

# Money Supply(M2) and Core Inflation in Nigeria.

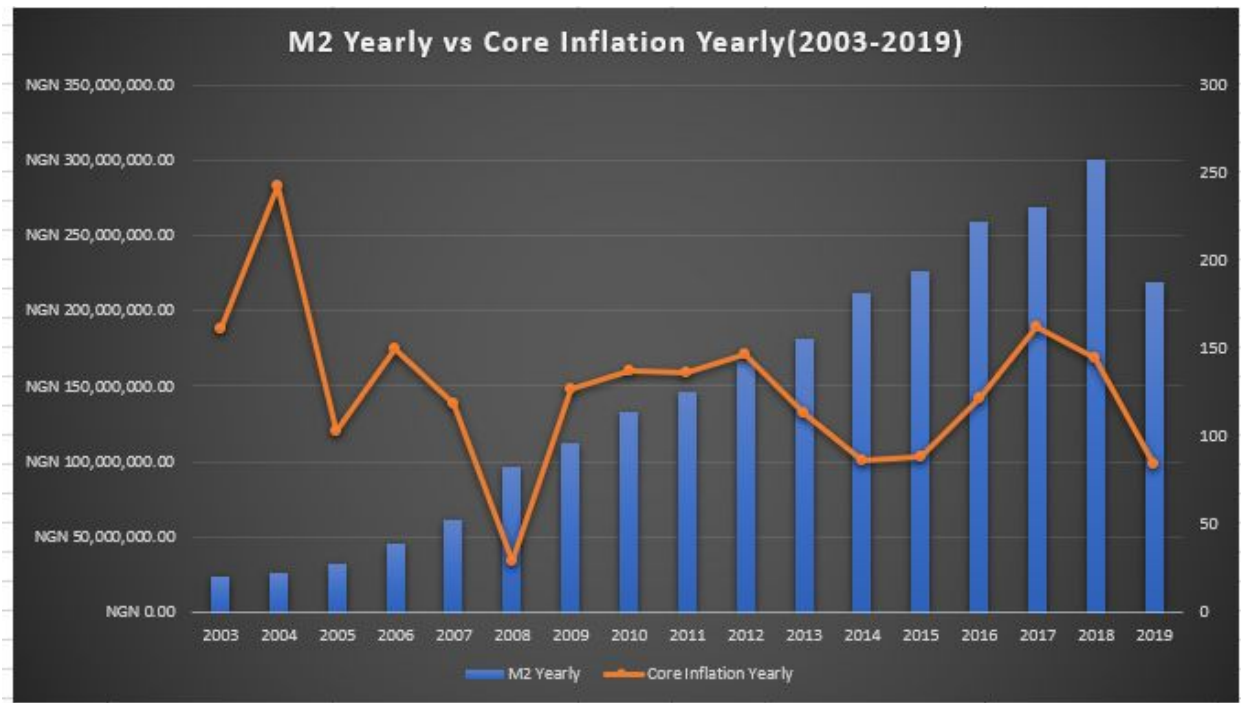
By

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## Introduction

The growth of the money supply as a leading indicator is an essential determining factor in the analysis of Nigeria's economy. Ideally, monetary policy involves the control of supply of money and interest rates by the Central Bank of Nigeria towards achieving macroeconomic objectives, which includes the control of inflation, consumption, price stability, and other key objectives as desired by the CBN.



## Money Supply

Money Supply is divided into M1, M2, and M3(which is considered the broadest), but the analysis to be done here will be restricted to M2, which includes narrow money plus savings and time deposits, as well as foreign-denominated deposits.

Money Supply as an endogenous driver has its relationship with inflation, in that the more money in supply, the higher the level of inflation in the prices of goods and services that money as a medium of exchange is used to acquire such resources in the economy and vice versa.

Notably, the Money Supply M2 can be increased and decreased by the Central Bank of Nigeria by increasing or decreasing banking reserves. The use of banking reserves is the classical approach to money printing, which allows banks to multiply their deposits and increase the amount of money which is the M2 in circulation in Nigeria at a supposed constant and predictable rate.

## Inflation and Core Inflation

Inflation, on the other hand, is simply the changes in the cost of goods and services. Core inflation, however, doesn't include the food and energy sector because their prices are too volatile, and they fluctuate widely.

With the foundation in place, without further ado, the money supply, and inflation datasheet will be examined explicitly towards concluding how we could project if there would likely be a decrease in money supply or an increase in the money supply.

