

Socialscientia Journal of the Social Sciences and Humanities

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Online access: <https://journals.aphriapub.com/index.php/SS/>

COVID-19 LOCKDOWN, SUPPLY DISRUPTIONS AND INFLATIONARY PRESSURE IN NIGERIA

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Abstract

There has been an eclectic adoption of the lockdown strategy to curb the spread of COVID-19. Apart from curbing the spread of the virus, lockdowns may have an unanticipated effect on other facets of human existence beyond the disease itself. This study, therefore, examines the impact of the COVID-19 lockdown strategy on the supply and inflation rate in Nigeria. Monthly Purchasing Managers Index (PMI) in manufacturing and non-manufacturing activities was utilized. Using a 50-point benchmark index, the overall manufacturing composite PMI for the months of January (59.2 points), February (51.1 points), and March (58.3 points) indicates that the economy expanded prior to the COVID-19 lockdown. Meanwhile, the overall manufacturing composite PMI for the month of May stood at 42.4 points indicating that the economy contracted by about 16 points following the lockdown. Similarly, the overall non-manufacturing PMI for the months of January and February showed evidence of growth at 59.6 points and 58.6 points respectively. Contrarily, the overall non-manufacturing PMI for the months of March (49.2 points) and May (25.3 points) showed a declining non-manufacturing sub-sector. The individual diffusion indices that make up the overall manufacturing and non-manufacturing PMI showed a general contraction in the month of May. These contractions affected the supply of manufactured commodities. New orders and production levels dwindled, which in turn created rising unemployment and supply shortages. The overall implication of this production-distribution debacle created a gap between supply and demand leading to demand-pull inflation in the month of May. The monthly inflation rate increased from 12.34% in the month of April to 13.39% in the month of May showing an increase of 8.5 percentage points in just one month. Given a fragile economy, the spread of the COVID-19 and its lockdown containment strategy created aggregate demand and supply gap which led to the increase in the inflation rate in Nigeria within the period of study. This study, therefore recommends that government should implement a selective lockdown strategy that will allow the manufacturing and other critical sectors to remain in operation while trying to curb the spread of the virus.

JEL Code: E31, I15

Keywords: COVID-19, demand, inflation, purchasing managers index, supply

Introduction

Global economic, political and religious spheres have been greatly jolted by the Coronavirus (COVID-19) pandemic that originated from Chinese Wuhan province in December 2019. According to World Health Organization, the Severe Acute

Respiratory Coronavirus 2 (SARS-CoV-2virus) is the strain of coronavirus that causes COVID-19 disease. This strain is novel and do not have any known cure or preventive vaccination as at May 2020. The epidemiology of this virus indicated that it is very contagious and lethal (WHO, 2020a). Due to the high rate of infection and spread coupled with the increasing rate of mortality, certain containment protocols and strategies were introduced by nations of the world to protect their citizens. Governments are responding to the pandemic by placing restriction order on human and vehicular movement; total or partial lockdown, border closure and increasing surveillance strategies (Metu, 2020). The Nigerian Centre for Disease Control (NCDC) implemented mechanisms for case detection, contact tracing, patients' isolation and quarantine while advocating physical distancing, face masks, hand hygiene and prohibition of mass gatherings towards reducing transmission. There are other pockets of palliative arrangements to the perceived most vulnerable in the society while stimulus packages have been pronounced by the Nigerian government to mitigate the backlash on the private sector. Globally, however, a key government adopted strategy to contain COVID-19 was the lockdown of nearly all the sectors of the economy. The lockdown strategy implied that movement is highly restricted while inter-state borders are closed thereby impeding production and distribution chains. The President of Nigeria, through the advice of the Presidential Task Force on COVID-19 (PTF) had pronounced initial lockdown of states with the highest number of cases with effect from 30th of March 2020. Following the PTF guideline, other states also implemented the lockdown while closing their borders to travelers. Glover et al (2020) argued that lock-down policies have very large distributional implications where households face trade-offs between restrictions on social interaction to slow the virus transmission and depressed economic activities. A strategy likely to trigger economic shocks and propagated by supply disruptions. Baldwin (2020) explains that global supply chains can be affected due to the pandemic. The global economic downturn could pass through countries as trade in final and intermediate goods are hampered by the domestic lockdown policies. As trading countries concurrently curtail economic activities by implementing lockdown policy, reductions in supply of foreign input or demand for imports further exacerbate the economic downturn.

