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Effect of Public Spending on Economic Growth

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Abstract:
The component of total economic output that often attracts the attention of economists and remains the most deeply analysed is public spending. Most economists across the globe have advanced arguments to buttress the need for minimal government interventions in economic activities and the need to moderate government spending. The main purpose of this research was to examine how consistent increases in public spending could impact economic growth. The quantitative approach to scientific inquiry was adapted and used in the research. Specifically, the cross-sectional design formed the basis of the research. Data required for the study were obtained mainly from secondary sources. These included textbooks, peer-reviewed articles published in journals and grey literature. Other sources were Google Search Engine, including Netcials, MacroTrends, Population Matters, OECD, and databases of the World Bank and Bank of Ghana, among other significant sources. Respective data on Ghana's annual GDP values and growth rates from 1983 through 2020, annual population data from 1983 through 2020, and annual public spending values from 1983 through 2020 were collected and used in the research. Descriptive statistics and regression models were used to describe the research variables and to evaluate their behaviour over the stated time frame on economic growth. The research revealed a non-record of negative economic growth from 1984 through 2020, with the lowest growth rate recorded during 2020 (0.88%) and the highest during 2011 (14.05%). Marginal increases and decreases in GDP growth rates were recorded from 1985 through 2007. Respective performances of the Ghanaian economy from 2013 to 2016 and from 2017 to 2020 culminated in respective average growth rates of 3.96% and 5.44%, which were lower than the average recorded from 2009 through 2012 (9.02%). The research further revealed a consistent surge in public spending during periods of general elections relative to the immediate-preceding fiscal years. Average public spending values from 2013 to 2016 and from 2017 to 2020 were US$10.349 billion and US$13.535 billion. Poverty is a by-product of political and economic injustice and not a consequence of limited resources at the national and global levels. Since public sector operations and functions in global economies, including Ghana, are characterised by gross inefficiency, the fundamentals of growth championed by increased public spending are believed to be non-resilient and non-robust enough to assure economic growth sustainability in the long run. Findings from the research revealed a positive but non-significant relationship between public spending and economic growth (coefficient value = 0.044575771; p = 0.462, p > 0.05). Public spending accounted for only 1.51% of the variation in economic growth from 1983 through 2020. The statistical outputs validated the relevance of the share of public spending in GDP, non-dominance of public spending in economic wealth creation strategy, non-excess allocation of limited resources to unproductive sectors, minimal effect of transaction costs on public spending, and mild effect of public spending on the rigidity and robustness of the Ghanaian economy and growth thereof. The study called for increased capacity of various governments through due diligence to limit the extent of laissez-faire that clouds public sector functions and operations; urgent implementation of the smart growth strategy by economies that are yet to have a firm grip of its implementation; review of public sector policy with excessive reliance on longevity of active service as the basis of service recognition and promotion. This would encourage innovation, creative thinking, and competition in the public sector, and it would project the public sector in a positive light. The research also called for the application of meticulousness to the identification and resolution of simmering challenges that cause the public sector to play second-fiddle to the private sector in terms of economic utilisation of limited available resources.

Keywords: *Economic growth, GDP growth, public expenditure theory and public spending*

1. Introduction

Public spending, which is also known as public expenditure, involves funds expended by governments through any of their institutions or entities. Consistent with the OECD (2003), MyAccountingCourse.com (2021) believed it is imperative for governments to spend on goods and services to ensure a wide range of public activities are performed, and services are provided to accelerate development and to ensure the growth of their respective economies. Public spending is extended to include central and local governments and state-owned enterprises (SOEs).

CFI (2020) defined public spending as the quantum of money spent by the public sector to acquire goods and provide services such as healthcare, social protection, defence, and education. Goods and services acquired by governments for current use and to provide direct satisfaction to the individual and collective needs and requirements of the people or community are classified as *government final consumption spending* in national accounting. On the contrary, goods and services acquired by governments for future use are termed as *government investment*. Generally, it includes public investment and public consumption as well as transfer payments such as income transfers.

