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The Impact of Inflation Rate on Private Consumption Expenditure and Economic Growth—Evidence from Ghana

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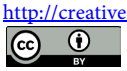

Abstract

The effect of inflation on an economy has far-reaching implications. One of the most significant effects of inflation is the uncertainty created when the inflation rate is fluctuating, which can reduce or increase consumer purchasing power. The study employed the Engle-Granger Cointegration, error correction, and granger causality as estimation techniques to determine the association between inflation rate and private consumption expenditure. In this study, using the ordinary least square econometric method, the study empirically assessed the impact of inflation on private consumption expenditure and economic growth between 1990 and 2020. The data were first analyzed using the Augmented Dickey-Fuller (ADF) test which indicates that all the variables of interest were stationary after their first differencing. The study found a cointegration relationship between private consumption expenditure, inflation rate, interest rate, and gross domestic product rate. The study found that in the long run, INF has a negative significant effect on PconX, while INTR and GDPR have positive significant effects on PconX. The study's empirical findings show that there is a long-run negative significant relationship between inflation and private consumption expenditure in Ghana, meaning that private consumption expenditure in Ghana reduces on products and services during periods of high inflation than during periods of low inflation". According to the findings, inflation expectations have a detrimental impact on private consumption expenditure attitudes, particularly among consumers in a very favorable financial situation. Furthermore, since the global financial

crisis, the importance of inflation expectations has grown. The results for consumption expenditures are quite evident and difficult, particularly when compared to the results for interest rates and economic growth, as they imply a positive and relatively strong relationship to inflation. As a result, based on the findings of the study, the research advised that the government should provide low and stable prices at all times to prevent the negative impact of inflation on private consumption. Also, it was advised that the government, in collaboration with the Bank of Ghana, formulate and implement prudent fiscal and monetary policies aimed at stabilizing macroeconomic factors to boost economic growth.

Keywords

Private Consumption Expenditure, Inflation, Economic Growth, Granger Causality

1. Background of Study

The economic stability of the country is a major challenge for all governments in the world. Government policy, national consumption rate, deflation, inflation, etc. have major impacts on the economy of a country. Inflation refers to a persistent increase in the general level of prices of goods and services. This means that several-all inclusive index of prices continues to rise. In a growing and changing economy some prices must go up and some must go down as supply changes in response to changes in consumer tastes and desires and national needs. Inflation is depicted as a universal and long-term increase in prices and tariffs. The rise will be broken down into categories of economic goods. As a result, inflation alters price relationships. The most important change that should lead to inflation is raising consumer goods prices in line with wages, thus recording profits and encouraging the resumption of production where there are real resources, on the path to re-establishing a functional relationship between prices and costs. Barro (1995), Bruno and Easterly (1998), Rousseau and Wachtel (2002) are among the many theoretical and empirical studies that show that sustained and thus likely predictable high rates of inflation can have negative consequences for an economy's long-run rate of real growth or its long-run level of real activity. Inflation, according to this research, stifles growth and development by causing economic distortions and uncertainty, inhibiting long-term planning, and lowering savings and capital accumulation. During an inflationary period, a fixed amount of money can purchase a smaller quantity of goods and services than it could otherwise. The real value of money has been drastically reduced, resulting in a reduction in the purchasing power of money for consumers. The effect of inflation on the consumption patterns of consumers unlike the effect of income on consumer expenditure has not received the needed at-

tention in the marketing environment literature both theoretically and empirically. The effect of inflation on consumer spending is both direct and indirect (Katona, 1975).

The fundamental form of inflation is an imbalance between aggregate demand and aggregate supply, both of which are considered feeds, with a greater nominal solvent, artificially supported, in comparison to the real offer of products in a given period (Ciumara & Ciutacu, 2003). Inflation has gotten a lot of attention in the scholarly and policy literature over the years. This is also true of inflation expectations monitoring and measurement as part of an inflation-targeting monetary policy (for example, Bryan & Ventaku, 2001; De Wet, 2003; Kershoff & Smit, 2002; Mishkin, 2004; Saunders, 2003). The severity with which inflation's malignant consequences spread across the real economy varies in every economy, depending on the degree of economic development, the maturity of market processes, the quality of government administration, and even the population's ability to report on the inflationary process. The level of inflated or independence and awareness of her fate, as well as its toxic implications, have been demonstrated by historical experience.

Inflation forecasts, explanation or escape clauses in the event of non-achievement of the target, and the monitoring of inflationary expectations are three support measures of monetary policy execution used by central banks also known as Bank of Gold Coast (BGC) or Ghana Commercial Bank in inflation-targeting countries. These measures are necessary since current policy adjustments will only have a limited impact on future inflation rates after some time. The speed with which changes in monetary policy are conveyed across the economy determines how long it takes for policy changes to affect inflation. The third of these three indicators (inflation expectations) is beyond the authorities' direct control. This is understandable because inflation expectations are mostly created by central banks' prior policy decisions and their success in managing inflation, rather than by public declarations of the central bank's flans. According to Mishkin, "... the legitimacy of the program in the eyes of the public is a vital part of a successful anti-inflation policy" (Ibid., p. 658). Inconsistent policy decisions raise future inflation expectations, leading to dynamic time inconsistency (also known as temporal consistency) issues (see, for example, Kydland & Prescott, 1977). The time-consistency in monetary policy conduct provides a game theory explanation of the subsequent action between a central bank and private economic agents in their efforts to outmaneuver one another in forecasting actual, rather than promised, economic results. The central bank will choose to announce an optimal low inflation rate for period t + 1 in period t, but because this affects the expectations and behavior function of private economic agents in period t + 1, a higher inflation rate may be discovered to be optimal, resulting in the implementation of a more expansionary policy than previously announced. Instead of using policy discretion, central banks prefer to utilize an explicit monetary policy anchor to avoid any time inconsistency issues. As a result, there is less confu-

sion about the authorities' policy orientation.

The terms "autonomy" and "independence" of central banks are frequently used interchangeably in literature (see for instance Arnone, Laurens, Segalotto, & Sommer, 2009). "While the central bank has no right to claim government independence... it should be able to maintain a posture of independence inside government,". The first description is favored since the authority of central banks to execute appropriate policy is congruent with "autonomy" rather than "independence," but because the literature employs these two words interchangeably, both are employed in this study. While many central banks have lost operational autonomy as a result of economic hardship, a renewed focus on such autonomy emerged in the 1980s and 1990s as it became clear that monetary policy cannot be everything to everyone. "One of the major objections of central bank independence is that it may lead to economic policy that is less employment-promoting than the ideal policy of the median voter and/or that is not social-welfare optimizing," Maxwell says of the loss of independence. This criticism stems from the fact that central bankers are more conservative than typical voters and are not directly answerable to voters" (1997: 146).

The central bank's ability to make the essential judgments on monetary policy and interest rates without government influence is still a hot topic of contention. "One striking trend in emerging countries in the 1990s was the rather remarkable increase in the statutory independence of their central banks," (Habib Adam & Padayachee Vishnu, 2000). According to Maxwell, "at least thirty countries... enacted advances in the statutory independence of their central banks" between 1990 and 1995 (1997: 3). Private consumption (also known as personal consumption, consumer expenditure, or personal consumption expenditures (PCE)) is a measure of consumer spending on goods and services that is not included in the official statistics. Private consumption includes all purchases made by consumers, such as food, housing (rent), energy, clothing, health, leisure, education, communication, transportation, and other services. It also includes the services provided by hotels and restaurants. It also includes durable goods (such as automobiles), but not the purchases of residences by households, which are included in the definition of household investment.

In most nations, private expenditure accounts for about half and two-thirds of the gross domestic product (GDP). In general, the poorer a country is, the greater its share of total consumption is. The fact that private consumption accounts for the vast majority of GDP indicates that it is the primary driver of economic growth. According to Global Economy, in 2019, private expenditure made up 69.03% of the Ghanaian GDP. Sustained economic growth and development necessitate several prerequisites, one of which is adequate savings to fund future investment. Sustained (and rising) inflation, on the other hand, pushes consumers to spend now rather than save later, as they try to avoid paying higher costs in the future. Consumers will act following their beliefs if actual inflation surpasses the officially reported inflation rate, by consuming now rather than

saving for future spending if perceived inflation is high.

The methodology devised for comparing actual prices with "projected" price levels can be used by governments of developing nations to confirm the accuracy of their average price increases measurement. For poor countries, this could be a beneficial strategy for improving inflation credibility. The usage of an inflation credibility barometer and variations in the barometer in a developing country will act as a twofold early warning system for changes in inflation perceptions. Readings of the inflation credibility barometer over time will alert developing-country governments to make timely policy adjustments in the event of deteriorating inflation perceptions that could feed through into inflation expectations, allowing for accurate pricing of the opportunity cost of deferring current consumption in favor of future consumption through interest rates (e.g. savings).

Unlike the influence of income on consumer spending, the influence of inflation on consumer consumption patterns has received little attention in the marketing environment literature, both theoretically and empirically. Inflation has a direct and indirect impact on consumer expenditure (Katona, 1975). Because of pessimism and uncertainty in the economy, consumers prefer to conserve rather than consume during periods of inflation. Inflation influences consumer spending by influencing both liquid and illiquid assets since there is a desire to hold real assets rather than assets tied to nominal values or not indexed to inflation during periods of inflation. Inflation affects the income distribution of households (employers, employees, borrowers, and creditors) (Wilso & Howard, 1978). Inflation can degrade the real worth of nominal assets, reducing the actual worth of household wealth invested in those assets. Using both survey data and time-series data, researchers have looked at how inflation affects consumer purchasing in an economy (Eggertsson, 2006; Eggertsson, 2008; Malmendier and Nagel, 2009; Piazzesi & Schneider, 2009; Eggertsson, 2011; Christiano, Eichenbaum, & Rebelo, 2011; Woodford, 2011; Coibion & Gorodnichenko, 2012; Werning, 2012; Correia, et al., 2013; Romer & Romer, 2013).

Consumers increase current spending as a result of a wealth-redistribution channel if they predict inflation rates to be higher, according to academics (Doepke & Schneider, 2006; Atif Mian, Kamalesh Rao, & Amir Sufi, 2013). This is because they have larger marginal propensities to consume out of their wealth. Higher inflation acts as an implicit tax on households' use of paper money as a medium of exchange, resulting in less consumer spending in an economy since disposable income is reduced (Aruoba & Schorfheide, 2011). Precautionary savings (Bloom, 2009; Pastor Lubos & Veronesi Pietro, 2013) is another avenue via which inflation pressures influence consumer spending. Inflation can influence consumer spending in several different ways. The most straightforward explanation is that inflation has a negative impact on consumer confidence and, as a result, leads to increased savings. Inflation may also alter the income distribution among households, which may have an impact on consumer behavior in the process. As can be seen from the preceding, inflation's effect on private con-

sumption expenditure is driven by the importance of private consumption and the economic consequences of inflation.

According to Alagidede et al. (2014) there are "two schools of thought on the causes of inflation in Ghana". This suggests that beyond the impact inflation has on private expenditure, there are beliefs about what inflation is to Ghanaians. They further state that the schools are "monetarist and the structuralist". The monetarist is a view that "suggests that inflation is a matter of excessive aggregate demand". This conception premises on the fact that when demand becomes uncontrollable, inflation becomes inevitable. In suggesting the type of solution to inflation, monetarist believes that "the causes are inherent in fiscal and monetary restraint". The basic idea of the structuralist is that inflation is caused by the system and channel of productions. The belief is that as there are many channels to take production through, there are chances of an increase in the price of goods. One of the basic factors to a structuralist is trying to get restructured. Since the effect of every inflation is on the people, this work presents a sequential analysis of how inflation affects private expenditure. Private expenditures are goods and services paid for by citizens. Thus, people will keep needing to understand how best to live in a place by knowing the standard of living. This research will work through some years in determining the kind of effect inflation has on what the citizens purchase or use.

This research is relevant due to the contradictory nature of the results of empirical investigations published by previous studies and researchers. Given the limited understanding of the impact of inflation on the Ghanaian economy, the realization that the problems resulting from the effects of inflationary growth are becoming unbearable for the citizens and the entire economy. It is, therefore, necessary to critically examine the impact of inflationary growth rate on private consumption expenditures and the Ghanaian economy's overall growth. Some research implies that rising inflation and rising inflation expectations lead to increased consumer spending, while others imply that rising inflation and rising inflation expectations have little or no influence on consumer spending. Private consumption expenditure is also a significant factor in understanding the role of inflation in the economic growth of Ghana. The variable is significant because it influences both inflation and economic growth. Additionally, it accounts for roughly two-thirds of domestic final spending, making it the primary driver of future economic growth.