Nigerian economy has remained very fragile prior to the emergence and spread of COVID-19 pandemic. Economic fundamentals were pointing to the likelihood of relapsing into another round of recession after emerging from the recent recession of 2016. The International Monetary Fund (IMF, 2020) forecast economic contraction of -3.4 percent in Nigeria due to the pandemic. Crude oil exports as a major source of government revenue has declined since the first quarter of 2020 while Nigeria's national debt continues to increase. The macroeconomic environment of Nigeria indicates poor ease of doing business, very low human development index, widespread hunger and poverty, high rate of unemployment with soaring labour force, low manufacturing capacity utilization and several policy inconsistencies. More so, this period coincided with the planting season and there is danger of food crisis if farmers loose the opportunity of planting. If the lockdown persists, the entire Africa run the risk of food scarcity in the near future. Consequently, Nigeria needed to implement policies that will stimulate and sustain economic activities despite measures at containing the COVID-19 pandemic. Otherwise, the aftermath of the pandemic will erode the economic gains recorded from the recovery of 2016 recession.

The effect of the lockdown as a COVID-19 containment strategy without recourse to its economic implications are beginning to emerge. According to the Central Bank of Nigeria (CBN) (2020),

of Nigeria (CBN, 2020) purchasing manager's index (PMI) report from the fourth quarter of 2019 to May 2020, over 98 % of both manufacturing and non-manufacturing subsectors have posted negative growth rates. The manufacturing and non-manufacturing composite PMI for the months of May 2020 stood at 42.4 and 25.3 respectively. The manufacturing composite PMI between the months of January (59.2 points) and May (42.4 points) indicate a 27 percent decline while the non-manufacturing composite PMI between the months of January (59.6 points) and May (25.3 points) indicate about 56 % decline. The deceleration in these indices implies that production and distribution of goods and services in the Nigerian economy have been impeded. Therefore, this shows evidence of supply disruptions in the economy as supply shortages occasioned by the lockdown strategy will lead to excess demand. Theoretically, supply shortages trigger hoarding and scarcity which in turn affect prices. Given the excess demand condition, there is bound to be inflationary pressure due to upward price movements.

More so, the monthly inflation report of the National Bureau of Statistics (NBS, 2020) showed an upward trend in the inflation rate from third quarter of 2019 prior to the pandemic. The monthly inflation rate for the months of December 2019, January 2020, February 2020, March 2020 and April 2020 stood at 11.98%, 12.13%, 12.2%, 12.26% and 12.34% respectively. The inflation rate for the month of May was forecasted to be 13.4% which shows a disproportionate increase in prices as a result of covid-19 pandemic and its attendant lockdown strategy.

Though studies are ongoing as the pandemic and its restrictions endures, the focus of this study is to evaluate the effect of the lockdown measure on supply and inflation rate in Nigeria from January to May 2020. We employed the CBN Purchasing Manager Index which, according to the available literature, no study in Nigeria has delved into. The rest of the paper is organized as follows: Following the introductory part is Section 2 which presents the review of related literature. Section 3 discusses the methodology while Section 4 contains the discussion of analysis. Section 5 is summary and conclusion of the paper.

Literature Review

Conceptual Clarifications

Supply and demand disruptions Generally, disruptions can be conceptualized as interruptions to regular flow or sequence of something. In business, it can truncate smooth distribution of goods and service. Supply disruptions are unplanned and unanticipated events that influence the flow of goods and materials within a supply chain (Clark, 2012). This usually affect the activities from raw materials to actual production and eventual distribution. Disruptions can be intentional or unintentional human actions such as industrial accidents, terrorist strikes, unexpected staff demands, perverse insecurity, overhaul of production processes and R&D implementation. (Bin & Qingying, 2017). It could also be triggered by natural disasters such as floods and earthquakes. In our context, epidemic can equally trigger disruptions. Clark (2012) observes that supply chain disruption remains a problem in the globalized marketplace which can significantly affect business continuity. As such, it has become an area of concern in the economic sphere. Due to the concomitant effect of supply disruption on demand and prices, final consumptions are affected which leads to demand disruptions. Unexpected events may suddenly and significantly increase or decrease market demand for particular products or services which may further influence supply chain performance. Both demand disruption and supply disruptions may cause Page 186

chain disruption risk arising from operational contingencies like strikes and economic disruption, natural disasters and political instability (Kleindorfer & Saad, 2005). Hence, lockdown as a result of COVID-19 pandemic is categorized as an unexpected or unplanned event which has affected demand and supply chain.