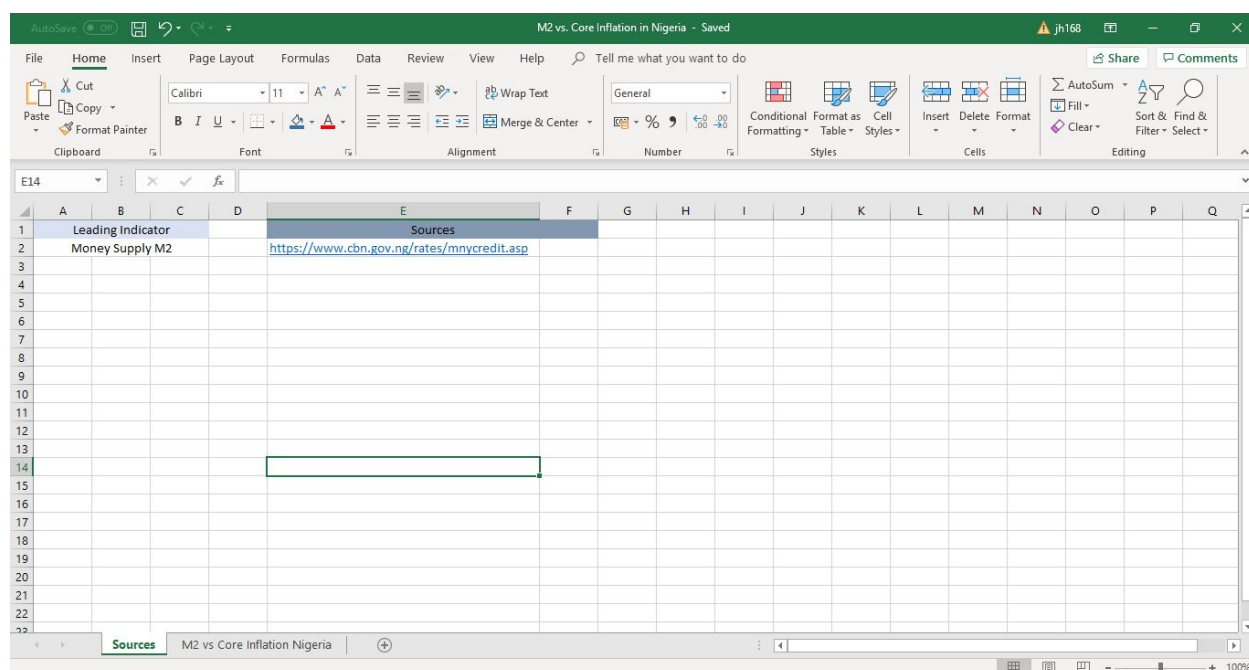
Core inflation is used in this analysis because it reflects the relationship between the price of goods and services and the level of consumer income. If prices for goods and services increase over time, but consumer income doesn't change, consumers will have less purchasing power. However, if consumer income rises, called wage growth, while the prices of goods and services remain unchanged, consumers will have more purchasing power. Also, as investment portfolios and home prices rise, asset inflation occurs, which can provide additional money for consumers to spend.

## The Money Supply Spreadsheet

The money supply spreadsheet involves two sheets on the sheets tabs, which are "Sources" and "M2 vs. Core Inflation in Nigeria".

### Sources Sheet

The sources sheet consists of the data source on the money supply and core inflation in Nigeria from the [CBN](#) data and statistics page.



## The M2 vs Core Inflation in Nigeria Tab

This sheet consists of data collected from the CBN website and data derived by the author, coupled with charts depicting the relationships between core inflation and money supply.

### Sample Size

The sample size for this observation ranges from 2003 to 2019, a period of 17 years.

## Original Data Tab

### Monetary Data

The monetary data tab consists of the money supply data collected from the CBN statistics website, which initially includes the Year, Month, and Money Supply M2 column. The derived year column is a combination of the year, month, and the first day of the month for observation and simplicity purposes, thus not ideally the date at which the data was collected.

### Inflation Data

The inflation data tab consists of the core inflation data collected from the CBN statistics website, which originally includes the Year, Month, and Core Inflation column. The derived year column is a combination of the year, month, and the first day of the month for observation and simplicity purposes, thus not ideally the date at which the data was collected.

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Original Data									
Monetary Data					Inflation				
Year	Month	Derived Year	Money Supply M2		Year	Month	Derived Year	Core Inflation	
2003	1	01/01/2003	NGN 1,746,192.10		2003	1	01/01/2003	8.6	
2003	2	01/01/2003	NGN 1,778,660.20		2003	2	01/02/2003	8.9	
2003	3	01/01/2003	NGN 1,918,925.70		2003	3	01/03/2003	9.4	
2003	4	01/01/2003	NGN 1,966,190.10		2003	4	01/04/2003	10.4	
2003	5	01/01/2003	NGN 1,857,919.50		2003	5	01/05/2003	11.3	
2003	6	01/01/2003	NGN 2,124,315.70		2003	6	01/06/2003	12.3	
2003	7	01/01/2003	NGN 1,952,426.10		2003	7	01/07/2003	13.8	
2003	8	01/01/2003	NGN 1,972,619.00		2003	8	01/08/2003	14.9	
2003	9	01/01/2003	NGN 1,981,068.50		2003	9	01/09/2003	15.8	
2003	10	01/01/2003	NGN 2,071,969.00		2003	10	01/10/2003	17.4	
2003	11	01/01/2003	NGN 2,079,576.60		2003	11	01/11/2003	18.9	
2003	12	01/01/2003	NGN 1,985,191.80		2003	12	01/12/2003	19.8	
2004	1	01/01/2004	NGN 1,917,503.40		2004	1	01/01/2004	20.9	
2004	2	01/01/2004	NGN 2,062,656.10		2004	2	01/02/2004	22	
2004	3	01/01/2004	NGN 2,106,238.60		2004	3	01/03/2004	23.2	
2004	4	01/01/2004	NGN 2,089,655.80		2004	4	01/04/2004	22.9	
2004	5	01/01/2004	NGN 2,105,957.60		2004	5	01/05/2004	23	
2004	6	01/01/2004	NGN 2,113,281.40		2004	6	01/06/2004	22.6	
2004	7	01/01/2004	NGN 2,123,061.20		2004	7	01/07/2004	21.6	
2004	8	01/01/2004	NGN 2,141,896.80		2004	8	01/08/2004	20.8	
2004	9	01/01/2004	NGN 2,156,836.10		2004	9	01/09/2004	19.3	
2004	10	01/01/2004	NGN 2,231,973.60		2004	10	01/10/2004	17.5	