Components of total economic output, including personal consumption, private investment and net exports, are measured at market price and later adjusted for inflation. However, public spending is simply valued at cost price in the measurement process. Some economists have raised controversies about how public spending is computed; they noted that market value added by the activities of public spending is not considered in the measurement process. Thus, governments characterised by inefficiencies and higher spending on limited production would increase total public debt since the production value would be added to costs without recourse to value-addition (Management Study Guide, n.d.).

CFI (2020) identified two major forms of public spending. These include current spending and capital spending. *Current spending* is short-term and includes spending on raw materials and wages. This spending is subject to annual renewal. *Capital spending*, however, is long-term in nature and does not require annual renewal. It is also called *social capital* and includes public spending on the construction of bridges, roads, equipment, education and hospital facilities.

Business Standard (2021) defined capital spending as the quantum of money spent by economies on the construction of buildings, health facilities, and educational centres and towards the development of equipment and machinery, among others. Generally, capital expenditure could be extended to include money spent to acquire fixed assets, including land and investments initiated by governments toward profit generation and earning of dividends in future. Capital spending is analogous to development or investment expenditure. The latter relates to spending at the national level, with benefits extending several years into the future. Capital spending usually includes funds expended to acquire both tangible and intangible assets, repair existing assets, upgrade existing assets, and repay loans.

The needs of the people and segments of society that each government is tasked to deal with in relation to ensuring sustained livelihoods are varied. In most cases, policymakers are torn between decisions on the implementation process. Generally, decisions would have to be made with regard to whether the support for businesses should entail tax breaks or grants to stimulate innovativeness, whether a section of the population should be issued with more vouchers, or whether their workfare income supplement should be increased. The foregoing and many other factors are considered during annual budget preparation (Ministry of Finance, 2020b).

CFI (2020) identified two major sources of providing primary finance for public spending. These include indirect and direct taxes collected by various governments, as well as governments' decisions to borrow from two important sources: domestic borrowing and foreign borrowing. The former relates to governments' decisions to borrow funds from their citizens, while the latter relates to the decision to borrow from foreigners or outside their jurisdictional borders. The decision to engage in public spending enables governments to provide services, produce goods, or purchase goods and services essential to the fulfilment of social and economic objectives.

Increased governments' borrowings in recent decades imply economies are saddled with inevitable trade-offs during budget preparation. Suppose national income remains constant. The surge in public spending on one sector could imply limited availability of funds for the other and vice versa. Governments are compelled to weigh all considerations for the competing needs of various segments of society. Increased public spending in a current fiscal year implies less savings and investments for the future (Ministry of Finance, 2020b). The foregoing holds strongly when the economy has limited natural and financial resources, and borrowing may be an option to stimulate public project developments in future years.

In some cases, public sector institutions tend to possess state-of-the-art equipment relative to less sophisticated equipment in the private sector. Yet, the private sector demonstrates more efficiency and effectiveness in using its limited equipment than the public sector. Management Study Guide (n.d.) described the public sector as one characterised by complacency and the private sector as one motivated by efficiency and the desire to compete.

Functions of governments throughout the world are believed to be characterised by some monopoly tendencies, while governments' operational duties are performed in less competitive environments. To this end, some economists are of the firm belief that countries with strong leanings towards public spending as the "perfect" conduit for economic stimulation, development and growth often tend to play second-fiddle to countries with strong leanings towards other components of gross domestic product (GDP) such as increased personal consumption and private investment as main drivers of their respective economies. Economies that relish competition and promote innovation in both the private and public sectors are believed to have development and growth edge over their counterparts with limited considerations for the foregoing important development variables. The foregoing implies that public spending in contemporary governance is assuming a new dimension and requires a novel approach to its implementation by various economic management teams across the globe to ensure its resounding success through improved efficiency.