COVID-19 Lockdown: Lockdown is a set of compulsory measures implemented to reduce community transmission of COVID-19 which are applied indiscriminately to the general population (Mboera et al, 2020). Lockdown as a COVID-19 prevention strategy started in Wuhan China in January, 2020 aimed at rapidly bringing the epidemic under control (WHO,2020b). Given the nature of the disease, lockdown soon became an acceptable strategy by most countries to mitigate the disease spread. It is a condition where people are required to stay at specific locations due to exposure to certain risks if they are allowed to move freely. The term is synonymous to stay-at-home or shelter-in-place order. It is usually initiated by those in authority to protect people or system from harm. Several events like outbreak of diseases or natural disasters can call for the implementation of lockdown strategy aimed at achieving a specific objective. In this study, we explain that COVID-19 lockdown is a restrictive measure designed to curtail the movement of people aimed at limiting the spread of the COVID-19 virus. However, the extent to which the lockdown can be implemented have been questioned. There is the tendency to create disruption of normal social and economic life to greater majority of African population where other forms of harm can develop beyond the virus. Mboera et al (2020) argued that there is already high disease burden and poverty in Africa coupled with under-resourced and fragmented health systems which pose additional challenges in controlling COVID-19 and implementing lockdown measures. The effects of lockdown include job losses, increased social tension, lack of access to food and basic necessities, erosion of civil liberties, supply chain disruptions etc. Therefore, consideration to these effects should be part of the policy decision before lockdown can be implemented. While lockdown translates to staying at home and moving when it is absolutely necessary or during emergency, the overall implication on peoples' welfare and wellbeing is paramount in deciding the timing and tenure of the lockdown. Consequently, COVID-19 lockdown may have unanticipated effect on other facets of human existence beyond the disease itself. This is partly the motivation for this paper.

Inflationary Pressure Inflation rate is the percentage change in the overall level of prices (Kasseh, 2018) while inflationary pressure are events or policies that put pressure on the general price level. Inflation rate defer over time across countries and its control constitute a key macroeconomic policy objective. Inflation can also be seen as the excess of expenditure over income at full-employment level. The greater the aggregate expenditure, the larger the inflationary gap and the more rapid the inflation. This study explains inflation as a macroeconomic condition, in which general price level upsurge continuously or the value of money declines steadily. Among the major reason for this upsurge in price or sustained decrease in the value of money is excessive increase in demand on one hand and shortage in supply due to cost of production and other related factors.

Theories of Inflation

Theories of inflation are generally linked to its causes. As a result, the type of inflation being experienced can easily be identified. Tontochi, (2011) states that inflation process is purely a growth of money supply phenomenon in developed countries,

while it arises from exchange rate depreciation emanating from balance of payment crises in developing countries.

Monetary theory inflation Monetarism holds that only money matters, hence, Milton Friedman's quantity theory of money holds that inflation is always and everywhere a monetary phenomenon resulting from a rapid upsurge in the quantity of money than in total output. Thus, the monetarists employed the familiar simple identity of exchange equation of Fisher, $MV=PT$ meaning that rapid expansion of MV (stock of money supply) results to rise in prices and transaction PT .

Cost push theory Cost-push inflation, also known as 'New inflation' is caused by increase in cost of production. Production cost comprises increase in the price of raw materials, enforced wage increase by unions, profit increase by employers to make up for rise in cost of labour and cost of production and upward adjustment of wages to compensate for upsurge in cost of living. The crucial causes of cost push inflation are the rise in money wage more than the productivity of labour and rise in cost of raw materials. While an upward movement of wages will increase price directly, a severe rise in cost of raw materials may affect output thereby crowding out supply and increases price.