Sources M2 vs Core Inflation Nigeria +

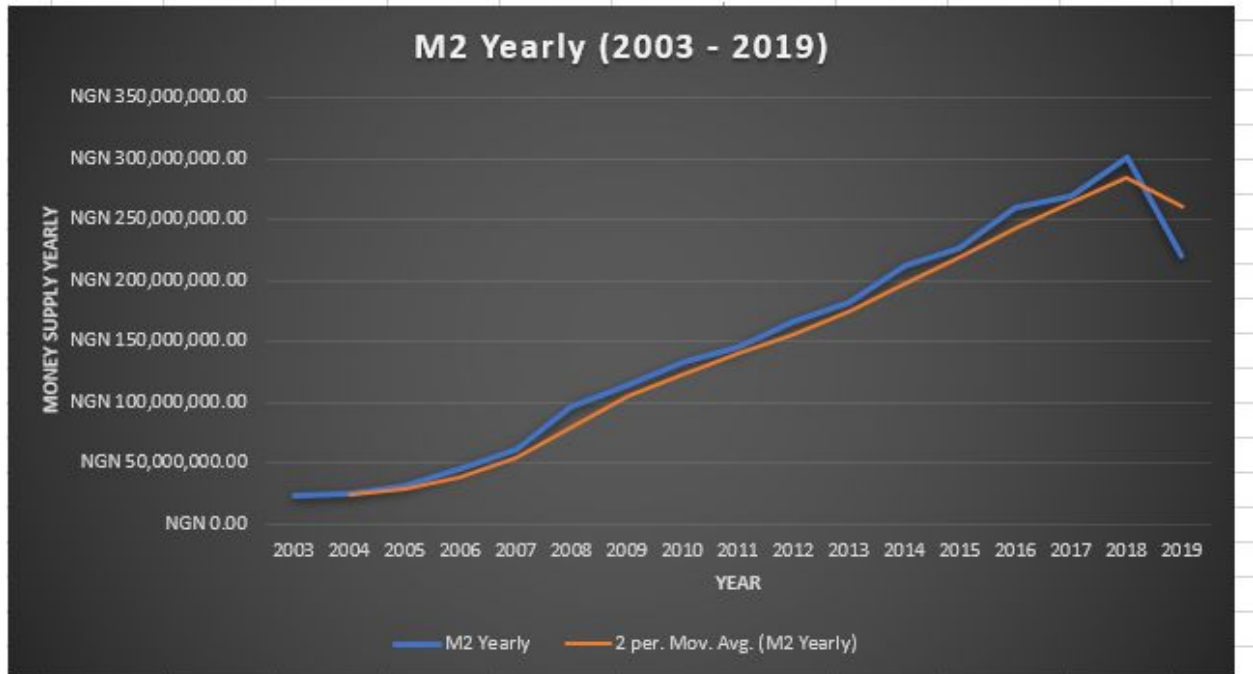
## Derived Data Tab

### Money Supply(M2) Yearly

The money supply yearly tab underneath the derived data tab consists of three columns, which include the year, the money supply yearly, and the rate of change in money supply annually expressed as a percentage.

The year column consists of the years from 2003 to 2019, the money supply column includes the sum of money supply in a year, while the percentage rate of change in money supply is derived from the yearly money supply column expressed as a percentage.

