.269	-0.211	-0.274	-0.364	-0.448
	(0.528)	(0.349)	(0.233)	(0.170)	(0.192)	(0.226)	(0.367)
vixind	-0.015*	-0.008	-0.007*	-0.005*	-0.006*	-0.005	-0.007
	(0.008)	(0.006)	(0.004)	(0.003)	(0.003)	(0.004)	(0.006)
corruption	0.002	0.001	0.002**	0.002***	0.002***	0.002**	0.004***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.327	0.884	0.812	0.618	0.702	0.532	0.364
	(1.718)	(1.134)	(0.758)	(0.552)	(0.624)	(0.736)	(1.193)
Observations	60	60	60	60	60	60	60

Table B.3: Results of Quantile Regression in the Different Decile for Ghana

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Intrgh	0.011	-0.010	-0.021	-0.014	-0.030	-0.050	-0.046
	(0.062)	(0.044)	(0.038)	(0.054)	(0.062)	(0.081)	(0.087)
Lnoilp	-0.369	-0.516*	-0.691***	-0.890***	-0.658*	-0.724	-1.156**
	(0.372)	(0.266)	(0.228)	(0.322)	(0.369)	(0.486)	(0.523)
Lnexch	-0.009	-0.006	-0.008	-0.008	0.001	0.035	0.035
	(0.040)	(0.029)	(0.025)	(0.035)	(0.040)	(0.052)	(0.056)
Vixind	-0.001	-0.001	0.001	0.003	0.001	-0.002	0.001
	(0.005)	(0.004)	(0.003)	(0.005)	(0.005)	(0.007)	(0.007)
Corruption	0.001	0.002	0.001	0.001	0.001	0.004*	0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Constant	0.817	1.185**	1.606***	2.068***	1.547*	1.633	2.708**
	(0.827)	(0.591)	(0.506)	(0.715)	(0.821)	(1.080)	(1.162)
Observations	60	60	60	60	60	60	60

Table B.4: Results of Quantile Regression in the Different Decile for Egypt

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Intreg	-0.131	-0.009	-0.102	-0.052	-0.039	-0.022	-0.028
	(0.252)	(0.123)	(0.101)	(0.083)	(0.086)	(0.068)	(0.105)
Lnoilp	-1.549	-0.718	-1.144**	-1.058**	-1.104**	-0.823**	-0.892
	(1.379)	(0.672)	(0.550)	(0.453)	(0.471)	(0.371)	(0.576)
Lnexch	-1.796	-1.402**	-1.165**	-0.825*	-0.687	-0.248	0.361
	(1.377)	(0.671)	(0.549)	(0.452)	(0.470)	(0.370)	(0.575)
Vixind	0.001	-0.004	0.005	0.009	0.010	0.010	0.018*
	(0.022)	(0.011)	(0.009)	(0.007)	(0.008)	(0.006)	(0.009)
Corruption	0.002	0.001	0.002	0.002	0.001	-0.001	-0.004
	(0.012)	(0.006)	(0.005)	(0.004)	(0.004)	(0.003)	(0.005)
Constant	6.617	4.128*	4.649**	3.826**	3.712**	2.320*	1.366
	(4.404)	(2.146)	(1.756)	(1.446)	(1.504)	(1.185)	(1.839)
Observations	60	60	60	60	60	60	60