Structural theory inflation The structuralist school argues that structural and institutional factors play a more prominent role in inflation dynamics. The structuralists argue that inelastic food supply, infrastructural inadequacies that pose problems for distribution of output, lack of financial resources and low export receipts leading to foreign exchange shortages in developing countries put pressure on domestic prices. "The nominal exchange rate pass-through to domestic price inflation depends on how the changes in the exchange rates are passed through to import prices and therefore to domestic consumer prices" Mishkin (as cited in Harvey & Cushing, 2014).

Demand pull theory Demand Pull inflation theory was propounded by John Maynard Keynes. Keynes and his followers explained that increase in aggregate demand is the source of demand-pull inflation. Aggregate demand here comprises private consumption, investment and government expenditure. Inflationary pressure is as a result of expanded value of aggregate demand overshooting the value of aggregate supply at the full employment level. Keynesian theorists maintain that movement along the Phillips curve indicate scenarios of how rising output and falling unemployment causes inflation to rise. Increase in employment leads to increase in aggregate demand which forces firms to hire more workers to maintain the increase in output. Due to capacity constraints that result from overshooting aggregate demand, the increase in output or aggregate supply will eventually become small that price will begin to rise. Thus, the wider the gap between aggregate demand and aggregate supply, the more rapid is the inflationary pressure. According to this theory, any effective policy aimed at controlling inflation should focus on decrease in each component of total demand (Tontochi, 2011)

Methodology

Theoretical Framework

This study is anchored on the demand pull theory of inflation. The theory in its simplest form argues that inflationary pressure arises as a result of excessive aggregate demand over aggregate supply. Although excessive demand aggregate could arise from the expansion of money stock and suppressed supply resulting to inflationary

pressure, this study hypothesizes that COVID-19 lockdown strategy inflationary pressure in Nigeria is as a result of contraction in supply.

Method of Analysis

The study employed the monthly Purchasing Manager Index (PMI) as utilized by Bragoudakis (2018) and Habanabakize et al. (2017) as tool for data analysis. It is a measure of prevailing direction of economic activities in both manufacturing and non-manufacturing sectors. It is chosen for its appropriateness on monthly survey of supply chain and provision of useful insight for analysis and decision making.

Discussion: Effect of Supply Disruption on Prices in Nigeria

In order to ascertain the linkage between COVID-19 lockdown on supplies in the economy, we took a cursory look at the Central Bank of Nigeria's monthly Purchasing Managers Indices (PMI) for the manufacturing and non-manufacturing sectors from January to May 2020. This period was chosen to reflect the emergence and eventual spread of the pandemic and the effect of the lockdown strategy on the economy. The Composite PMI monthly report compares the changes in the volume of business and manufacturing activities between current and preceding months. The manufacturing Composite PMI is computed as a weighted average of five diffusion indices, namely: production level, level of new orders, suppliers' delivery time, employment level and raw materials inventory/work in progress while the non-manufacturing Composite PMI is computed from four diffusion indices, namely: business activity, level of new orders, employment level and inventories (CBN, 2020). From this report, a composite PMI above 50 points indicate an expanding economy; a composite PMI of 50 points indicate a stagnant economy while a composite PMI below 50 points indicate a contracting economy.