The result of this study will provide pertinent data regarding the effect of inflation on the variables being studied. In other words, it will validate the efficiency of her macroeconomic policy toward price stability. Additionally, the study would serve as a guide for financial management regarding the most appropriate policies to adopt at any given point in time. The result will also be of interest to government officials and other investors, as well as policymakers. The reason for this is because it will expose the effectiveness and performance of the financial administration. Also, this research will provide a solid foun-

dation for further research on inflation, private expenditure, and economic growth. Therefore, our current investigations were prompted by these varied results, as well as the fact that there are few empirical studies in Ghana on the influence of inflation on household consumption and economic growth in the marketing environment. In this study, we examine the time series link between inflation expectations and private consumption expenditures and willingness to spend on durable consumer goods using Ghana macro data spanning between 1990 to 2020.

1.1. Research Objective

The objective of this study is to investigate and assess the impact of inflation on private consumption expenditure and economic growth in Ghana and to add to the body of knowledge on the factors that influence consumption expenditure. While the specific aims of this study are:

- To examine the relationship between inflation and private consumption expenditure in Ghana;
- To examine how private consumption expenditure affects the growth of the Ghanaian economy;
- To investigate the relationship between interest rate and private consumption expenditure.

1.2. Research Question

The research issue for this study includes the following;

- What level of impact does inflation have on private consumption expenditure in Ghana?
- How does inflation affect Ghana's economic growth?
- What is the nature of the relationship between inflation and private consumption expenditure?

1.3. Statement of Problem

The study addressed the knowledge gap and conducted an assessment on the hypotheses concerning the impact of the inflation rate on private consumption expenditure and the economic growth of Ghana. Private consumption expenditures are measures of the amount of money that individuals spend on various products and services. It gives you an idea of how much money the citizens of a country spend on various products and services. Since it is a major factor of economic growth, the need to study the impact of inflation on it becomes important as inflation policies may have adverse effects on it depending on the period. Although studies have been conducted to investigate the relationships between inflation and private consumption expenditure but research on this particular area has not been thoroughly investigated. This paper aims to conduct a study that will examine these and other macroeconomic variables such as monetary policy (interest rate), gross domestic product growth rate, and so to provide

a clear picture of their relationships and to suggest some possible ways of stabilizing these variables to achieve high economic growth rates for the country to meet its objectives. According to Frimpong and Oteng-Abayie (2010), inflation above 14% always hurts Private consumption expenditure and economic growth, which is why the Bank of Ghana's monetary planning committee always aims for a single-digit rate. Inflation, interest rate, money supply, and other macroeconomic variables are important determinants of economic growth in industrialized nations by extensive research. Several Ghanaian administrations have implemented fiscal and monetary policies aimed at lowering inflation and interest rates, as well as maintaining a stable currency rate and the stock market, to encourage economic growth.

The literature on these variables is scarce and dispersed. Again, research in this field is few in Ghana, and we do not know the exact relationship between some of these variables, such as inflation, interest rate, economic growth, and private consumption index.

1.4. Research Scope

This research takes a case study of the Ghanaian economy. This research seeks to evaluate empirically and theoretically, the relationship between inflation and private consumption expenditure in Ghana by taking a case study on time series trends from 1990-2020.

1.5. Technical Routes

This research follows a simple and systematic delimitation. Chapter one provides a general background to the study. More importantly, it gives research questions, problems of study, and how significant this research is. In chapter two, discuss the review of related works. It provides reviews of some works related impact of inflation on private consumption expenditure and the economic growth of Ghana. The goal is to provide shreds of evidence for the significance of the study. In chapter three, this project discusses the methodology in which research instruments are discussed and the methods adopted for data analysis. Chapter four presents the discussions and findings of the research. The findings are strategically organized to answer the research questions in chapter one. Chapter five provides a summary and conclusions of the research. It also presents recommendations for further studies. This work wraps up with reference to the works cited. It is also analyzed in a sketched diagrammatic format below **Figure 1**.

2. Study Country Overview

The location for this research is the Republic of Ghana. Ghana is a country in West Africa situated on the Gulf of Guinea and bordered by Burkina Faso on the north, Cote d'Ivoire on the west, and Togo on the east. The southern part of the country is bordered by the Atlantic Ocean. Ghana's landmass is 92,099 square

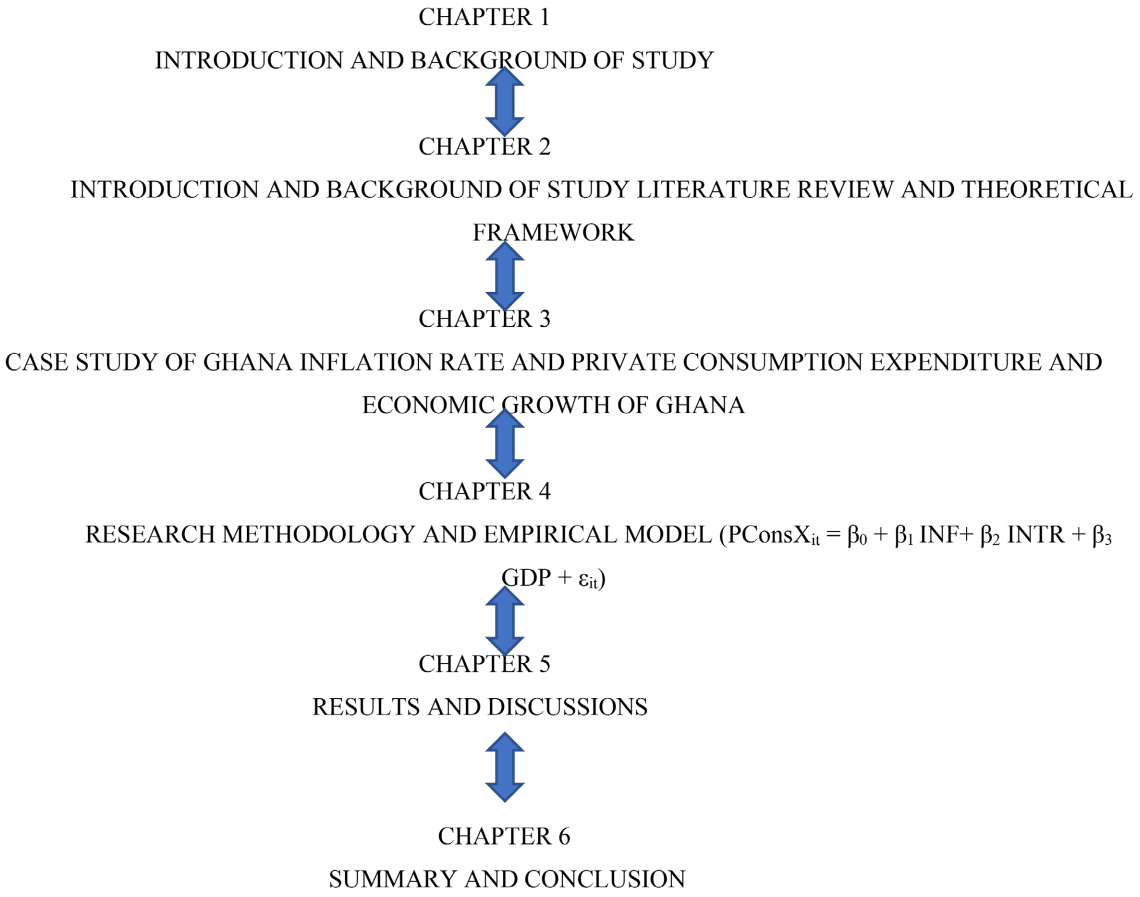

Figure 1. The disposition of this study is analyzed above.

miles/238,535 square kilometers, resulting in a population density of 121 people per square kilometer, for the entire country. According to World Bank Annual statistical data base, the Ghanaian population is about 30.42 million. However, in the opinion of many experts, Ghana's population growth has reached alarming proportions, as the country is inadequately prepared to meet the vastly increased demands for food, water, education, and employment that come with a fast-increasing population. Family planning is at the heart of efforts to slow population growth because it can either reduce the number of births or assist families in properly spacing out their children's births. Ghana's economy is broad and wealthy in resources, including industries such as digital technology production and exportation, automotive and ship construction and exportation, and the exportation of various and rich resources such as hydrocarbons and industrial minerals. As a result, Ghana has one of the highest GDP per capita in West Africa. In 2011, Ghana became the world's fastest-growing economy due to a GDP basement. The Ghanaian domestic economy in 2012 revolved around services, which accounted for 50 percent of GDP and employed 28 percent of the woworkforceBesides the industrialization associated with minerals and oil, industrial development in Ghana remains basic, often associated with plastics (such as chairs, plastic bags, razors, and pens). 53.6 percent of Ghana's work-

force were employed in agriculture in 2013.

In July 2007, Ghana began a currency re-denomination process, switching from the Cedi () to the new Ghana Cedi (GH). For every 10,000 Ghana Cedis transferred, 1 Ghana Cedi is received. After surpassing South Africa in 2019, Ghana is Africa's greatest gold producer and second-largest cocoa producer (after Ivory Coast). Diamonds, manganese ore, bauxite, and oil are also abundant. Although the majority of its debt was canceled in 2005, the government's expenditures were thereafter allowed to spiral out of control. This, combined with a drop in oil prices, resulted in an economic crisis, forcing the government to seek a $920 million IMF extended credit line in April 2015. The case study chosen for this study is within Ghana. Keenly, the purpose is to track time-series data of the interplay between private expenditure and inflation. The reason for choosing Ghana is to fill in the gap of inflation impact on private consumption expenditure. Also, this project is on Ghana as it is one of the fast-growing economies in West Africa.

2.1. Inflation Rate in Ghana (1990-2020)

Inflation is a macroeconomic problem that Ghana is currently dealing with, and it is the most concerning economic situation. Because of its increasing rate and affective measures, the government of Ghana is concerned about the impact it has on private consumption spending, and the country's economic growth. There are different causes of inflation as discussed before. Macroeconomic factors are one of the major causes of inflation in a country. In the case of Ghana, the real exchange rate and money supply are the main macroeconomic factors responsible for inflation in Ghana. Whilst exchange rate depreciation reduces the level of inflation, growth in real output or expenditure and money supply exert pressure on price levels to move up. To a large extent, research has given further support to the view that inflation in Ghana is a combination of aggregate demand and excess liquidity (Gyebi Francis & Boafo Godfried, 2013). Even though inflation has received a great deal of attention, all of the authors agree that it has an impact on private consumption expenditure and Ghana's economic growth. Ghana's inflation rate was 9.9 percent in 2020. Though Ghana's inflation rate has changed significantly in recent years, it has tended to decline from 2001 to 2020, ending at 9.9% in 2020.

Inflation, as measured by the consumer price index, reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. Inflationary forces have been present in Ghana for a long time. Between 1990 and 2020, there was a lot of upheaval in the market. The yearly average rate of inflation increased from single digits in the early 1990s to more than 59% in 1995 (**Figure 2**). Inflation surged to 59 percent in 1995 after a brief dip. Unfortunately, the dramatic drop to 25% in 2000 was followed by the biggest surge to 32 percent in 2001. This

phase of high volatility is characterized by currency devaluation and counter-devaluation. Price controls were in place for the majority of the time, and there were changes in economic policy that were later reversed. Inflation reached its maximum point in 1995 when the economic reform program was implemented. Food prices were substantially more volatile than non-food prices, reflecting an inelastic food supply scenario, as seen in Figure 3.

Inflation levels gradually fell in the decade following the ERP's implementation, even if they remained in double digits and above the government targets.

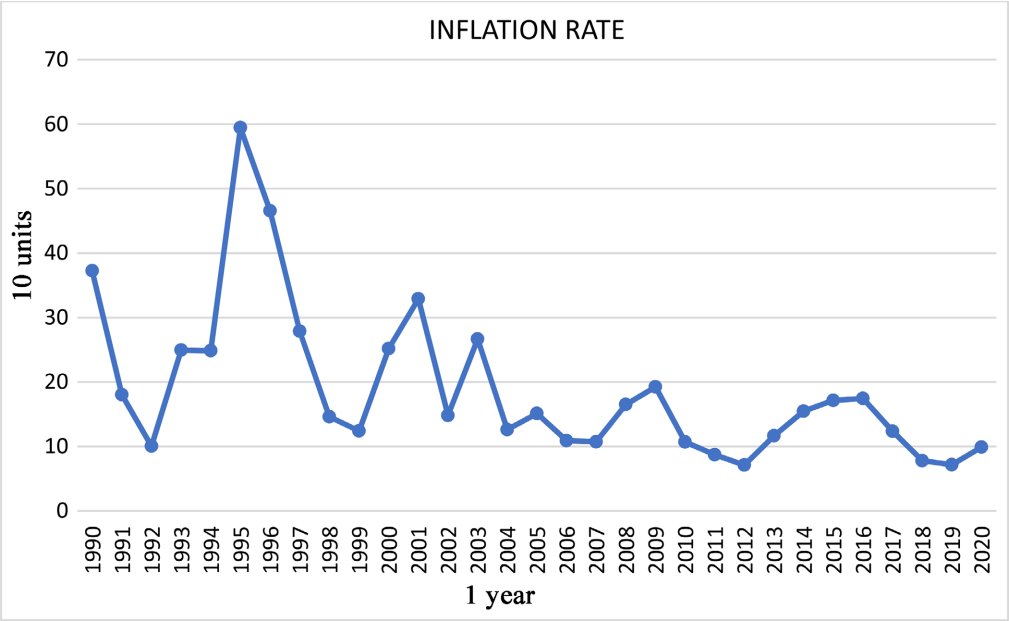

Figure 2. Inflation rate 1990-2020.