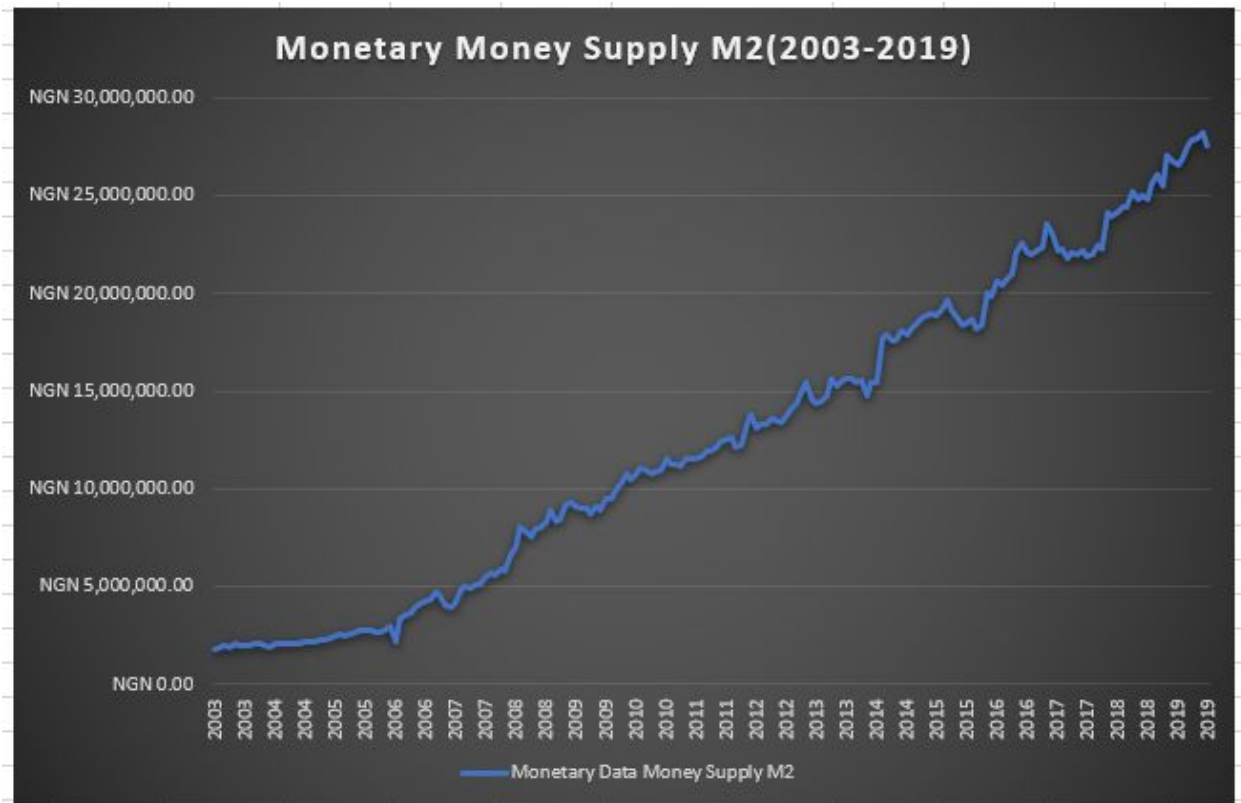
The M2 yearly chart depicts the growth in the money supply from 2003 to 2019, coupled with a two-period moving average. Ostensibly, the money supply has growth has remained relatively above the two-period moving average from 2003 to 2018, just of recent has money supply fell below the two-period moving average towards the end of 2019.



A further decline in money supply by the end of 2019 could be expected or correction just below the two-period moving average given the recent cut in the monetary policy rate by the CBN from 14% to 13.50%.

The money supply is also observed to be growing at a nominal constant rate from the chart below:

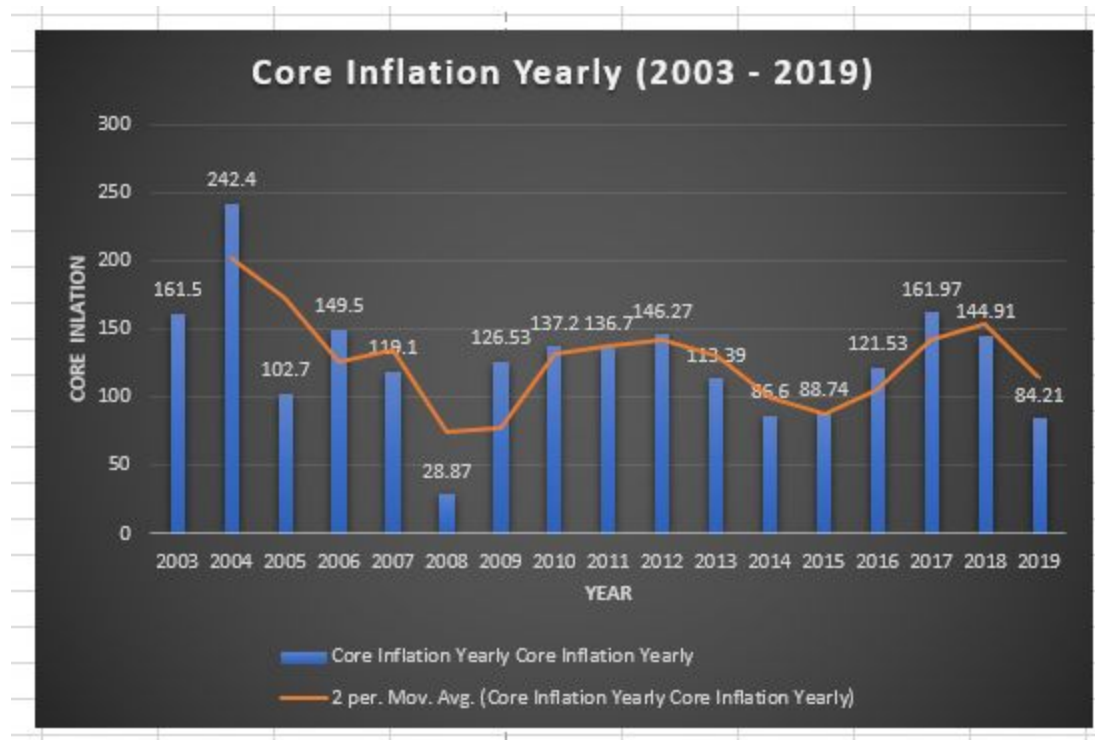




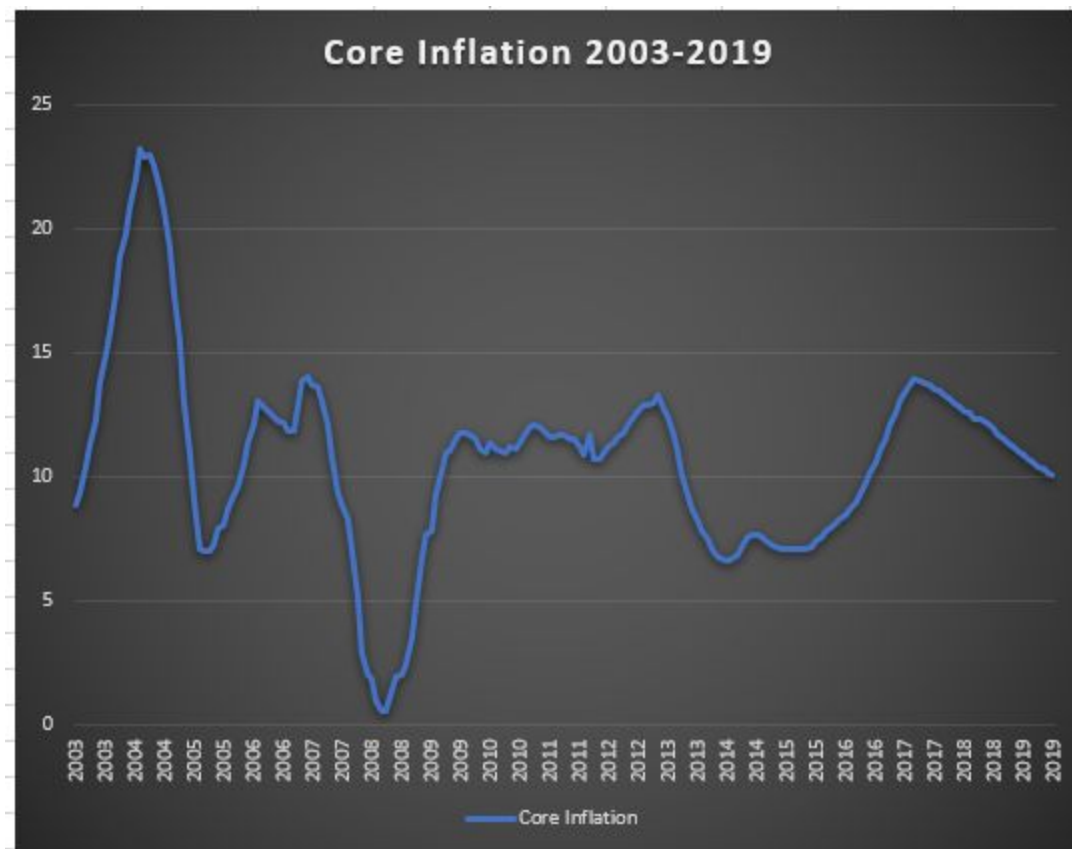
### Core Inflation Yearly(2003-2019)

The core inflation yearly chart has not been in a trend since 2003 except for recently. Core inflation remained at an all-time high in 2004 at 242.4, with an all-time low of 28.87 in 2008.