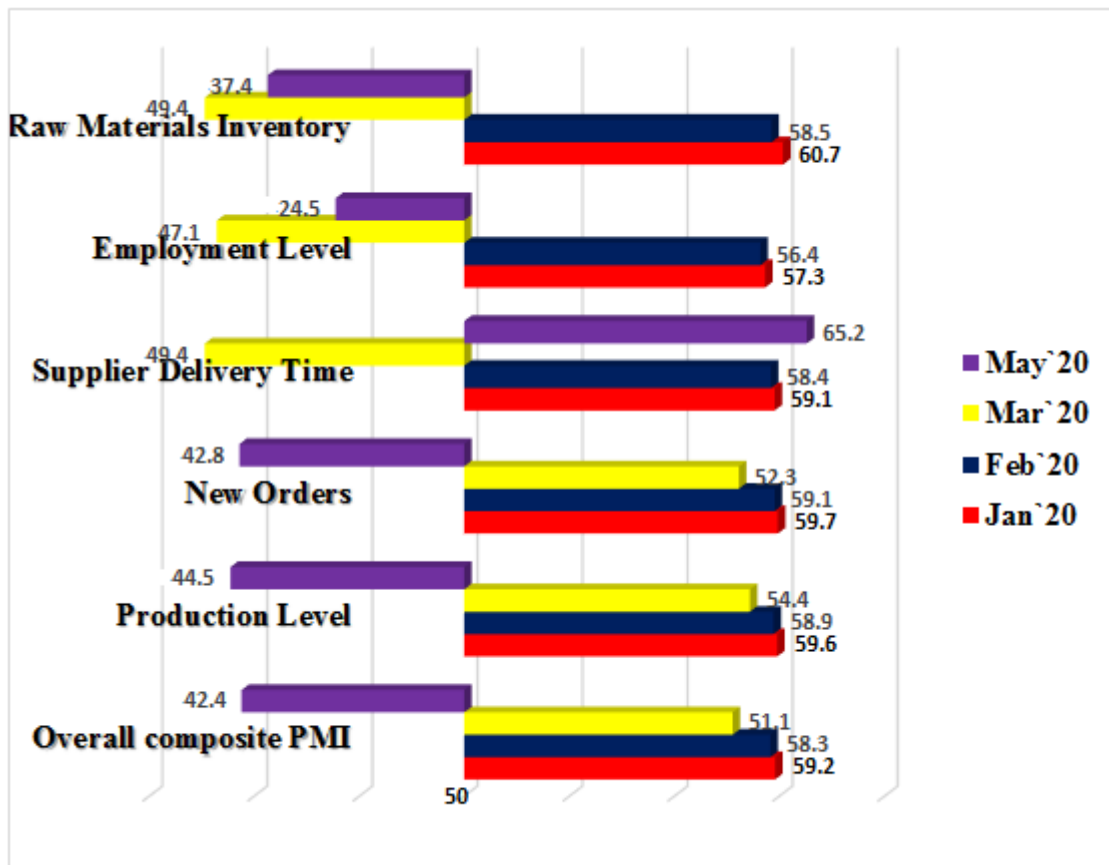


Figure 1: Manufacturing PMI

(Source: Authors Computation from CBN purchasing managers index, 2020)

Figure 1 shows the manufacturing PMI and its component indices from the month of January to May 2020. Using the 50 points benchmark index as reported by CBN (2020), the overall composite PMI for the months of January (59.2 points), February (58.3 points) and March (51.1 points) are all above 50 points indicating an expanding economy prior to the COVID-19 lockdown. However, the peak of the lockdown on manufacturing activities occurred in April before gradual relaxation of the strategy in May. Consequently, the overall PMI for the month of May stood at 42.4 points which is below the 50 points benchmark. This implies that the economy contracted by about 16 points as a result of the lockdown strategy between the months of March and May. The effect of lockdown on the manufacturing activities can further be verified by comparing the individual diffusion indices that make up the overall PMI as shown in Figure 1. The production level index for the months of January, February and March stood at 59.6; 58.9 and 54.4 points respectively. This indicates that manufacturing production expanded prior to the COVID-19 lockdown. Similarly, New orders index expanded in the months before May which implied an increasing demand for manufactured products. Contrarily, both the production level index and index for new orders contracted in the month of May recording 44.5 and 42.8 points respectively.

The supplier delivery time contracted in the month of March due to initial blanket lockdown restriction declared by the government. However, supplier delivery time index grew in the month of May following government policy of free movement of essential commodities. Both employment level and raw materials inventory

declined in March and May. The employment level index stood at 37.4 and 24.5 points in the months of March and May respectively showing that COVID-19 pandemic led to job losses and exacerbated unemployment situation in the economy.