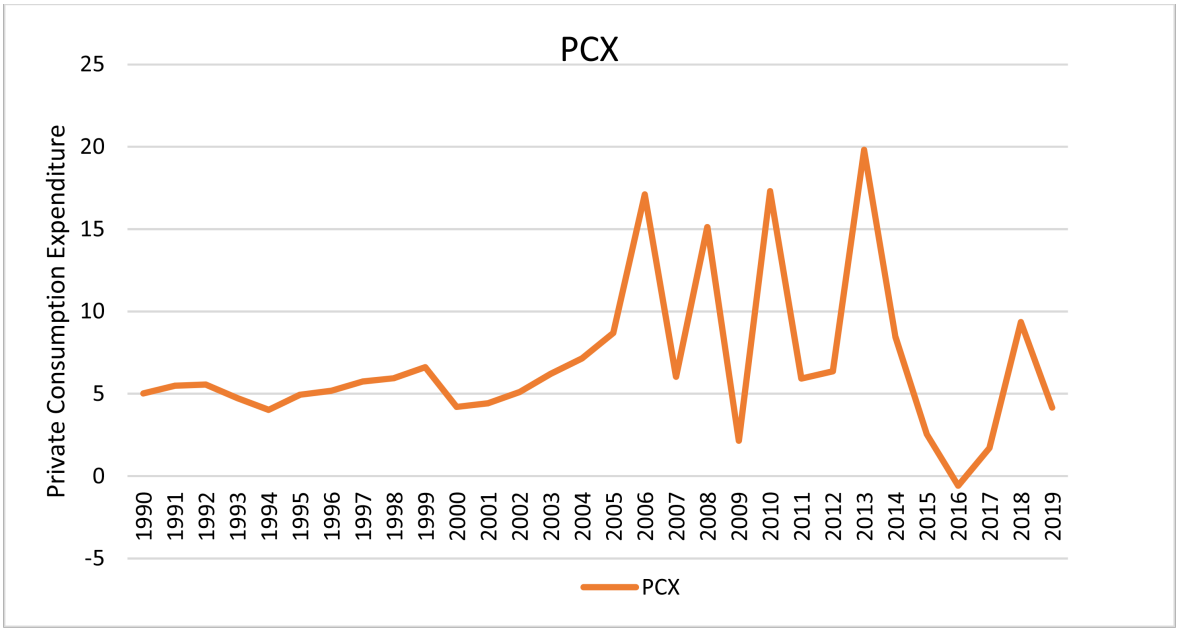

Figure 3. Private consumption expenditure 1990-2020.

During this time, the figures fluctuated between 10% in 1992, 59% in 1995, and 46% in 1996, indicating that, while volatility had decreased significantly, it was still present. Large increases in government spending in the run-up to the 1996 elections may have contributed to the high inflation rate in 1995 and 1996. It's worth noting, for example, that while food inflation fell dramatically between 1995 and 996, non-food inflation remained stubbornly high. Inflation has remained a major cause of concern among policymakers in Ghana, and it threatens to undermine the ERP's modest accomplishments. It also means that the majority of people will have decreased living standards. Excess liquidity and a limited food supply are substantially to blame for current inflation patterns. For a long time, the Central Bank has been under great pressure to actively support the government's expansionary economic policies. Effects of discretionary increases in gasoline and utility costs, tax initiatives, and exchange rate depreciation are among the other causes.

2.2. Private Consumption Expenditure

Ghana's household consumption was 46,251 million US dollars in 2019. Before rising to a high of 46,251 million US dollars in 2019, Ghana's household consumption fell to a low of 2876 million US dollars in 1973. Understanding the determinants of private consumption expenditure has been one of the central issues in macroeconomics. It is assumed that private consumption is the largest or main component of aggregate demand and therefore plays a vital role in macroeconomic policymaking. The quality and standard of living of the citizens of a country are could rest solely on personal expenditure which in turn affects economic growth. Many economists have devoted much time to studying personal consumption expenditure, such as Keynes (1936). The Keynesian study of consumption expenditure has been the source of many Consumption Expenditures Theories today. However, there are three main theories of consumption. One of these theories is Duesenberry's Theory (1949) which is called the Relative Income Theory. Duesenberry propounded that consumption expenditure depends on the income of an individual relative to the incomes of others rather than the absolute size of his own home. Another theory is Modigliani's theory of Life Cycle the Hypothesis. This theory advocates that the profile of consumption expenditure planned by individuals depends on their lifetime income expectations rather than current disposable income (Gali, 1994). Additionally, a well-known American economist, Friedman in 1957, established a hypothesis about consumption behavior known as the permanent income hypothesis, according to which an individual's consumption is determined by his or her permanent income rather than the current amount of income. This theory is called the permanent Income Theory of Consumption.

2.3. A Look at Long-Term Growth Record (GDP)

Ghana's growth record has been uneven, as **Figure 4** shows. Following a period

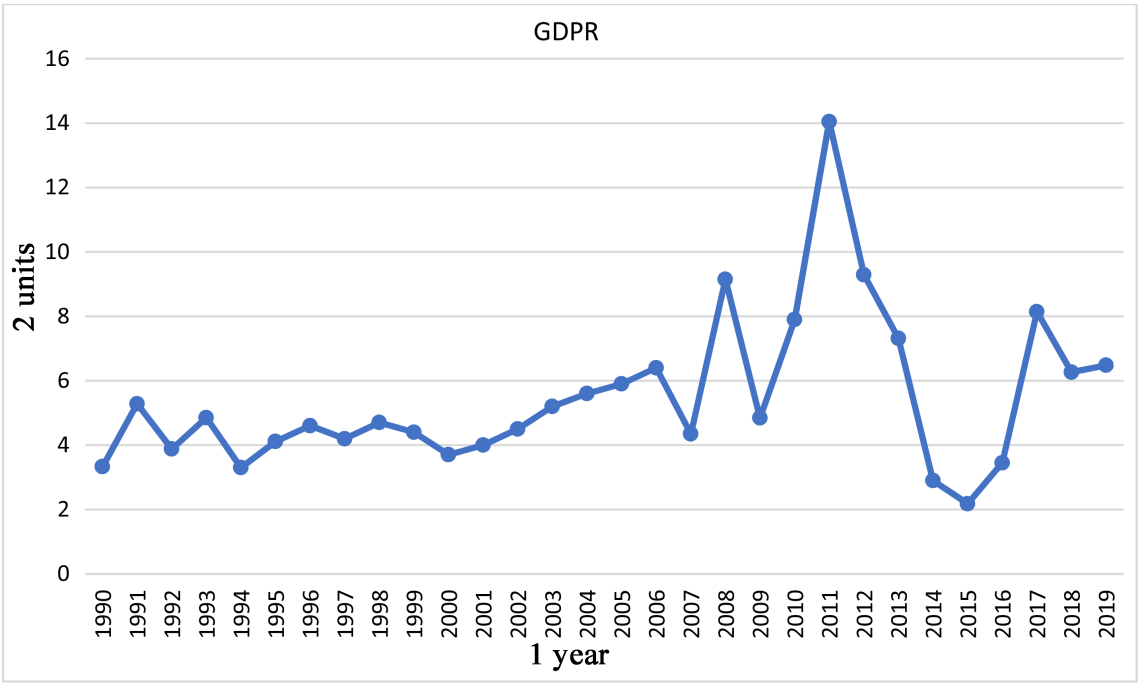

Figure 4. Gross domestic product growth rate.

of relatively high GDP growth in the 1950s and early 1960s, the Ghanaian economy began to stagnate in 1964. Since the mid-1960s, growth has been erratic, and it wasn't until 1984 that things started to settle down. The growth rate trend was fluctuating and almost at status quo in 1990, to 2003, while it came over 6% in the year 2006. Positive growth tendencies emerged during the turbulent period, with the highest rates of growth reaching 9% in 2008 and following was a deep fall in 2009 and 2010 respectively. Eventually, in 2011 the GDPR rose swiftly and upsurged to 14%. The economy appears to have positively responded to the ERP and the SAP. It recovered from its negative growth rate of about 5 percent in 1983 to a hefty positive rate of 8 percent in 1984. This positive growth appears to have maintained with little variation since that time, while there appears to have been a modest slowing in the rate of increase since 1990. Following years after 2011, there has also been a deep fall in GDPR below 10% until the year 2020.

The per capita income growth rate looks to be close to the GDP growth rate shown above. As seen in Figure 4, per capita GDP growth closely matches GDP growth, implying that population growth has been relatively stable, albeit the increasing disparity between them since the 1980s suggests that population growth has accelerated during this time. Ghana's GDP per capita PPP averaged 3476.79 dollars from 1990 to 2020, with a peak of 5396.87 dollars in 2019 and a low of 2342.37 dollars in 1990. i.e., when adjusted for purchasing power parity, Ghana's Gross Domestic Product per capita was last measured at 5304.98 US dollars in 2020 (PPP). Ghana's GDP per capita, when adjusted for Purchasing Power Parity, is equal to 30% of the global average.

In 2020, Ghana's Gross Domestic Product per capita was estimated to be 1848.25 US dollars. Ghana has a GDP per capita that is 15% higher than the global average. Therefore, Ghana's Gross Domestic Product (GDP) increased by 0.80% in the fourth quarter of 2020 as compared to the preceding quarter.

2.4. Effect of Inflation on Private Consumption Expenditure

When one's purchasing power is reducing, it's natural to want to make a purchase now rather than later. Cash will only depreciate, thus it is preferable to complete your shopping and stock up on items that are unlikely to depreciate in the future. As for consumers, this means filling their petrol tanks, stocking their freezers, purchasing shoes in the next size up for their children, among other things. The result is that enterprises must make capital investments that, under alternative circumstances, may have been postponed. When inflation takes hold, many investors turn to gold and other precious metals for protection against rising prices. However, the volatility of these assets can negate the benefits of their price protection, particularly in the short term. Osuji Casmir and Agbada Andrew (2020) state that inflation increases household consumption expenditure. He further gave an instance: during the inflation period, people spend more money on goods and services than during less inflationary periods. This means that inflation increases the average private consumption expenditure. The interest rate had a negative but insignificant effect on household consumption expenditure implying that interest rate is not a significant variable influencing changes in household consumption expenditure growth rate. The result also showed that there exists a positive significant relationship between gross domestic product growth rate and household consumption expenditure growth rate (Osuji Casmir & Agbada Andrew, 2020). The effect of the population is not the same on all citizens of a country. Usually, the blows dealt by inflation have lesser effects on the self-employed citizens and Entrepreneurs. But salary earners are more affected. People with fixed income employed in either public or private sector organizations or Self-employed, working in unorganized sectors are considered as victims of rising inflation, as inflation influences the consumption, spending, and investment practices of the households. Inflation also increases the cost of living, price of commodities and reduces the opportunities of getting goods jobs which in turn results in reduction in income level and finally causes a fall in consumption expenditure. Hence, this situation directly influences households' income and their spending capacities.

3. Empirical Review

When the price level of consumer goods and services rises over a given period, this is referred to as inflation. A high inflation rate is frequently caused by an excess of money supply, and it has the potential to turn into hyperinflation, which occurs when inflation occurs too quickly and rapidly. Hyperinflation can devalue the currency, resulting in a recession and even economic collapse, de-

pending on the circumstances. Inflation is attributed to a variety of causes, and governments are reluctant to accept responsibility for the causes of inflation, leading to the development of gloomy justifications for the existence of inflation. For example, one of the primary reasons why inflation can be so destructive is that it divides society into two categories: winners and losers. And one category will benefit at the expense of the other. In general, inflation occurs when the quantity of money increases at a faster rate than the rate of increase in output. Therefore, foreign and domestic reviews have been analyzed below in other to elucidate more on the concept of our research. In this section, we look at the available literature from both a global and Ghanaian viewpoint.