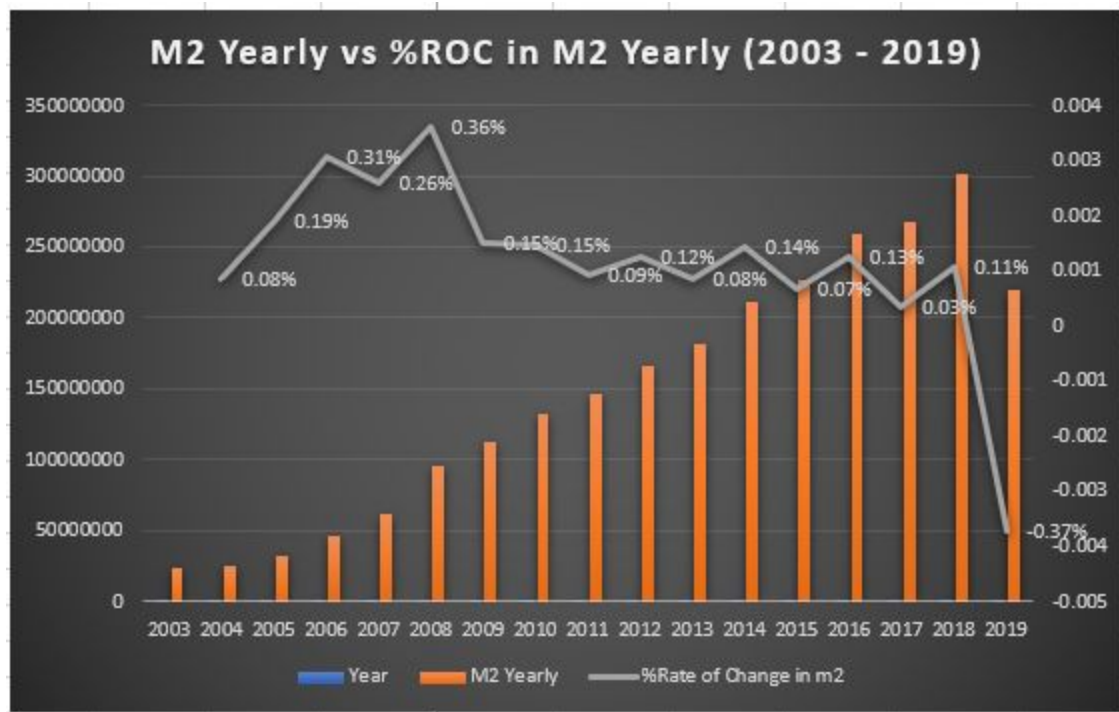


Nigeria has experienced a steady increase in its core inflation from 2014 to 2017. The core inflation all-time high for the past ten years remains at 161.97 in 2017 and currently declining since 2018. A further decline in core inflation at the end of 2019 could be expected; similarly, the CBN might want to keep core inflation a tad bit above the 2014 or 2015 core inflation number.

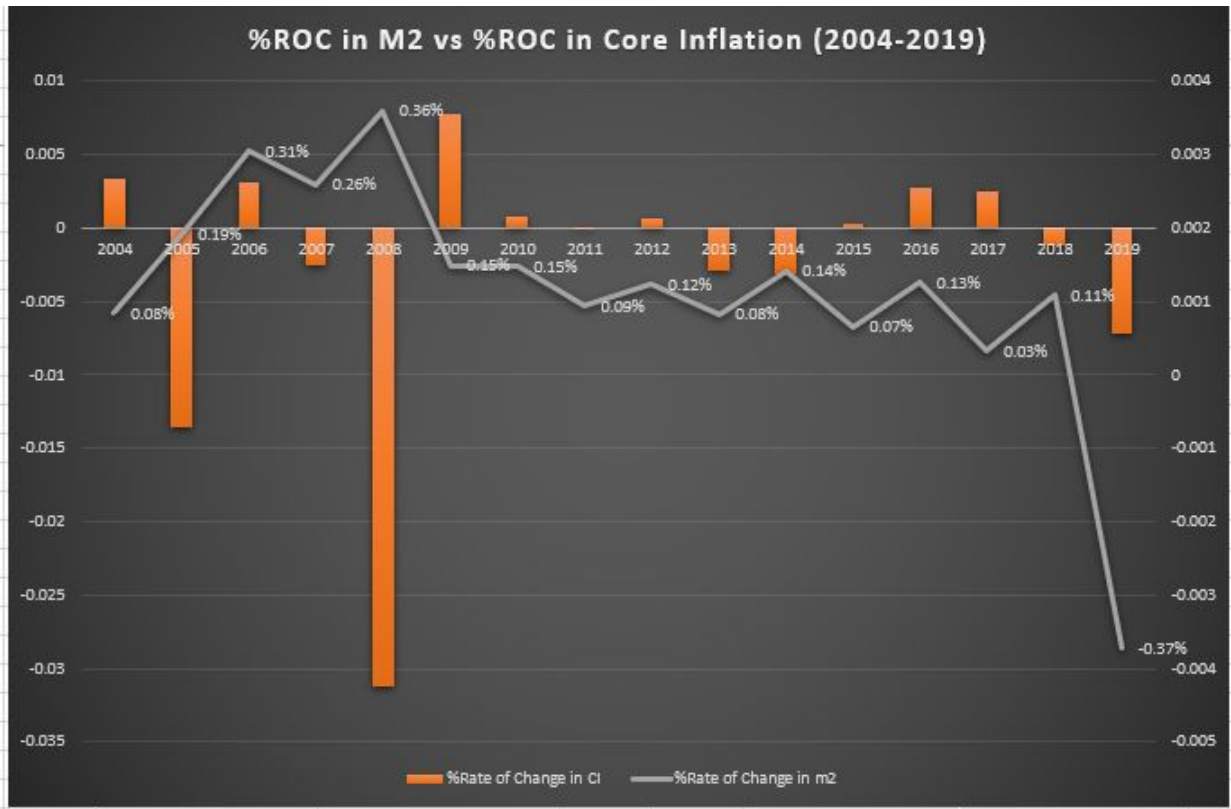


### M2 Yearly vs ROC in M2 Yearly(2003-2019)

The relationship between money supply and the Nigeria economy and its rate of change is depicted in the chart below:

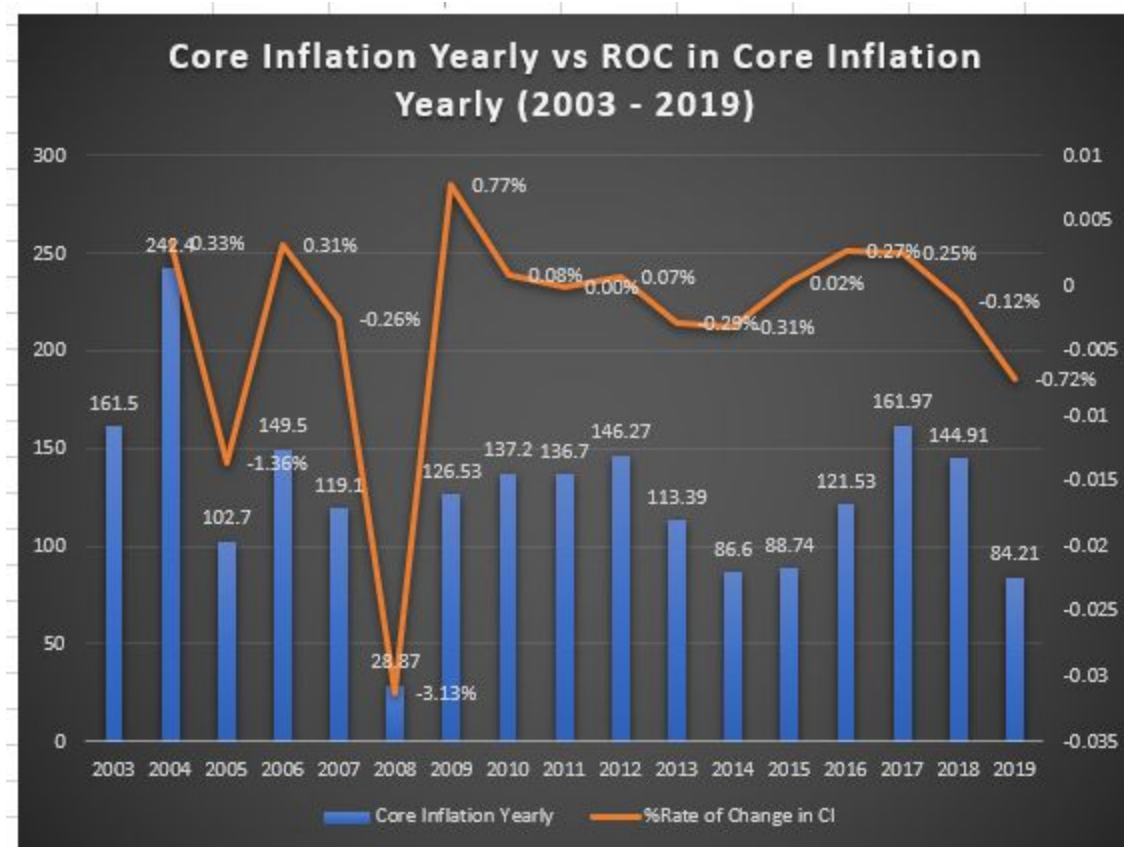


The money supply has been increasing from 2004 to 2007 with an average rate of change of 0.2%. However, since 2016 to 2019, the rate of change in money supply has decreased by -0.02% accompanied by a decrease in money supply towards the end of 2019 compared to 2018, the CBN would definitely be considering an increase in money supply by the end of 2019 especially when core inflation seems to be below 2015 and 2014 number, and that seems to be the goal given the cut in monetary policy rate from 14% to 13.50%.



### Core Inflation Yearly vs ROC in Core Inflation Yearly(2003-2019)

The growth in core inflation has not been easily predictive from 2003 to 2008, but with the availability of data, we could predict where core inflation could be at the end of 2019.



From 2012 to 2014, the average rate of change in core inflation was 0.03%, of which we experienced a decline in core inflation level during that period from 146.27 to 88.74.

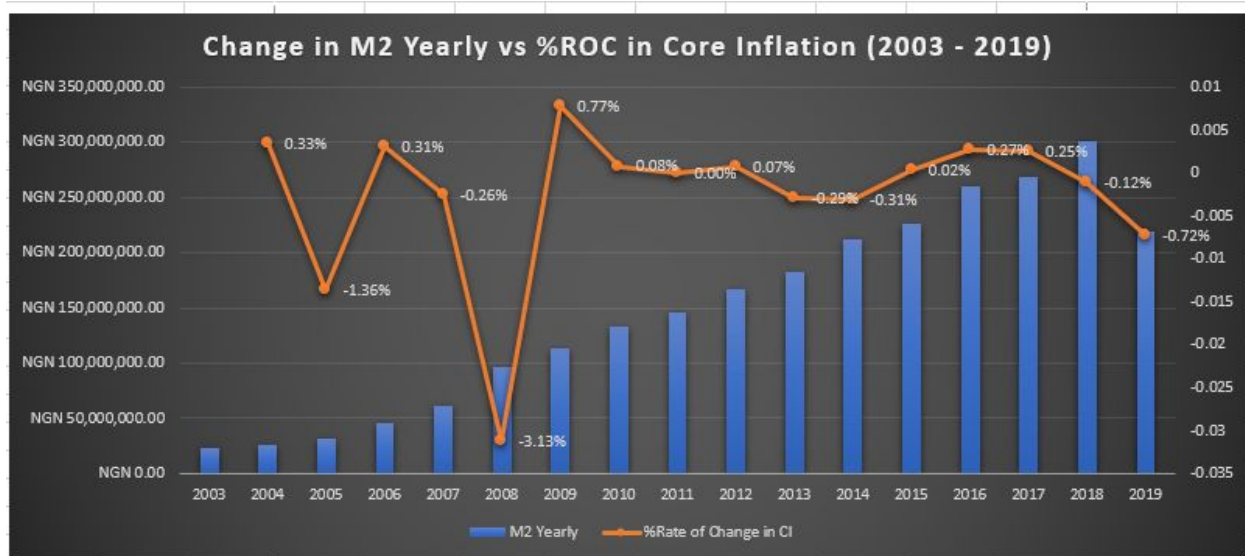
Examining the rate of change in core inflation from 2014 to 2016 the average rate of change in core inflation was 0.2%, of which we experienced an increase in core inflation from 88.74 to 161.97, we could hypothesize a benchmark of +0.2% to project an increase in core inflation and -0.2% to expect a decline in core inflation given the rate of change.