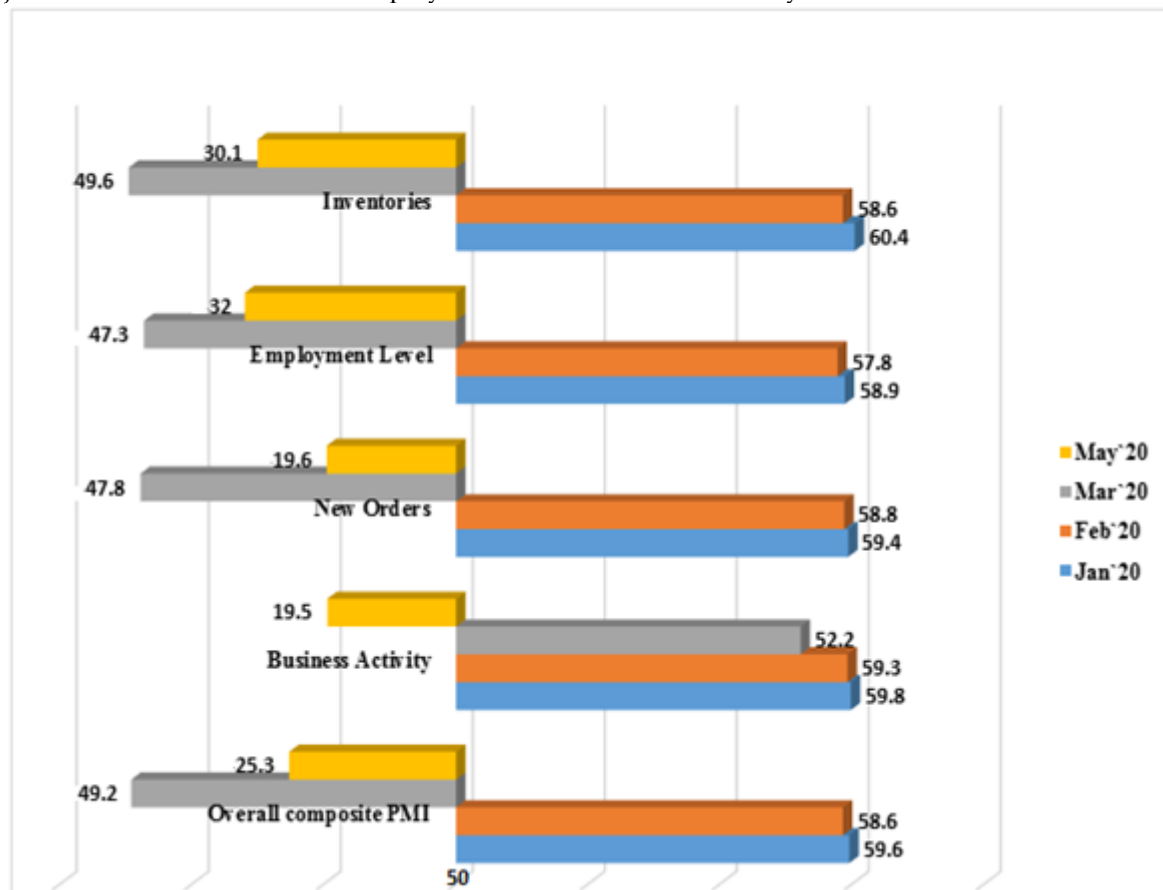


Figure 2: Non-Manufacturing PMI

(Source: Authors computation from CBN purchasing managers index ,2020)

Figure 2 shows the Non-manufacturing PMI and its component indices from the month of January to May 2020. The overall PMI for the months of January (59.6 points) and February (58.6 points) are above 50 points indicating an expanding non-manufacturing sub-sector prior to the COVID-19 lockdown. However, the months of March (49.2 points) and May (25.3 points) showed a declining non-manufacturing sub-sector as a result of the effect of the lockdown occasioned by the Covid-19 pandemic. The overall non-manufacturing PMI indicated that the sub-sector contracted by about 34.3 points which is more than twice that of manufacturing sector within the same period. Furthermore, the individual diffusion indices that make up the overall PMI as shown in Figure 2 shows that business activity, new orders, employment level and inventories were growing in the months of January and February prior to the implementation of the lockdown policy. Even though business activity index with 52.2 points showed growth in the month of March, new orders, employment level and inventories contracted significantly within the periods of March to May.

Consequently, as manufacturing sector was contracting, the non-manufacturing sub-sectors were contracting at a very high rate. As new orders are not being anticipated, production level kept declining which in turn created rising

unemployment. As business activities were dwindling, inventories were being depleted thus creating lockdown induced shortages. The overall implication of this production-distribution debacle created a gap between supply and demand. While there is a supply disruption in the economy due to the effect of COVID-19 containment strategy, aggregate demand for consumption goods kept rising. Theoretically, disequilibrium in supply and demand affect prices.