3.1. Foreign Evidence

Using panel data, Alem and Soderbo (2010) investigated household consumption in urban Ethiopia: the impact of food price inflation and idiosyncratic shocks. Food price inflation harmed households with low asset levels, according to the findings of their study. Wadal (2011) conducted an econometric analysis on Lebanon's private consumption function, looking at how consumption responds to income, interest rate, inflation, and wealth. They also discovered that households headed by casual workers were more exposed to price fluctuations in food. Hausman Joshua and Wieland Johannes (2014) look at the Bank of Japan's monetary easing and the expansionary fiscal policy known as "Abenomics" from a global perspective. Higher inflation expectations raise consumption and GDP, according to their evidence-based aggregate time-series data. Barro (1995) used data from the 1960s to 1970s to examine the effects of inflation on the economic performance of over 100 countries. The study's regression results found that if several country variables remain constant, an increase in average inflation of 10% per year reduces real GDP growth by 0.2 - 0.3 percent per year and lowers the investment-to-GDP ratio by 0.4 - 0.6 percent. Prasanna and Gopakumar (2009) used co-integration and error correction models to explore the empirical link between inflation and economic growth in India from 1972 to 2007. Inflation and economic growth are inversely associated, according to the findings of their study. Second, inflation is more sensitive to changes in growth rates than growth is to changes in inflation rates. In their study of the causes of economic growth, Bruno and Easterly (1995) presented a nonparametric definition of high inflation crises as "periods when annual inflation exceeds 40%." The authors selected nations with high inflation crises of 40% and above using annual data for 26 countries and a 40 percent inflation rate as a benchmark for an inflation crisis. They then examined how the country's growth performed before, during, and after the high inflation crisis. After controlling for other factors like shocks from political crises, trade terms, and wars, the analysis found evidence of a negative link between inflation and growth.

De Mello and Carneiro (2010) examined consumption behavior in the context of chronically high inflation using Euler equation-type consumption functions.

The empirical findings demonstrated that widespread backward-looking indexation and entire foreign currency substitution via dollarization lead to consumer instability amid continuously high inflation. As a result, if external shocks are to have a similar impact on high-inflation countries in Latin America, the underlying consumer spending responses to shocks must be essentially similar, according to the study. Bachmann, Berg and Sims (2015) begin their research with MSC survey data. They discover a statistically and economically negligible link between households' inflation forecasts and their willingness to spend on durable goods. Household predictions about future inflation are shaped by past inflation perceptions (Jonung 1981). Controlling for historical inflation perceptions diminishes the negative consumption propensity's marginal effect while increasing the positive consumption propensity's marginal effect. High historical inflation perceptions reduce consumers' marginal desire to consume durables while increasing their unfavorable attitude toward purchasing durables, as predicted by the consumption Euler equation.

3.2. Ghanaian Evidence

Inflation can affect the economic growth of a country positively and hyperinflation can affect it negatively. The results of empirical investigations published in the literature are contradictory. Some research implies that rising inflation and rising inflation expectations lead to increased consumer spending, while others suggest that rising inflation and rising inflation expectations have little or no influence on consumer spending. The current investigations were prompted by these varied results, as well as the fact that there are few empirical studies in Ghana on the influence of inflation on consumer spending in the marketing environment. Using a Co-integration technique and annual time series data spanning 1980-2010, Agalega and Acheampong (2013) investigated the impact of inflation, policy rate, and government consumption expenditure on GDP growth in Ghana. The study's findings revealed a positive long-run association between inflation, policy rate, and real GDP, while government consumption expenditure had a negative long-run influence on real GDP. Inflation and government consumption expenditure had a beneficial influence on real GDP in the near run, according to the findings. In conclusion, the study advised that the government, through the Bank of Ghana, create and implement prudent monetary and fiscal policies aimed at decreasing and stabilizing both micro and macroeconomic indicators, including inflation targeting, to boost economic growth.

We also contribute to the recent research that examines the relationship between inflation rates and private consumption expenditure using macro-level data. According to Mavikela Nomahlubi, Mhaka Simbarashe and Phiri Andrew's (2018) study of the effect on inflation on Ghana, there is a negative and significant effect at low inflation rates, an insignificant effect at moderate levels, and significantly positive effects at high inflation rates. While there are few parts of the country where the effect of inflation is not strong, it would still affect the

larger population in the area. Consumers who spend a larger proportion of their incomes in the sectors where inflation is persistent are likely to be adversely affected. Although it can be argued that some producers may benefit from higher prices following a positive inflationary shock, we posit that the welfare implications for the wider population are likely to be negative (Alagidede et al., 2014).

Agbelie (2014) suggested that the remedy to Ghanaian inflation is for Government to stop printing money and regulate the supply of money through the use of its monetary policies like the open market operations, cash ratios, bank rates and, special deposits to control the supply of money in the system. Also, the government should reduce its expenditure. The government of Ghana should only spend money on productive ventures with accountability and eschew expenditures on ambitious projects and ventures. Policies that contribute to high production should be pursued by governments.

EffahNyamekye and AduseiPoku (2017), using the ADF test (for stationarity qualities), the Johansen test long-rung run relationship), the VECM test (short-run run dynamics), and the OLS test (for a degree of correlation), investigated the effect of inflation on consumer spending in Ghana from 1964 to 2013. The results of the OLS test indicate that the variables are not stationary in terms of levels but are on the first difference. The results of the Johansen test show that inflation and consumer expenditure have a long-term stable relationship. The VECM's studies reveal a consistent correlation between inflation and consumer expenditure. Therefore, their study revealed that inflation and consumer expenditure have a positive relationship. Nevertheless, several studies have been conducted throughout the years to investigate the influence of inflation on economic growth, with only a handful focusing on the impact on individual consumption.

3.3. Research Gap

To the researcher, there has not been a thorough study of the impact of inflation on private consumption expenditure and economic growth in the Ghana case study. Nevertheless, it is of a truth that the seat of many big technology companies like Twitter are Ghana. This shows the extent to which Ghana is friendly with foreign investors. Such economic activities have an impact on the general GDP of the country. Also, with this research, there will be a track series of years of expenditure. The presentation which will be on the charts will provide an overview of inflation impact which has not been on record for Ghana, especially.

3.4. Theoretical Frameworks

The three theories of inflation approaches are: 1) the monetarist approach (quantity theory of money); 2) the Keynesian approach; and 3) the structural theory approach.

3.4.1. The Monetarist Approach (Quantity Theory of Money)

This is the relationship between national income measured at market prices and

the money supply's velocity of circulation. The relationship between price levels and the money supply is positive. The equation that represents this relationship is:

$$MV = PY$$

where M is the total amount of money in circulation,

V denotes the velocity of circulation,

and P denotes the overall price level,

Y is the total income.

As a result, the money supply and the price levels of a particular economy will have a proportionately positive connection. That is, if the money supply grows by a given proportion, price levels will also grow by the same percentage. Inflation is said to be generated by an increase in a country's money supply, according to this idea. Inflationary conditions are thought to be generated by an increase in the money supply that is not accompanied or sustained by an increase in the money supply.

3.4.2. The Keynesian Theory of Inflation

The Keynesian inflation theory can be seen as an extension and generalization of Wicksell's viewpoint. According to Keynes, an increase in real factors could lead to an increase in aggregate demand. According to Keynes, the inflationary gap is the difference between expected expenditure and output available at full employment.

Thus, an increase in general price levels, or inflation, is attributable to an increase in aggregate demand that exceeds the increase in aggregate supply, according to Keynes. If a particular economy's output is at full employment, an increase in government spending (G), private consumption (C), and private investment (I) will increase aggregate demand, which will lead to an increase in general price levels. Such an inflationary situation arises when a given economy is unable to expand its output or aggregate supply in response to an increase in aggregate demand at its optimal or full employment level (maximum utilization of scarce resources).

As shown in Figure 5, there is an upward shift of the aggregate demand curve: C + I + G + ΔG, an excess demand equal to the amount AB, which is the excess demand at full employment output.

- AB: At full employment, the inflationary gap is the amount by which aggregate demand exceeds aggregate output.
- If: is Equilibrium Output or Full Employment Output, since the output cannot be raised above full employment, prices will rise, resulting in demand-pull inflation. Hence,
- Aggregate demand must shift lower to point B, where it intersects the 45-degree line.

Therefore, this can be accomplished by enacting suitable policies, such as raising taxes or cutting government spending.

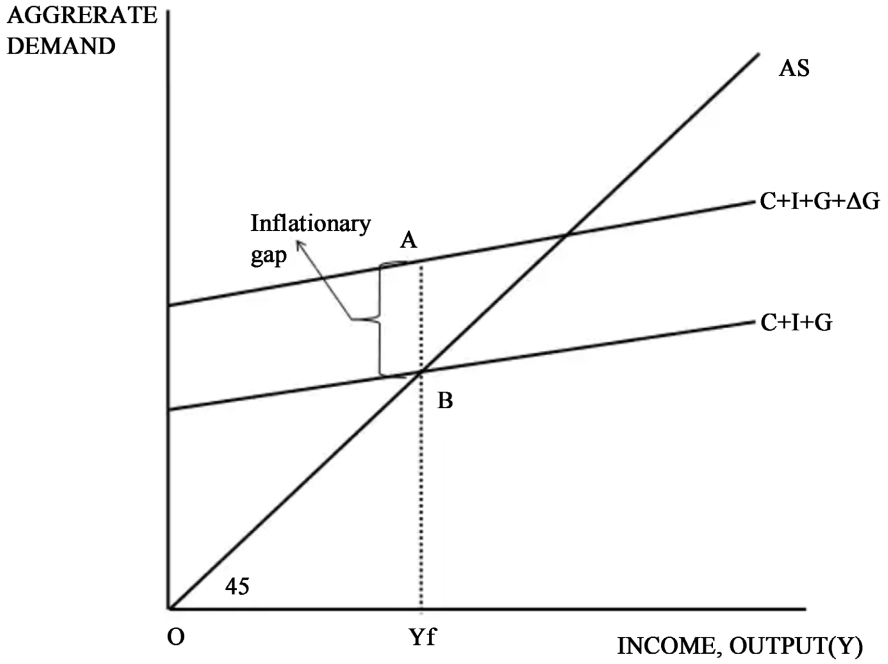

Figure 5. Inflationary gap.

3.4.3. The Structural Theory of Inflation

According to this theory, the major cause of inflation is the inelasticity of the economy's structures. This theory is primarily used to explain the nature and basis of inflation in developing countries, which are influenced by inelasticities in the following areas: Production level and capacity, Capital formulation, Institutional framework, High inelasticities in the agricultural sector, and Inelasticities in the labor force and employment structures.

The theory emphasizes that inflation rise is attributable to the unstable and slower growth rate of export in the economy which is inefficient to support the required growth rate of the economy. This theory also asserts that a uniform rate of growth of money wages throughout the economy must lead to permanent cost pressures in the service sector, which is assumed to have lower productivity growth. Therefore, structural inflation is due to supply inelasticities resulting in to increase in agricultural prices and costs. (Figure 6)

3.5. Analysis of Consumption Theories

3.5.1. Relative Income Theory of Consumption

Duesenberry deduced from Keynes' consumption theory that a person's consumption is not determined by his current income, but by a previously attained income level. According to Duesenberry's relative income hypothesis, consumption of an individual is not the function of his absolute income but of his relative position in the income distribution in a society, that is, his consumption depends on his income relative to the incomes of other individuals in the society. For example, if the incomes of all individuals in a society increase by the same percentage, then his relative income would remain the same, though his absolute

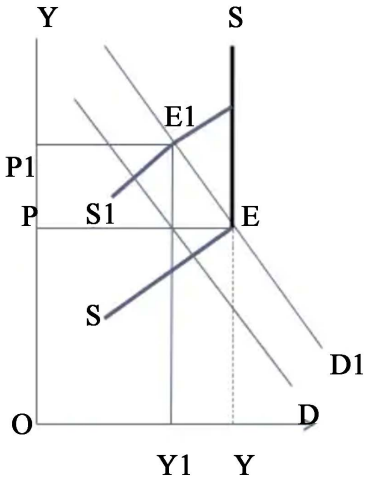

Figure 6. Structural inflation.

income would have increased. According to Duesenberry, because his relative income has remained the same the individual will spend the same proportion of his income on consumption as he was doing before the absolute increase in his income. That is, his average propensity to consume (APC) will remain the same despite the increase in his absolute income.

However, in the late 1950s to 19he Duesenbrry's theory was discarded by economists of that time. Why was this so? One possible reason is that—unlike Keynes, Modigliani and Brumberg, and Friedman—the relative income approach never developed a tractable diagrammatic framework suitable for classrooms, and with clear differentiated predictions and policy implications. This may have cost relative income theory dearly given the economics profession's penchant for mathematical and diagrammatic treatments.

3.5.2. Life Cycle Theory of Consumption

This is another post-Keynesian theory. It was postulated by Mowdigliani who explains that Consumption in any era is not a function of the period's current income, but of the lifetime predicted income. Thus, in the life cycle hypothesis, the individual is assumed to plan a pattern of consumption expenditure based on expected income in their entire lifetime. It is further assumed that an individual maintains a more or less constant or slightly increasing level of consumption.

According to Modigliani, The point of departure of the life cycle model is the hypothesis that consumption and saving decisions of households at each point of time reflect more or less a conscious attempt at achieving the preferred distribution of consumption over the life cycle, subject to the constraint imposed by the resources accruing to the household over its lifetime.