The Singaporean economy has witnessed a steady increase in national income and economic growth in recent years. However, the government has also increased its attention to meeting the needs of the elderly through increased

support, assisting lower-income families, and providing more healthcare facilities for the population. Increased public spending in the aforementioned areas affirms the need for governments to carefully balance their various spending needs. Countries that demonstrate prudence in the management of their respective economies today stand a better chance of saving enough to meet the infrastructural needs of their respective populations in the near and distant future (Ministry of Finance, 2020b). The foregoing renders long-term planning an inevitable tool in the economic success story of every nation across the globe.

1.1. Background of the Study

Discussion in this section was centred on historical antecedents of public spending within the Ghanaian economy. In 1992, eligible Ghanaian voters went to the polls to elect a new President. The presidential elections ushered the country to the Fourth Republic. Public spending since 1992 has witnessed steady increases. However, increased public spending is perceived by some analysts as the fulfilment of successive elected governments' obligations to the electorate and the entire population, while others think otherwise.

Consistent with happenings in other economic jurisdictions, public spending in the Ghanaian economy over the last decades has been characterised by some level of trade-offs. That is, public spending has increased and has been concentrated more in some sectors than others. Specific sectors of the Ghanaian economy with tremendous allocations from increased public spending in recent decades include education and health. These two sectors have spear-headed increased public spending with the cardinal reasons of making significant progress in the country's fight against income poverty and the attempts to increase access to health services and education among the growing population (Ministry of Finance and Economic Planning, 2011).

Increased access of a larger section of the Ghanaian population to education and health implied the urgent need for implementation of notable interventions such as the institution of a national health insurance scheme, initial abolition of school fees up to the Junior High School (JHS) level and recently to the Senior High School (SHS) level. These interventions were envisaged to serve multiple socio-economic purposes and benefits. That is, keep the country in a poll position toward the achievement of the Millennium Development Goals (MDGs), including ensuring gender parity, provision of potable and safe water, increased school enrolment rates, reduction in poverty and increased level of nutrition. Collectively, the foregoing was expected to accelerate the growth efforts of the Ghanaian economy (Ministry of Finance and Economic Planning, 2011).

Although the increasing child mortality rate has been perceived by many development experts as an albatross around the neck of successive Ghanaian governments, there have been significant improvements in the last two decades, thanks to rapid fiscal expansion (Ministry of Finance and Economic Planning, 2011). The implication is that the country's strides in the provision of education and health services to the population could not be discussed without recourse to public spending.

Available statistics depict a steady and significant increase in public spending over the past decades in response to the growing population and increasing demand for social and other essential services to keep the economy firmly on the competitive global development map. Ghana's public spending from 2004 to 2008 was believed to have surged from 20% to 24% of gross domestic product. The increase was necessary to ensure adequate funding was provided for public health and education networks to ensure decentralisation was effectively implemented while the national infrastructure gap was reasonably closed. Further, efforts were made to create a number of statutory funds so that public revenues required to be allocated to the sectors of education and health could be secured (Ministry of Finance and Economic Planning, 2011).

The total number of active labour force in the formal sector of the Ghanaian economy is estimated at 1,200,000 employees (or 1.2 million workers); the government of Ghana alone employs approximately 700,000 employees, equivalent to 58.33% of all workers in the formal sector. Thus, the government of Ghana remains the single largest employer in the economy. The mathematical and economic implication is an increased financial burden on the government and, by extension, increased public spending. In line with trade union expectations, public sector workers' wages, salaries and benefits are reviewed regularly and upwardly to improve their living standards through decent wage earnings. This explains why Ghana's wage bill witnessed a sharp increase from 4.7% in 2004 to 7.6% in 2008 (Ministry of Finance and Economic Planning, 2011).

In 2005, Ghana completed the Heavily Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI). The completion created more fiscal space and increased the opportunity for significant borrowing by elected governments. In 2007, the then-elected government decided to relax some of the external constraints to the country's budget, accessed the international financial markets and successfully issued Eurobonds, a trend that has been sustained to date. The country's constant exposure to internal and external natural occurrences such as droughts, floods, attacks of armyworms, pandemic outbreaks and lack of easy access to international financial markets render the fiscal stance of the government unsustainable, breed new and exacerbate inherent public financial management challenges (Ministry of Finance and Economic Planning, 2011).