Table B.5: Results of Quantile Regression in the Different Decile for Kenya

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Intrke	-0.050	-0.035	0.026	0.087	0.242	0.296	0.408
	(0.229)	(0.223)	(0.167)	(0.173)	(0.217)	(0.277)	(0.279)
Lnoilp	-0.068	0.048	0.186	-0.019	0.106	-0.033	0.747
	(0.692)	(0.676)	(0.507)	(0.523)	(0.655)	(0.837)	(0.844)
Lnexch	-0.835*	-1.006**	-1.313***	-1.137***	-1.061**	-1.055*	-0.759
	(0.480)	(0.469)	(0.351)	(0.363)	(0.454)	(0.580)	(0.585)
Vixind	-0.021***	-0.021***	-0.019***	-0.015***	-0.015**	-0.014	-0.007
	(0.007)	(0.007)	(0.005)	(0.006)	(0.007)	(0.009)	(0.009)
Kaopen	0.332	0.305	0.030	0.116	-0.180	-0.062	-0.501
	(0.420)	(0.411)	(0.308)	(0.318)	(0.398)	(0.508)	(0.513)
Corruption	0.001	0.001	0.006	0.004	0.008	0.005	0.010
	(0.009)	(0.009)	(0.007)	(0.007)	(0.009)	(0.011)	(0.011)
Constant	1.421	1.537	2.189*	2.216*	2.278	2.447	0.787
	(1.605)	(1.568)	(1.175)	(1.213)	(1.519)	(1.941)	(1.957)
Observations	60	60	60	60	60	60	60

Table B.6: Results of Quantile Regression in the Different Decile for Nigeria

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Intrni	0.002	-0.001	0.008	0.007	0.006	-0.005	-0.014
	(0.017)	(0.018)	(0.015)	(0.017)	(0.017)	(0.016)	(0.020)
Lnoilp	-0.099	-1.065	-0.374	-0.149	0.019	0.223	0.120
	(0.768)	(0.788)	(0.687)	(0.749)	(0.755)	(0.720)	(0.895)
Lnexch	4.328*	3.478	3.792*	5.259**	6.036**	5.010**	1.951
	(2.435)	(2.497)	(2.178)	(2.372)	(2.394)	(2.281)	(2.835)
Vixind	-0.010	-0.019**	-0.008	-0.001	-0.004	0.000	0.012
	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.009)
Kaopen	0.073	-0.431	-0.197	-0.065	-0.079	0.052	-0.001
	(0.359)	(0.368)	(0.321)	(0.350)	(0.353)	(0.336)	(0.418)
Corruption	-0.016	-0.029**	-0.023*	-0.027*	-0.031**	-0.020	-0.014
	(0.014)	(0.015)	(0.013)	(0.014)	(0.014)	(0.013)	(0.016)
Constant	-10.514*	-6.538	-8.775	-12.870**	-15.145**	-12.850**	-5.064
	(6.145)	(6.303)	(5.497)	(5.988)	(6.041)	(5.756)	(7.155)
Observations	60	60	60	60	60	60	60

Table B.7: Results of Quantile Regression in the Different Decile for South Africa

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Model 0.25	Model 0.35	Model 0.45	Model 0.55	Model 0.65	Model 0.75	Model 0.90
Intrsa	0.095	0.074	0.260	0.429	0.610*	0.282	0.195
	(0.206)	(0.269)	(0.310)	(0.320)	(0.329)	(0.288)	(0.176)
Lnoilp	0.054	0.108	0.483	0.218	0.130	0.024	0.249
	(0.435)	(0.570)	(0.655)	(0.676)	(0.696)	(0.609)	(0.373)
lnexch	-0.909***	-0.739*	-1.183**	-1.493***	-1.667***	-1.451***	-1.153***
	(0.332)	(0.435)	(0.500)	(0.516)	(0.531)	(0.465)	(0.285)
Vixind	-0.016***	-0.017**	-0.018**	-0.014*	-0.009	-0.009	-0.007
	(0.005)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.004)
kaopen	-0.145	-0.179	-0.008	-0.033	-0.066	-0.205	-0.015
	(0.259)	(0.339)	(0.390)	(0.402)	(0.414)	(0.363)	(0.222)
corruption	0.002	0.002	0.003	0.005	0.004	0.001	0.003
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.002)
Constant	1.421	0.980	1.259	2.346	2.778	2.551*	1.826**
	(1.048)	(1.372)	(1.578)	(1.628)	(1.675)	(1.467)	(0.899)
Observations	60	60	60	60	60	60	60