3.5.3. Permanent Income Theory of Consumption

Milton Friedman's Income Theory of consumption shares similarities with the Life Cycle approach in that, Friedman deduced that consumption is dependent

on the income in the long run rather than by present income levels. Friedman calls this long-term projected income a permanent income on which people build their consumption plans. According to Friedman, an individual who is paid or receives income only once a week, say on Friday, he would not concentrate his consumption on one day with zero consumption on all other days of the week. He argues that an individual would prefer a smooth consumption flow per day rather than plenty of consumption today and little con-sumption tomorrow. Thus, consumption in one day is not determined by income received on that particular day. Instead, it is determined by the average daily income received for a period. This is in line with the life cycle hypothesis. Thus, according to him, people plan their consumption based on expected average income over a long period which Friedman calls permanent income. Under this theory, even if economic policies are successful in increasing income in the economy, the policies may not kick off a multiplier effect in regards to increased consumer spending. Rather, the theory predicts that there will not be an uptick in consumer spending until workers reform expectations about their future incomes. Milton believed that people will consume based on an estimate of their future income as opposed to what Keynesian economics proposed; people will consume based on their moment after-tax income. Milton's basis was that individuals prefer to smooth their consumption rather than let it bounce around as a result of short-term fluctuations in income.

4. Research Methodology

Research Design and Data collection

In obtaining data for this research, a quantitative research design was used to obtain data from a large Ghanaian statistical database. The current study employs a quantitative research design that utilizes time-series data. The study quantitatively explains the relationship between inflation and consumption expenditure. The ordinary least squares (OLS) test is used to look at how inflation impacts consumption expenditure over time. The error correction model (ECM) is used to look at how inflation affects consumer spending in the near long run. The aim is to use the statistical results to determine real-life decisions. The quantitative research method was used to be able to conduct in-depth research to produce an accurate result through statistical analysis. The Augmented Dickey-Fuller (ADF) test is used to look into the stationarity qualities of the variables (inflation and consumer spending). To study the relationship between inflation and private consumption spending, the OLS test is performed.

This research adopted a secondary data source, and the data for this study was taken from the 2020 issue of the Central Bank of Ghana (CBG), and The World Bank Statistical Bulletin. For data entry, Microsoft Excel for Windows was adopted, and for estimation, an econometrics statistical package (E-views 11) was utilized. Annual secondary data for Ghana from 1990 to 2020 was used to conduct the empirical study of the influence of inflation on consumption expenditure. The

data comes from the WorBankank Development Indicators (WDI). The study's sample size is 30.

Data Analysis

This study's investigation process is divided into five primary steps. To begin, a combination of descriptive and inferential statistics is used to analyze the data. The descriptive statistics are the frequency distribution, the mean score, and the percentage distribution. The Pearson Product Moment Correlation will be used to determine the relationships between the dependent and independent variables, and it will be the inferential statistics used. Second, the augmented Dickey-Fuller (ADF) will be employed to determine whether the variable is stationary or non-stationary, as well as the order of integration. Third, the Engel and Granger approach is used to determine whether the variables have a long-term relationship. Fourth, check to see if the variables are co-integrated. The ECM model will be specified, but if it is not, it will be inter-perfected in the long run. Finally, multiple residual tests on the residuals of the models would be performed to check that linear model estimation was followed.

Conceptual Framework

When the price level of consumer goods and services rises over a given period, this is referred to as inflation. A high inflation rate is frequently caused by an excess of money supply, and it has the potential to turn into hyperinflation, which occurs when inflation occurs too quickly and rapidly. Hyperinflation can devalue the currency, resulting in a recession and even economic collapse, depending on the circumstances. Also, the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or altered at set intervals, such as yearly, is reflected by inflation as measured by the consumer price index. In most cases, the Laspeyres formula is utilized. Inflation figures are annual averages, not end-of-period figures.

Inflation is the rate of increase in prices over a given period. Inflation is typically a broad measure, such as the overall increase in prices or the increase in the cost of living in a country. But it can also be more narrowly calculated—for certain goods, such as food, or services, such as a haircut, for example. Whatever the context, inflation represents how much more expensive the relevant set of goods and/or services has become over a certain period, most commonly a year (Oner, 2010). Peterson (1980) defined inflation as a persistent increase in the general level of prices. They further explained that in a growing and changing economy some prices must go up and some must go down as supply changes in response to changes in consumer tastes and desires and national needs. If the overall level is to remain stable, individual prices of commodities, services, wages, etc., must be free to move up and down. Inflation is largely the result of two different phenomena, which are often referred to as demand-pull and cost-push inflation. Demand-pull inflation occurs when demand for goods and services within the economy exceeds the economy's capacity to produce goods and services. Cost-push inflation occurs when the price of input goods and services in-

creases (CRS, 2020).

Types of Inflation

The three types of inflation, i.e., 1) Demand-Pull Inflation, 2) Cash Push Inflation, and 3) Mixed Demand Inflation. The demand-pull inflation hypothesis is related to what is known as the traditional inflation theory. Inflation is created by an excess of demand (spending) relative to the available supply of goods and services at current prices, according to this hypothesis. The money supply, according to classical economists, is the most important component since, according to the quantity theory of money, only an increase in the money supply can raise the general price level. Demand-pull, on the other hand, is defined in current income theory as an excess of aggregate money demand relative to the economy's full employment production level. The theory assumes that prices for goods and services, as well as economic resources, are responsive to supply and demand pressures and, as a result, will easily rise under the strain of strong aggregate demand. Economists such as Friedman, Hawtrey, and Golden Weiser, who view inflation as strictly a monetary phenomenon, firmly endorse the hypothesis of inflation driven by an excess money supply. Excess demand occurs in the economy as a result of large-scale investment expenditures in the public or private sectors, which exceed overall output. Prices will rise as a result of this excess demand, resulting in excess demand inflation, also known as demand-pull inflation. As a result, according to this demand-pull inflation theory, prices rise in response to an excess of aggregate demand over the existing supply of goods and services, which is caused by an increase in the quantity of money resulting in a fall in interest rates, which increases investment expenditures and prices. When the MEC or MPC rises, generating an increase in expenditures and thus price demand-pull inflation can occur without an increase in the money supply. Inflation is deemed controllable since it is caused by excess demand, which can be reduced by monetary and fiscal policies that reduce demand.

Bent Hansen, Keynes, Wicksell, and Swedish economists all contributed to the development of the excess demand method. According to them, the general price is decided by the entire demand for and supply of products, just as the price of each good is controlled by the forces of supply and demand. According to them, inflation is produced by excess demand, in which total demand for products is greater than the supply of goods at current prices, as measured by the volume of money offered. However, a closer examination reveals that there is little difference between the two approaches, namely, Milton Friedman's quantity theory approach that excess demand is caused by excess money supply and Bent Hansen-Keynes' approach that excess demand is caused by increased expenditures on C and I, especially when it is realized that excess demand can only become effective by measurably increasing expenditures on C and I. The aggregate supply function becomes completely inelastic at some income level Y0 in the Figure corresponding to full employment, as shown in **Figure 7**. Pure-demand inflation theorists tend to assume that at some income level Y0 in the Figure

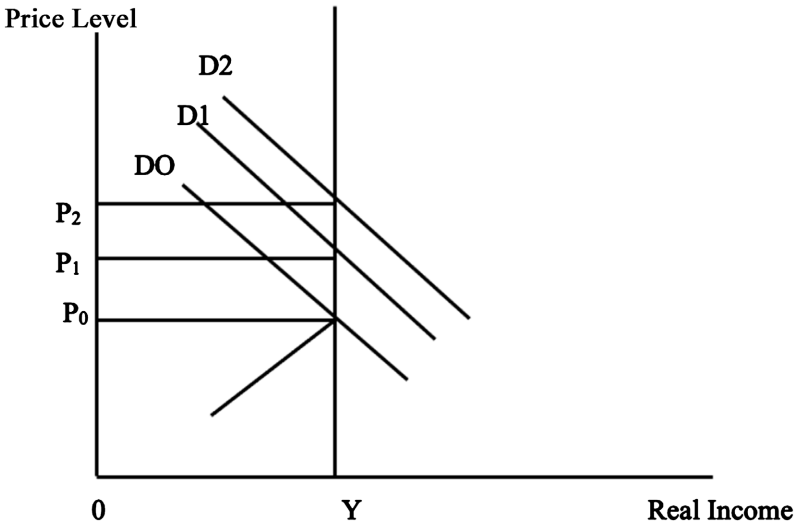

Figure 7. Pure-demand inflation.

corresponding to full employment, the aggregate supply function becomes completely inelastic, as drawn. Increases in demand beyond D0, to D1 and D2, raise the price level from P0 to P1 and P2, and increases in demand beyond D0, to D1 and D2, boost the price level from P0 to P1 and P2.

Inflation is a process of dynamic disequilibrium. It means that the price level will rise steadily over time. As a result of excess demand inflation, the IS and/or LM schedules continue to shift upward over time, perpetuating excess demand for goods and services and preventing general equilibrium. Although an increase in price level should clear markets, this does not happen if demand continues to climb at the same rate as price increases. Excess demand inflation that is not fueled by an increasing money supply must eventually come to an end. When interest rates reach a certain level, money demand becomes completely inelastic in relation to the rate of interest. Because there are no more speculative balances to be obtained, attempts to borrow funds will either be unsuccessful or result in the abandoning of other initiatives due to the resulting increase in interest rates. When money demand becomes inelastic, all funds are used for transactions, and any increases in aggregate demand can only be supported by reducing expenditures elsewhere in the economy or increasing the velocity of money transactions. As a result, the money supply is ultimately the causal component.

Consider Figure 7, which shows how excess demand inflation works regardless of whether the excess demand is caused by higher money supply or expenditures on C and I. from Figure 8, let us assume that the output level at full employment remains constant at Y0. With price level p0, general equilibrium is attained at Y0 and i0. An increase in the price level may now occur as a result of an increase in aggregate demand, shifting the IS0 schedule to IS1; the resulting excess demand of Y1 – Y0 leads to a bidding up of prices, shrinking the real value of the money supply and shifting the LMp0 schedule to LMp1, where general equilibrium is restored at the higher interest rate i1 and higher price level p1.

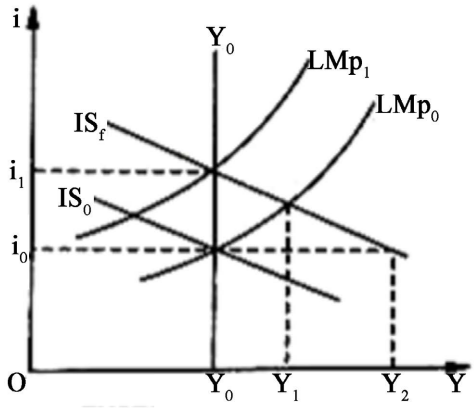

Figure 8. Excess demand inflation.

Cost-Push Inflation

During and after WWII, the cost-push inflation theory gained popularity. Prices, rather than being pulled up by surplus demand, are pushed up by a rise in the cost of production, according to this hypothesis. Prices grow as the cost of raw commodities, particularly labor, rises under cost-push inflation. The main rationale for inflation, according to this hypothesis, is that some producers, groups of workers, or both succeed in raising prices for their products or services above those that would prevail under more competitive conditions.

In other words, inflationary pressures start with supply and expand across the economy, rather than demand. Cost-push inflation occurs in industries that are relatively concentrated and in which sellers have a great deal of control in determining both prices and salaries. In a competitive economy, cost-push inflation may be impossible to achieve. Because this inflation is caused by cost and supply forces, it is difficult to treat because fiscal and monetary policies can only reduce cost inflation while increasing unemployment and slowing GDP. As a result, many cost-push inflation specialists advise for inflation reduction rather than outright abolition. The pure cost-push inflation process is seen in Figure 9.

According to pure supply (cost-push) inflation theorists, whatever happens to aggregate demand, the aggregate supply curve rises upwards from S_0 to S_1 to S_2 in societies with oligopolies, unions, and other pressure groups. A common feature of such marketplaces is that the money wage rate is inflexible downward, resulting in an aggregate supply curve similar to that represented by S0S. We may now proceed to the process by which increases in the money wage rate push up the price level using the initial SoS and D_0 curves in Figure 9: We assume that the increase in the money wage rate is completely due to labor unions' use of their market power and that it is not due to greater labor productivity or higher demand for labor. The S_0S curve has shifted to S_1S as the wage rate has risen.