Moreover, from 2016 to 2018, the average rate of change in core inflation was 0.13%, which is below our hypothetical benchmark, and thus, we experienced a decline in core inflation from 2016 to 2018.

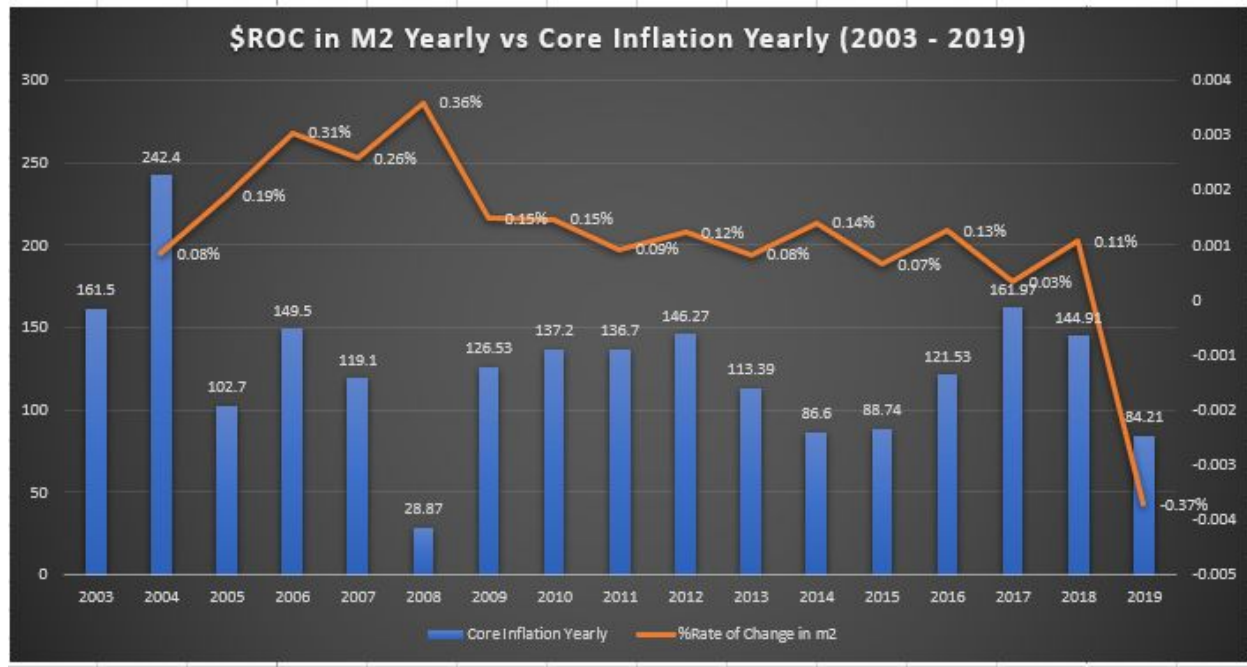
Furthermore, examining the period of 2018 to 2019, the average rate of change in core inflation is -0.28%; a decline in core inflation is as expected. However, to ensure a trend reset in core inflation ahead of 2021, a steady rate of change in core inflation by 0.4% is expected.

## M2 Yearly vs ROC in Core Inflation Yearly(2003-2019)

From 2009 to 2014, Nigeria has experienced an average rate of change in core inflation by 0.07%, accompanied by a steady increase in money supply by 0.12%. Ideally, as the rate of change in core inflation decreases we could expect an increase in money supply in the economy, such that as the rate of change in core inflation from 2016 to 2019 increased by 0.10% compared to 2009 to 2014 increase by 0.03%, the money supply from 2016 to 2019 decreased by -0.02% .



Conclusively, we should expect a drop in core inflation given the decrease in money supply before we could expect a correctional policy to increase money supply towards maintaining a steady core inflation level, and also a similar inverse relationship exists when the ROC in M2 yearly from 2003 to 2019 is examined in relation to Core Inflation Level.



## Conclusion

The money supply could be predicted via the current level of core inflation, and the future core inflation level could be predicted, given the existing money supply level in Nigeria's economy. However, it is best to take into consideration that anomalies are bound to exist when predicting, and thus, economists could experience an off reading than forecasted.