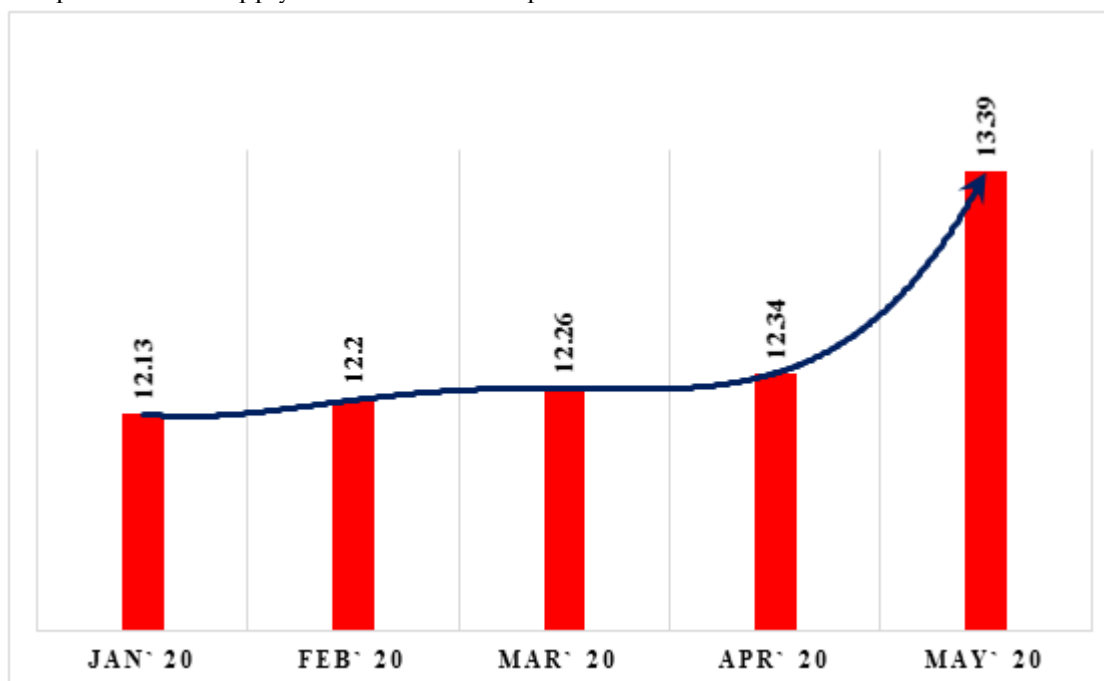


Figure 3: Monthly Inflation Rate

Source: Authors computed using data from CBN monthly inflation report (2020)

Figure 3 shows monthly inflation rate from January to May 2020. Even though there is evidence of upward trend in inflation, the change has been fairly smooth prior to the month of May. However, the effect of supply disruptions as a result of the lockdown strategy on general price level is easily observed in the month of May where there is a quantum leap in inflation rate of 8.5 percentage points which is more than twice the average change in previous months. Therefore, the effect of the lockdown strategy on both supply and prices in Nigeria have been negative. This is an indication of the need to implement policies to mitigate the apparent recessionary effect of the pandemic and prevent further economic losses by reviewing the lockdown as a containment strategy.

Macroeconomic Policy Options and COVID-19 Pandemic

Nigeria, and indeed the entire African continent faces more social and economic challenges ex-ante and ex-post COVID-19 pandemic. With limited policy options available to Nigeria, and indeed African countries, a protracted lockdown strategy may be unsustainable. An alternative strategy peculiar to our circumstances may be the way out of the impending economic pandemic. Following the line of thought of Soludo (2020), the lockdown strategy cannot be effective given the overall social and economic circumstances facing the continent where there is widespread poverty and over 90 percent of the population survive on daily income. In Nigeria, the political-economic

environment remains very fragile with apparent signs of a looming hardship on the entire populace. No doubt, there is existence of twin epidemic – health and economic – for Nigeria. Even though the entire health system has come under pressure during this pandemic, the effect of the economic shock occasioned by lack of appropriate policy will be long term. The rate of COVID-19 testing given the population of Nigeria have been very slow. So far, the Nigerian Centre for Diseases Control (NCDC) gave the figure of confirmed cases to be about 13,500 as at the month of May with about 100,000 people tested. Given the population of 200 million people (WDI, 2020), only 0.05 percent have been tested while about 0.007 percent of Nigerians are confirmed cases. Meanwhile, over 98 percent of the population are at the risk of other pandemics due to the lockdown strategy. The extended lockdown may entrench hunger and deaths from other diseases. For instance, Metu (2020) posit that the lockdown (total or partial) and restriction on movement imposed to suppress the transmission of COVID-19 have resulted in a significant reduction global economic activities. Hence, the lockdown policy is time-inconsistent, but the big question is, what should Africans have done differently?