With an increase in the money pay rate, the price level at which each potential level of output will be supplied rises correspondingly. The effect of a higher money wage rate and the resulting upward shift in the SS function from S_0S to S_1S with aggregate demand of D_0 is a rise in the price level from P_0 to P_1 and a

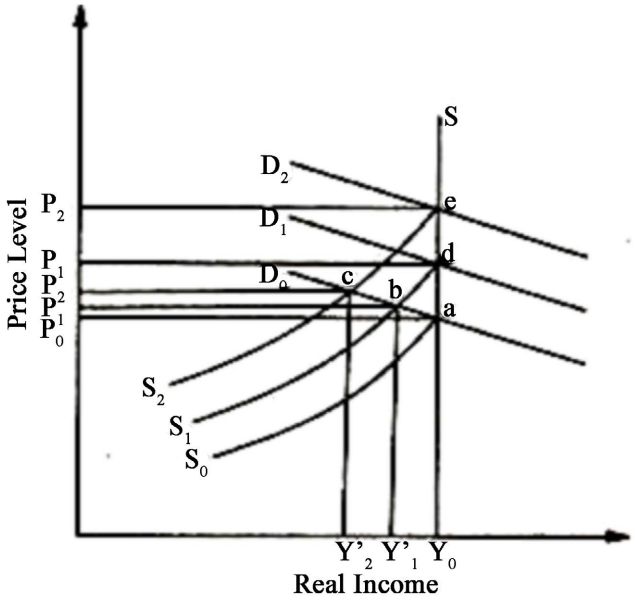

Figure 9. Pure cost-push inflation process.

decline in the output level from Y_0 to Y_1 (which results in unemployment). As a result, the advent of unemployment coincides with the growth in the price level. Increases in the money pay will cause the SS curves to migrate upwards even more (e.g., S2S). With each increase in the money wage rate, the price level rises, output falls, and unemployment rises. If left to their own devices, such increases in the money wage rate will not be able to continue indefinitely, as the growing unemployment that follows each such increase is likely to stifle the unions' demands for ever greater money wage rates.

As a result, according to this group of economists, inflation is generated by an increase in cost, particularly when elements of production want to raise their share of the overall product by raising their awards or factor costs, a process known as cost-push inflation.

It is caused by monopoly aspects in the labor market, such as wage-push, or in the commodities market, such as profit-push, but it is largely due to wage-push, which raises production costs and thus prices. Recently, it has been noted that labor unions in many countries have grown so powerful that they are now able to obtain salary increases practically every year that much exceed the overall average rise in output per man-hour.

Sectoral fluctuations in demand, according to one prominent variant of the cost-push hypothesis, are the primary causes of inflation. For example, if the cost of tractors rises owing to high steel prices, the cost of agricultural items such as food may rise as well, forcing further wage increases and so on. As a result, once cost-push inflation gets started in one industry or sector, it spreads like wildfire throughout the economy.

Willard Thorp and Richard Quandt revived the cost-push inflation theory in their book "The New Inflation," released in 1959. They emphasized that cost-

push inflation is generated by pay rises as a result of labor's robust trade union efforts. The first impetus for inflation is provided by pay increases and growing costs of various inputs. Workers and employers aim to insert escalator clauses in labor contracts as a result of rising wage costs, agreeing to raise wage rates as soon as the cost-of-living index rises.

Escalator clauses provide for monetary corrections based on inflationary factors, commonly known as indexing. As inflation rises, the real income of workers is safeguarded by pay increases that keep pace. Cost-push inflation arises as a result of this. Administrative inflation is a type of cost-push inflation that can occur during a recession, a rebound, or a shortage, as well as concurrently with demand-pull inflation. Prices are influenced less by demand and supply and more by administrative action in specific industries or for certain items. For example, when management in some companies raises prices in an attempt to maximize profits, this is known as administrative inflation. This has occurred in the global steel, cement, coal, and oil industries, as well as in India, where prices have risen by 30% to 50% despite massive unemployment among both men and machines. Both monetarists and Keynesians, on the other hand, oppose administrative cost-push inflation—indeed, monetarists oppose all forms of cost-push inflation.

Is there no upper limit to how far this merry cost-push pursuit of wages after prices and prices after wages may be from Figure 10, which is just next to i?. At Y_0, i_0, and p_0, universal equilibrium reigns supreme. The price level is raised to P_1 via a price increase initiated independently by monopolistic business groups or as a result of wage pressure, shifting the LMp0 schedule to LMp1. However, because the new equilibrium between the IS and LM functions is below full employment, there will be un-cleared markets and upward pressure on wages and prices to revert to their previous levels. As a result, it appears that a general wage-price increase will result in a situation in which all of the higher-priced output will not be purchased, implying that cost-push inflation is unlikely to be self-sustaining, as is commonly assumed. The wage-price spiral, in which rising

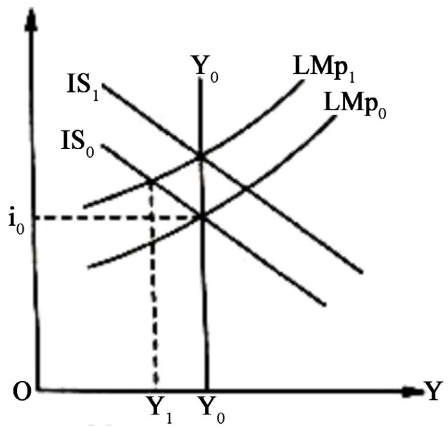

Figure 10. Cost-Push inflation.

salaries and costs lead to rising prices, will come to a stop. Though, according to the cost-push inflation theory, a slowly increasing price level is preferable to a slowly declining price level in terms of reducing unemployment.

Mixed Demand Inflation

The difficulty of determining the fundamental nature and source of inflation persists. Is inflation caused by the demand side of the goods, factor, and asset markets, the supply side, or a combination of the two what is known as mixed inflation? Many economists believe that inflation is caused by a combination of demand-pull and cost-push, which is known as mixed inflation. The process can be started by either demand or cost, but it cannot be sustained until other forces are also at work. The most significant difference between the two inflationary theories is the responsiveness of both money wages and prices to changes in demand. Those who believe the economy has wage and price flexibility argue in favor of demand-pull inflation because such flexibility makes any cost-induced inflationary trend impossible to sustain. Those who believe wages and prices are not flexible, on the other hand, highlight the cost-push theory of inflation. Neither approach is sufficient to explain the source and nature of inflation on its own; rather, both perspectives are complementary rather than competitive (or alternative) as explanations of the cause of inflation. Figure 11 demonstrate examples of mixed inflation. For numerous reasons (one of which is the money illusion), one type of mixed-inflation theory (shown in Figure 11) denies that aggregate supply is price-inelastic at full employment. As shown in Figure 11 (Y_0, P_0), (Y_1, Y_1), and (Y_2, P_2) are all full-time positions, meaning there is no involuntary unemployment. A.P. corresponds to the first. Lerner's "low full employment" is characterized by large voluntary unemployment, whereas his "high full employment" is characterized by little or no voluntary unemployment.

In contrast to real or full inflation, Keynes referred to the zone between low and high full employment as "semi-inflation." Even though all three positions are full-employment, mixed inflation theorists believe society favors the couple (Y_2, P_2) to other options. Mixed inflation does not continue once (Y_2, P_2) is attained in this case. The solutions were more directly tied to demand than to cost

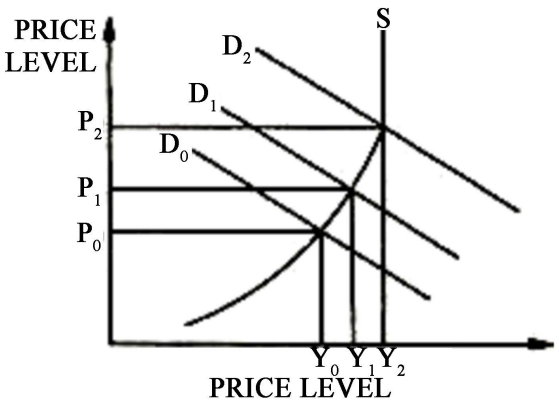

Figure 11. Mixed inflation illustratively.

inflation in this regard.

4.1. Model Specification

This part contains the time series econometric methodologies and techniques utilized to carry out the study on the influence of inflation on private consumption expenditure in Ghana. The linear regression model based on the ordinary least square (OLS) technique will be used to evaluate the impact of inflation on Private consumption spending in Ghana. Ordinary least square (OLS) is widely employed in regression analysis because it is more intuitive and technically easy than any other econometric technique. To make comparisons to generally accepted econometric specifications easier, we use a basic standard empirical model of consumer expenditures with a Keynes (1936) and Milton theoretical framework. As a result, households are expected to spend based on their wealth, income, and INTRs, which are all heavily influenced by inflation. Assessing the dependent variable, as a result, the basic functional representation of consumer expenditure is: (PConsX), while the independent variables were the consumer price index, a proxy for inflation rate (INF). Interest rate (INTR) and gross domestic product growth rate (GDPR) were used as relevant control variables to achieve robust estimations. The linear regression model's generic functional form is as follows:

$$\text{PConX} = f\left(\text{INF} + \text{INTR} + \text{GDPR}\right) \tag{1}$$

where ;

PConsX = Private consumption Expenditure;

INF = Inflation rate;

INTR = Interest rate;

GDPR = Gross domestic product growth rate.

The following is the econometric form of equation (1):

$$\text{PConX} = \beta_0 + \beta_1\text{INF} + \beta_2\text{INTR} + \beta_3\text{GDP} + \varepsilon \tag{2}$$

where ε = Stochastic Error term; β_1 - β_3 = Coefficients of each independent or explanatory variable; $\beta 0$ = Intercept of connection in the model/constant;

4.2. Hypothesis

H0: there exists a significant negative impact of inflation rate and private consumption expenditure.

H1: there is no significant negative impact of inflation rate and private consumption expenditure

4.3. Definition of Variables and Measurement

- Dependent Variable: The dependent variable that will be used is (PConX) used as a Private consumption Expenditure measure.
- Independent Variable: The independent variable that will be assessed in this study is the Inflation rate (INF). INF is measured by the consumer price in-

dex and it reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally adopted.

- Control Variables: Private consumption Expenditure can also be influenced basically by Interest rate and Gross domestic product growth rate. Hence, Private Consumption Expenditure is not only impacted by the Inflation rate. Therefore, control variables are used to create a broader perspective of performance determinants because they could influence the outcomes.

Research Expectations

Based on the model speculated for my data analysis in 4.6, I have few expectations or predictions about my regression result and historical studies which include;

- That there might be a negative impact between inflation and consumption expenditure in Ghana as opposed to the popular perception that these variables have a favorable positive relationship. i.e., the direction of the relationship between inflation rate and consumer spending, on the other hand, should be consistent with the structural inflation theory. This insinuates that a uniform rate of growth of money wages throughout the economy must lead to permanent cost pressures in the service sector, which is assumed to have lower productivity growth. Therefore, structural inflation is due to supply inelasticities increasing agricultural prices and costs. Hence increase in prices resulting in inflation and causes a decrease in consumption expenditures for rational consumers. This also follows the Keynesian consumption theory as well as Milton Friedman's permanent income theory of consumption that consumption is dependent on the income in the long run rather than by present income levels. Friedman calls this long-term projected income a permanent income on which people build their consumption plans. Therefore, it is expected that private individuals in Ghana exercise rational attributes in their consumption lifestyle and would prefer a smooth consumption flow per day rather than plenty of consumption today and little consumption tomorrow. Thus, consumption in one day is not determined by income received on that particular day. Instead, it is determined by the average daily income received for a period. This is also in line with the life cycle hypothesis. Thus, if an increase in the inflation rate is successful in decreasing the purchasing power of incomes in the Ghanaian economy, the effect may result in to decrease in private consumption spending. Hence, the theory predicts that there will not be an uptick in private consumption expenditure until workers reform expectations about an increase in the purchasing power of their future incomes.
- We would also predict that consumers with higher inflationary predictions have more negative consumption expenditure than customers with le inflation rates. i.e., Pessimistic customers would have higher inflationary expecta-

tions and negative consumption spending.

- The inflation rate should have a steady decrease in Ghana from 1990 to 2020 because a reasonable amount of growth was recorded in Ghana between these periods.

5. Empirical Results and Discussions

5.1. Descriptive Analysis

The summary statistics of the data in the calculated model are shown in Table 1. The mean is a measure of the data's central tendencies, and the values of the mean suggest that inflation and consumption expenditure are well-matched. The data set's spread is calculated by comparing the data sets minimum and maximum values. Private consumption expenditure is more evenly distributed than inflation. The findings show that inflation is more variable than consumption expenditure. The standard deviation measures the data set's dispersion from its mean values. The bigger the variance and the higher the standard deviation value, the more dispersed the data is. As a result, private consumption expenditure is more evenly distributed than inflation. The skewness coefficient is a measure of the data set's distributional nature (the nature of normality). The results show that the data set is positively skewed across the board except for interest rate (INTR). The kurtosis coefficient determines the nature of the data distribution's weakness. The data set's values are all greater than zero in absolute terms. Consumption expenditure is more peaked than inflation, indicating a more peaked-topped distribution. The kurtosis and skewness values indicate that the data set is not regularly distributed.

5.2. Pearson Product Moment Correlation

From Table 2 we observe that PConX has a direct but high negative relationship of (r = 0.67) with the inflation rate (INF). This means that a percentage increase in the level of INF will result in a 0.67 percentage decrease in private consumption

Table 1. Descriptive statistics.

	PconX	INF	INTR	GDPR
Mean	19.11400	2.804078	1.210958	24.45015
Median	7.924941	2.728034	1.922864	9.813022
Maximum	47.21013	4.085331	6.389136	66.98383
Minimum	4.019327	1.963806	−12.16741	4.983024
Std. Dev	16.05438	0.540304	4.297971	22.0479
Skewness	0.522485	0.498084	−1.054376	0.751116
Kurtosis	1.614690	2.673265	4.185889	2.007587
Observations	30	30	30	30

Source: E-views 11.

Table 2. Spearman correlation.

Correlation probability	PConX	INF	INTR	GDPR
PConX	1.000000			
INF	−0.672525 0.0000	1.000000		
INTR	0.559066 0.0013	−0.321023 0.0837	1.000000	
GDPR	0.990656 0.0000	−0.636485 0.0002	0.562180 0.0012	1.000000

Source: E-views 11 *p0.05; and **p0.01 significance level.

expenditure (PconX). However, statistically, INF is significant at 0.05 level and ($P < 0.05$). Conversely, PConX has a high positive correlation with INTR ($r = -0.55$). Nevertheless, the correlation was statistically significant at ($P < 0.05$). thereby accepting the hypothesis that there is a strong positive relationship between INTR and PConX. Hence, a percentage increase in INTR will increase PConX by 0.55 percentage. Finally, the results also show that there exists a direct and very strong positive relationship between GDPR and PConX ($r = 0.99$). This supports the hypothesis that there is a strong positive relationship between GDPR and PConX. Eventually, the estimated coefficient of GDPR is statistically significant at 0.05 level and ($P < 0.01$).

5.3. The Unit Root Test

The Augmented Dickey-Fuller (ADF) unit root test was used to determine whether the variable was stationary in this research. These tests are necessary to avoid false or spurious regression, which is a common problem when estimating a regression line using data whose generating process is time-dependent. The ADF decision rule is to reject the null hypothesis of a unit root if the ADFT statistic is more negative than the table value. The stronger the evidence for rejecting the null hypothesis of a unit root, the lower the ADF test statistic.

- This test's null hypothesis is that there is no unit root.
- The alternate hypothesis varies slightly. Depending on whatever equation you use, the most common alternative is for the time series to remain stationary (or trend-stationary). The outcome is shown in the table below.

All the variables are stationary at the first level difference as shown in Table 3 below. The null hypothesis of non-stationarity was rejected at the 5% critical level, leading us to conclude that the variable is integrated of order one.

5.4. Engle-Granger Co-Integration Test

The study went on to examine cointegration among the variables of interest after examining the univariate time series of all-time series properties of each of the variables in the given model and finding them to be integrated in the same

Table 3. Result of the unit root test.

Variables	ADF t-Statistics	Prob.	Order of integration
PconX	−5.627982	0.0001	I (1)
INF	−5.838249	0.0000	I (1)
INTR	−6.305225	0.0000	I (1)
GDPR	−5.714910	0.0001	I (1)

Source: Augmented dickey-fuller tests statistics *p0.05; **p0.01.

order. The cointegration test is used to determine whether or not a set of non-stationary series is cointegrated. However, If these tests produce contradicting results at the 5% significance level, the researcher will investigate whether they produce similar results at the 10% significance level. If the answer is yes, the researcher will maintain the results based on a 10% significance level. If the tests still produce conjectural results at a 10% significance level, the researchers will adhere to the results based on the maximum eigenvalue test, which is normally used to try to nail down the number of cointegrating vectors (Enders, 2004). Furthermore, if the variables are integrated into different orders, we will use differencing to make them integrated in the same order before computing the number of cointegrating vectors. For example, if some variables are I(1) and others are I(2), we can first difference the I(2) variables to make them I(1) before counting the number of cointegrating vectors. On the other hand, if certain variables (excluding the dependent variable) are I(0) and some variables are I(1), the Engel-Granger two-step strategy should ignore the I(0) variables. Eventually, using the Engel-Granger two-step approach, a co-integration test was performed to see if there was a long relationship between the variables adopted in this investigation. The residual of the regression is stationary, meaning that the variables are co-integrated, according to the results of the co-integration test in the table above. We came to this result because the residual's ADF stat value is higher than the test critical value at the 5% confidence level. In this scenario, after differencing the I(1) variables, the research can run OLS. Since the variables are determined to be cointegrated, the researchers adopted the standard method and diagnostic tests to estimate the error correction model. The test's outcome is shown in **Table 4** below.

Dynamic Approach to ECM and Cointegration

Although consistent, OLS estimates in the static equation (Equation (4)) can be significantly skewed in small samples, due to serial correlation in the residuals. Allowing for some dynamics can help to reduce bias.

$$y_t = \alpha + \beta_0 x_t + \beta_1 x_{t-1} + \gamma y_{t-1} + \varepsilon_t \tag{3}$$

$$\text{PConX} = \beta_0 + \beta_1 \text{INF} + \beta_2 \text{INTR} + \beta_3 \text{GDP} + \text{PconX}(-1) + \varepsilon \tag{4}$$

The ECM model can be estimated using the residuals from the Engle and

Table 4. Cointegration two-step results by Engel-Granger.

Variable	ADT-stat	5% Critical value	Conclusion
Residual	−6.848623	−4.10	stationary

Source: Davidson and Mackinnon critical values table (1993) *p0.05; **p0.01.

Granger technique as an alternative to the two-step Engle and Granger procedure (4). The OLS estimator of (4) is super-consistent if cointegration holds.

5.5. The (OLS) Ordinary Least Squares. An ADL Model

The ordinary least square (OLS) estimated findings are shown below, with the dependent variable being private consumption expenditure (PconX) and the explanatory factors being inflation (INF), interest rate (INTR), and gross domestic product growth rate (GDPR). The estimated regression result in the table below reveals that the rate of inflation in Ghana has a statistically significant negative association with the rate of rising in private consumption expenditure. It has a coefficient of −1.678030 and a t-statistic of −2.022637, respectively. This means that the higher the inflation rate, the lower the private consumption expenditure. This discovery is in line with Mavikela's et al. (2018) study. Nevertheless, this follows with the structural inflation theory. This insinuates that a uniform rate of growth of money wages throughout the economy must lead to permanent cost pressures in the service sector, which is assumed to have lower productivity growth. Thus, structural inflation is due to supply inelasticities resulting in to increase in agricultural prices and costs. Therefore, an increase in price results in inflation and this causes a decrease in consumption expenditures for rational consumers.

In Ghana, on the other hand, the interest rate (INTR) reveals a statistically significant positive association with private consumption expenditure. This indicates that if interest rates rise by a percentage, private consumption expenditure will increase by 24.9%. Its calculated coefficient and t-statistics values are respectively 0.249786 and 2.616059. This relationship is consistent with consumption theory in economics: as interest rates rise, savings rise, and consumption declines. The t-statistic value (2.616059), on the other hand, indicates that the positive impact of interest rates on private consumption is statistically significant. The finding also demonstrates that in Ghana, the GDP growth rate has a statistically significant positive association with private consumption expenditure. It has an estimated coefficient of 0.575888 and a t-statistic of 7.801326. This means that if Ghana's Gross Domestic Product rises, so does private consumption expenditure. This observation is in line with Keynes' consumption theory in economics.

R-squared is estimated to be 0.988158 based on the regression results. This means that inflation, interest rates, and gross domestic product account for around 98.81 percent of overall fluctuations in private consumption expenditure. As a result, on average, the model fits the data relatively well. Furthermore, using the f-test to test the model's statistical stability, the estimated t-statistic is

500.6864. As a result, we infer that the model is statistically stable since our probability value is less than 0.05 level of significance. This also implies that the estimated model can be trusted when predicting future events. Finally, the ARM (autoregressive model) was adopted in other to correct the evidence of serial auto-correlation. The coefficient of PconX (−1) showed a positive relationship and likewise had a statistically insignificant probability value in explaining the variation in private consumption expenditure. Therefore the dependent variable Pconx (private consumption expenditure) was regressed against itself as PconX (−1). This made the Durbin Watson test for the existence of the autocorrelation method invalid. Eventually, the Breusch Godfrey serial correlation LM test was adopted. Hence, the model is found to be void of serial autocorrelation. Because the Prob* value is higher than the 0.05 level. Therefore, we came to this conclusion and fail to reject the null hypothesis that there is no serial correlation. (Table 5 and Table 6)

5.6. Granger Causality Test

The study extended its investigation into the causal relationship between private consumption expenditure (proxy; (PConX), inflation rates (INF), interest rate (INTR), and gross domestic product growth rate (GDPR). that is using the Granger causality tests to ascertain if private consumption expenditure can be adopted to predict future events in the economy. It explains linear predictions by implying that one thing occurs before the other, rather than implying that one

Table 5. Regression estimates.

Variables	Coefficient	Std Error	t-statistics	Probabilities
C	6.894687	2.636906	2.614688	0.0152
lnINF	−1.678030	0.829625	−2.022637	0.0544
INTR	0.249786	0.095482	2.616059	0.0151
GDPR	0.575888	0.073819	7.801326	0.0000
PconX (-1)	0.144370	0.105568	1.367550	0.1841
R-Squared	0.988158			
Adjusted R-Squared	0.986185			
F-Stat	500.6864			
Probability	0.000000			

Source E-view 11 *p0.05; **p0.01.

Table 6. Breusch godfrey serial correlation LM test.

F-statistics	2.203848	Prob. F (4, 20)	0.1053
Obs* R-Squared	8.871868	Prob. Chi-square (4)	0.0644

Source E-view 11 *p0.05; **p0.01.

thing causes the other to occur. The findings show all explanatory variables account for approximately 98.81% variation in consumer spending, indicating inflation rates, and other control variables such as interest rate, and gross domestic product growth rate are important determinants of PCE in Ghana. The results on the granger causality indicated that future inflation rates cannot be predicted using PCE.

Table 7 reveals the result of the Pairwise Granger causality test. Based on the decision rule, the null hypothesis that inflation rate D (LINF) does not granger cause private consumption expenditure D (PConX) cannot be rejected. Similarly, the null hypothesis that causes private consumption expenditure D (PConX) does not granger cause inflation rate D (LINF) cannot be rejected, thus implying the presence of a uni-directional relationship between D (LINF) and D (PConX).

Additionally, the null hypothesis that D (INTR) does not granger causes D (PConX) is accepted. Similarly, the null hypothesis that D (PConX) does not granger causes D (INTR) is accepted. This also signifies the existence of a uni-directional relationship between D (INTR) and D (PConX) with the relationship running from D (PConX) to D (INTR).

In the uni-directional relationship between D (GDPR) and D (PConX), the null hypothesis that D (GDPR) does not granger causes D (PConX), cannot be rejected while the Null hypothesis that D (PConX) does not granger causes D (GDPR) is also not rejected. Thus, showing that a uni-directional relationship exists between D (GDPR) and D (PConX), with the direction running from D (GDPR) to D (PConX).

The causality result explains that a relationship exists between the variables in consideration. That is inflation, will lead to an impact on private consumption expenditure, and private consumption expenditure equally influences inflation.

Table 7. Pairwise granger causality test.

Null Hypothesis	Obs	F-Statistic	Prob
D (LINF) does not granger cause D (PConX)	27	0.70649	0.5042
D (PConX) does not granger cause D (LINF)		0.13017	0.8786
D (INTR) does not granger cause D (PConX)	27	0.39295	0.6797
D (PConX) does not granger cause D (INTR)		0.15050	0.8612
D (GDPR) does not granger cause D (PConX)	27	0.46057	0.6369
D (PConX) does not granger cause D (GDPR)		0.34612	0.7112
D (INTR) does not granger cause D (LINF)	27	1.97360	0.1628
D (LINF) does not granger cause D (INTR)		0.72434	0.4958
D (GDPR) does not granger cause D (LINF)	27	0.20421	0.8168
D (LINF) does not granger cause D (GDPR)		0.78535	0.4683
D (GDPR) does not granger cause D (INTR)	27	0.04771	0.9535
D (INTR) does not granger cause D (GDPR		0.12874	0.8799

Source E-view 11 *p0.05; **p0.01.

Nevertheless, private consumption expenditure only promotes inflation since a uni-directional relationship exists between D (PConX) and D (LINF) with the direction running from D (PConX) to D (LINF). And D (LINF) proxied consumer price index which is the market-based prices. Furthermore, interest rate and gross domestic product growth rate enhances private consumption expenditure as a uni-directional relationship running from D (INTR) to D (PConX) and (GDPR) to D (PConX), exists between them respectively.