African governments (Nigeria inclusive) have realized that lockdowns are not sustainable and may not be the way forward. As a result, there have been gradual relaxation of the restrictions to open up the economy as the disease was spreading despite the lockdown. Soludo (2020) opined that a multidimensional approach beyond economics and western medicine should be adopted by African countries. Given that many more future disruptions are being anticipated with absence of external assistance to African countries, a homegrown strategy and policy is inevitable. Our analysis here is intertemporal (that is, past, present and future). Given the data and relevant information gathered so far, there is urgent need to reassess the lockdown strategy. The continued implementation of the lockdown may suggest ineptitude in crafting appropriate model to contain the twin pandemic of health and economic problems. The jury is now out on the prognosis of the pandemic where alternative measures can be tried. Government should design a strategy that will incorporate relevant stakeholders to mobilize, educate and equip people to take responsibility of their safety while working. While government should be at the forefront in providing, eliciting, organizing and regulation of healthcare; the churches, mosques, community leaders and civil society organizations should be mobilized towards the orientation of the people about the dangers of not keeping to safety guidelines. This model was implemented in Taiwan where economic activities continued despite the pandemic. Yet they were able to contain the spread of the pandemic.

The ingenuity created by the pandemic saw people creating cheap homemade hand sanitizers, face masks, disinfectants and even locally made automatic/semi-automatic washing-hand machines. This became expedient given the socioeconomic conditions of greater majority of the populace who couldn't have afforded imported safety gadgets. This created a huge market for artisans and small scale business owners to make extra income. But how can this opportunity be harnessed in a lockdown situation? Due to the negative effect of lockdown on these MSME's, the Nigerian government approved a fiscal stimulus package in the form of a COVID-19 intervention fund of ₦500 billion. This was meant to support healthcare facilities, provide relief for taxpayers, encourage private sector employers and SME's to retain and recruit staff during the economic downturn. However, there is need to make it affordable and accessible to relevant beneficiaries. It is also important for government to create a process for effective monitoring of the implementation of this package. | 93

Given the enormity of the effect of the pandemic on majority of developing economies, the immediate fiscal strategy was to borrow or secure moratorium on existing debt. However, events that trigger economic disruptions are ongoing and not temporary. Therefore, borrowing is only going to worsen the crisis as debt servicing with the vagaries of exchange rate fluctuations will only perpetuate a debt trap. Instead, policymakers should confront the structural dysfunctions that created the debt problems by exploiting opportunities for economic diversification that enhances competitiveness. According to Soludo (2020), there is need to craft a new business model that will encompass a wide range of institutional, technological, structural, macroeconomic, and even politico-governance arrangements that demands for disruptive thinking. This involves the development of non-debt-creating financing options and new forms of economic partnerships.

Summary and Conclusions

The study focused on COVID-19 lockdown, supply disruption and inflationary pressure in Nigeria. The PMI tool of analysis was employed to assess the impact of the lockdown strategy on the manufacturing and non-manufacturing sectors. Our analysis reveal that there is evidence of growth in manufacturing and non-manufacturing sector activities before the pandemic prior to the lockdown strategy while contractions have been experienced during the lockdown period. The effect of this is excessive demand value against a suppressed supply value translating to increase in prices. Even though there is evidence of upward trend in inflation before the pandemic, the change has been fairly smooth prior to the month of May when the percentage change became significantly different. Although, the Nigerian economy had remained very fragile prior to the emergence and spread of COVID-19 pandemic, the study concludes that aggregate demand and supply gap necessitated the inflationary pressure during the lockdown period. We recommend that government should implement a selective lockdown strategy that will allow the manufacturing and other critical sectors to remain in operation while trying to curb the spread of the virus. Given the abundance of natural medicinal plants, Africa and indeed Nigeria, should encourage researchers to develop herbal medicine for trials towards the cure of the disease. Finally, we recommend that government should improve the social protection in form of cash transfers to support families in extreme poverty as currently being done in the northern part of the country.

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