6. Summary and Conclusion

Summary of findings tells that the economic stability of the country is a major challenge for all governments in the world. Government policy, consumption rate, deflation, inflation, among all other macro-economic factors have major impacts on the economy of a country. As can be seen from the investigations, inflation's effect on private consumption expenditure is driven by the importance of private consumption spending and the economic consequences of inflation. The goal of this study was to look at how inflation affects private consumption expenditure in Ghana from 1990 to 2020. The data were sourced from the World data bank Development Indicators (WDI). The study's sample size is 30. The Pairwise Granger causality test was used to test for causality between the variables, as well as other tests such as the unit root test for stationarity and the error correction model for short-run dynamics testing. The study addressed the knowledge gap and conducted an assessment on the hypotheses concerning the impact of the inflation rate on private consumption expenditure and the economic growth of Ghana. Foreign and domestic empirical and literature reviews have been analyzed below in other to elucidate more on the concept of our research. In this section, we looked at the available works of literature from both a global and a Ghanaian viewpoint.

Nevertheless, the three theories of the inflation approach such as the monetarist approach (quantity theory of money); the Keynesian approach; and the structural theory approach have been carefully analyzed under the theoretical frameworks of the research. Furthermore, in other to deepen the dept of our research a case study on the inflation rate, private consumption expenditure, and economic growth of Ghana was carried out to show the trends of inflation, consumption expenditure, and growth respectively. Conceptually, it is a known fact that inflation has received a great deal of attention, all of the authors agree that it has an impact on private consumption expenditure and Ghana's economic growth. Ghana's inflation rate was 9.9 percent in 2020. Though Ghana's inflation rate has changed significantly in recent years, it has tended to decline from 2001 to 2020, ending at 9.9% in 2020.

Therefore, the data were first analyzed by adopting the descriptive statistical analysis, followed by the Pearson product-moment correlation analysis used in assessing the relationship between the variables adopted in our research. The study found a cointegrating relationship between private consumption expendi-

ture, inflation rate, interest rate, and gross domestic product rate. The empirical result of the investigation revealed the following after a detailed time series that included the use of OLS estimation techniques: The study found that in the long-run inflation (INF) has a negative significant effect on private consumption expenditure (PconX). This implies that, that the higher the inflation rate, the lower the private consumption expenditure or spending in Ghana "other things being equal". "Private consumption spending in Ghana, reduce on products and services during periods of high inflation than during periods of low inflation". implying that the inflation rate is a significant variable influencing changes in private consumption expenditure growth rate. Unanimously, inflation affects purchasing power or how much of something can be purchased with currency, because inflation erodes the value of cash, hence it encourages consumers to spend and stock up on items that are slower to lose value. Nevertheless, larger inflation rate expectations may be associated with greater uncertainty about future monetary policy, signaling difficult times ahead (Bachmann et al., 2015). In the buffer stock savings model, for example, the negative impact of inflation rate uncertainty on consumption is stressed.

Therefore, since we discovered evidence of a small and negative relationship between consumer inflation expectations and private consumption expenditure. This conclusion defies popular perception that these variables have a favorable positive relationship. The direction of the relationship between inflation rate and consumer spending, on the other hand, is consistent with the structural inflation theory. According to this theory, the major cause of inflation is the inelasticity of the economy's structures. This theory is primarily used to explain the nature and basis of inflation in developing countries, which are influenced by inelasticities in areas such as; Production level and capacity, Capital formulation, Institutional framework, High inelasticities in the agricultural sector, and Inelasticities in the labor force and employment structures. This theory presumes that a uniform rate of growth of money wages throughout the economy must lead to permanent cost pressures in the service sector, which is assumed to have lower productivity growth. Therefore, structural inflation is due to supply inelasticities resulting in increasing agricultural prices and costs. Hence increase in prices resulting in inflation and this causes a decrease in consumption expenditures for rational consumers. This also followed Milton Friedman's permanent income theory of consumption that consumption is dependent on income in the long run rather than by present income levels. Friedman calls this long-term projected income a permanent income on which people build their consumption plans. Therefore, it is expected that private individuals in Ghana exercise rational attributes in their consumption lifestyle and would prefer a smooth consumption flow per day rather than plenty of consumption today and little consumption tomorrow. Thus, consumption in one day is not determined by income received on that particular day. Instead, it is determined by the average daily income received for a period. This is also in the line with the cycling hypothesis. Thus, if an increase in the in-

flation rate is successful in decreasing the purchasing power of incomes in the Ghanaian economy, the effect may result in to decrease in private consumption spending. Hence, the theory predicts that there will not be an uptick in private consumption expenditure until workers reform expectations about an increase in the purchasing power of their future incomes. Which of these explanations do we think would be relevant in Ghana? Our research on inflation rate expectations has shown that Ghana consumers are not rational but might be rational to an extent, as they make biased and unbiased inflation projections and do not use all relevant data when forming inflation expectations. We might think that they aren't behaving optimally (that is, they aren't utilizing all relevant information) while making other decisions, such as significant consumption expenditures.

Conversely, the nominal interest rate illusion argument, on the other hand, appears unrealistic when we consider the impact of inflation expectations on consumption expenditure. Our findings corroborate the premise that higher inflation expectations lead to lower projected income and greater uncertainty thereby leading to a decrease in consumption expenditure. We have shown that higher inflation predictions lead to a decrease in consumption expenditure, implying both weaker income prospects and greater uncertainty about future consumption expenditures. The real interest rate is the subject of the first set of arguments. Due to constrained rationality (Mackowiak & Wiederholt, 2010), consumers may be unable to discriminate between nominal and real interest rates (real interest rate illusion, Bachmann et al., 2015) or do not utilize knowledge on real interest rates. However, it does not fully explain the situation; even after controlling for other economic expectations (such as interest rate and gross domestic product), inflation expectations still have some, albeit minor, explanatory power for consumption expenditure. Furthermore, if increased inflation expectations were accompanied by a considerable increase in interest rate, we would see a positive, rather than negative, influence on savings, which might end up increasing consumption and hence be consistent with the cautious savings motivation. The problem, in our opinion about private consumption expenditure, is that the inflation rate question applies to all consumer prices. If the price dynamics of these important items diverge greatly from the CPI index, there may be no evident relationship between the two variables. Ichiue and Nishiguchi (2015) made a similar argument. The subject of savings, on the other hand, is easier, and hence may lead to more reliable conclusions.

while INTR and GDPR have positive significant effects on PconX. i.e., implying that interest rate and gross domestic product growth rate are significant variables influencing changes in private consumption expenditure growth rate. On the other hand, interest rate (INTR) had a positive but small effect on private consumption expenditure, showing that interest rate is a significant variable driving change in private consumption expenditure growth rate in Ghana. This reveals that if interest rates increase by a percentage, private consumption expenditure will increase by 24.9% small percentage increase because rational

consumers will prefer to save more but given the fact that there is inflation, the situation forces them to engage in unplanned consumption expenditure. Its calculated coefficient and t-statistics values are respectively 0.249786 and 2.616059. This relationship is consistent with consumption theory in economics: as interest rates reduce, savings fall, and consumption rises. The p-statistic value (0.0151) on the other hand, indicates that the positive impact of interest rates on private consumption is statistically significant. The findings also revealed that in Ghana, there is a positive substantial association between the rate of growth of the gross domestic product and the rate of increase of private consumption expenditure. i.e. a percentage increase in GDPR will result in (0.575888) more than 50% increase in the level of private consumption expenditure. According to Keynes, an increase in real factors could lead to an increase in aggregate demand. This observation agrees with Keynes' inflations and consumption theories. According to Keynes, the inflationary gap is the difference between expected expenditure and output available at full employment. The Cointegration technique, descriptive analysis, and the Granger causality test was used to achieve the study's goals. It was discovered that there that a relationship exists between the variables in consideration. That is inflation, will lead to an impact on private consumption expenditure, and private consumption expenditure equally influences inflation. Nevertheless, private consumption expenditure only promotes inflation since a uni-directional relationship exists between D (PConX) and D (LINF) with the direction running from D (PConX) to D (LINF. And D (LINF) proxied consumer price index which is the market-based prices. Furthermore, interest rate and gross domestic product growth rate enhances private consumption expenditure as a uni-directional relationship running from D (INTR) to D (PConX) and (GDPR) to D (PConX), exists between them respectively.

6.1. Conclusion

Secondary data based on time series from 1990 to 2020 was used in this study to see if the inflation rate has an impact on consumption. This topic has recently gained prominence since consumer inflation expectations in Ghana. Eventually, inflation itself has fallen to historically low levels over the recent years and raising fears about a deterioration in consumption or spending dynamics. We took an approach to this problem, relating inflation rate forecasts to the private consumption expenditure growth rate expressed in the time series data. We revealed a negative relationship between the inflation rate and private consumption expenditure. Nonetheless, the impact of inflation rate（INF）on private consumption expenditure (PconX) is statistically significant in all model parameters investigated. Finally, we deduce that the influence of inflation rate on private consumption expenditure is dependent on the financial status or income of consumers which is determined by the structural inflation theory that is presumed to affect developing countries that are influenced by inelasticities in

areas such as; Production level and capacity, Capital formulation, Institutional framework, High inelasticities in the agricultural sector, and Inelasticities in the labor force and employment structures. The private consumption expenditure result is more difficult to understand. To begin with, they reveal a modest or small negative association with inflation rates, which contradicts the popular notion that the substitution effect of changes in the real inflation rate on consumption is dominant. Nonetheless, this outcome is consistent with evidence for the United States (Bachmann et al., 2015; Burke & Ozdagli, 2013). Second, based on the negative impact of inflation expectations on consumption behavior, this conundrum is explained by the phrasing of the research question on private consumption spending attitude. Private consumption expenditure refers to large purchases, whereas the inflation rate expectation question refers to consumer pricing in general. As a result, predicted price changes in a broad basket of goods and services may not always correlate to expected price changes in large items. Although the rate of inflation in Ghana was on a downward trend during the study period (1990-2020), it nonetheless reached a high enough level. The pricing indexes' trends differed for different groups of commodities and services (for example in 2010 for non-food goods CPI was 109.78 percent, 102.3 percent for foods products, and 104.78 percent for services). The increase in the yearly rate of inflation in 2010 was primarily due to a 5% increase in value-added tax. One of the direct consequences of this increase was an increase in the cost of heat and food.

Conclusively, an increase in price levels through the transmission mechanism results in inflation, and this causes a decrease in consumption expenditures. Increasing inflation might also enhance inflation uncertainty, and reduce consumption expenditure via a precautionary-savings channel. Thus, to avert a social and economic crisis, the government should, in our opinion, take into account the purchasing power or incomes of employees when implementing anti-inflationary measures, as well as the existing value-added tax in the Ghanaian economy where the competition takes place directly. A high level of the value-added tax will have a negative impact on exporters, cost competitiveness, and businesses would be unable to develop which in turn negatively affect consumption expenditures.

6.2. Recommendation for Policy

The following recommendations are made based on the study's empirical findings. To reduce and minimize the effects of price increases on the value of real wages, salaries, rent, and thus private consumption expenditure, the government should strive to keep inflation under control at all times, as our research shows that this has negatively and significantly decreased household consumption expenditure in Ghana. As a result, in 1983, Ghana initiated an economic recovery program (ERP) to reverse a long period of serious economic deterioration marked by inadequate financial management, high inflation rates, and extensive gov-

ernment engagement in the sector. Hence, this should be aggressively pursued. Finally, the government should strive to sustain high and consistent growth rates to increase the well-being or standard of living of its citizens.

One may expect a negative association between inflation forecasts and consumption attitude from a theoretical standpoint as analyzed. If a household predicts increased inflation in the coming year, it is wiser to make significant purchases now rather than save. Simultaneously, if a household expects prices to fall, or at least remain stable, it may be better to save and undertake the bulk of its shopping in one of the following periods, taking advantage of lower real expenditure. The estimation results partially support the hypothesis (only in terms of the effects on consumption expenditure).

6.3. Limitation of study

With data analysis over (30) thirty years period, the first problem we encountered was that there was difficulty in sourcing data from the country's website due to inconsistency with the keeping of data records and accurate figures in systematic order. This led us to depend or rely on rough estimates from world data bank economic indicators, which might not be adequate as firsthand information. Also, secondary data source does not enable us to refine questions, techniques, or procedures based on feedback or pilot tests which might be biased in some type of way. Furthermore, one of the most significant disadvantages of using secondary data is that it may not address our research's unique study questions or contain specific information that the research desires. Another problem is that there could be different results obtained for the various countries or different industries in Ghana especially when not generalized. Also, the country suffered damage during the Ghana economic and political crisis, which affected the growth, consumption pattern, and standard of living of Ghanaians. Therefore, this occurrence might impact the assessment leading to dynamics or differences with expectations of the theory adopted.

Finally, a common threat of inadequate or poor funding has also contributed to the length at which this research could be carried out or the areas it could cover to deepen its analysis and get access to effective and efficient information, we may not have as many resources as the primary researchers, to have a thorough data collection. Hence, this has led us to depend solely on secondary sourcing of data based on time series. Therefore, these evidently influence the inadequacy of our data, and affect the external validity of the study, since the outcome will most probably not remain the same when adequate funding and sufficient information could be acquired.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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