One of the challenges to effective management of the Ghanaian economy during 2008 was fiscal overspending, which was believed to have remained unnoticed by the administration. During 2009, the economy was compelled to introduce measures and formulate and implement policies that would assure fiscal stability so the economy would be placed on the path of sustainable development. Ghana's lower-middle-income status during 2010 further exerted economic pressures and called for an improved and more "sophisticated" approach to managing the economy.

However, in 2011, the then-political administration led by the late Professor John Evans Fiifi Atta Mills lived up to economic management expectations. GDP growth during fiscal year 2011 was 14.05%, a rate that remained unequalled

from 1960 to 2020. The late Prof. Mills could be described as a prototype of Ghana's first President, the late Osagyefo Dr. Kwame Nkrumah, whose sterling leadership qualities on the African terrain remain indelible. Similarly, the late Prof. Mills was a legend; he exuded in-depth knowledge and finesse in academia, and he practically demonstrated political leadership, selfless commitment, and strong delivery to the people during his "brief" term in office.

Factors such as macroeconomic instability, political capture and public financial management challenges were identified as teething that the country's oil rent could ignite to further compound existing issues related to the generation of positive externalities through public spending. Ministry of Finance and Economic Planning (2011) noted the existence of a large information gap on the outcomes of public spending in the Ghanaian economy. Further, a comprehensive review and analysis of public spending in Ghana from the perspective of efficiency, effectiveness, sustainability and equity were believed to be deficient, while reports on outturns were not regular and did not comprise functional classifications during the period.

Moreover, major statutory funds established for health and education were decoupled from the consolidated fund, and there were distinct mechanisms for reporting. This rendered efforts aimed at aggregating public spending on the basis of individual programmes quite challenging. Besides, the annual progress report released by the National Development Planning Commission (NDPC) only aligned public spending with the broad priorities of successive poverty reduction strategies. However, it did not establish a clear link between public spending and outcomes. Although all government Ministries were required to publish annual progress reports at the sector level, only a few were committed to this task (Ministry of Finance and Economic Planning, 2011).

In the last decade, public spending in the Ghanaian economy was believed to be bedevilled by a lack of systematic, careful cost-benefit analysis and a lack of effective computation of social and financial returns when decisions related to domestically financed public investment projects were made. In some cases, impact evaluations and completion reports remained unpublished, while effective assessment of the adequacy of the ratio of the public sector labour force in terms of location, skills composition and remuneration to emerging challenges remained ineffective during the period (Ministry of Finance and Economic Planning, 2011).

1.2. Problem Statement

The component of total economic output or gross domestic product that often attracts the attention of economists and remains the most deeply analysed is public spending. Most economists across the globe have advanced arguments to buttress the need for minimal government interventions in economic activities and the need to moderate government spending. Former President of the United States, Mr. Ronald Reagan (as cited in Management Study Guide, n.d.), once affirmed that the decision to maintain large government size is not a panacea to national challenges. Rather, large government size is the nemesis that each nation must seek to fight and address. The foregoing statement supports lean government sizes in various economies to the neglect of large sizes and their attendant huge financial commitments and burdens to the affected economies.

In most developing and some emerging economies, issues related to effective governance and accountability to the people have been raised severally, whereas inefficiency has been identified as a major challenge to countries at all stages of economic development – developing, emerging and advanced economies – across the globe. Due to the gross level of inefficiency believed to characterise operations and functions of officials in the public sector, the Management Study Guide (n.d.) argued that it would be practically unfair to identify public spending as the major source of wealth creation in global economies.

Further, foreseen and unforeseen internal and external natural occurrences such as pandemic outbreaks, armyworm attacks on farmlands, droughts and floods, among others, tend to expose the level of unsustainability that characterises the structural nature of fiscal expansions and the urgent need for remedial and corrective measures (Ministry of Finance and Economic Planning, 2011). The inherent unsustainability of structured fiscal expansions calls for careful scrutiny of public spending to assure value for money and to curb the needless allocation of limited national resources to unproductive areas.

The total annual public spending in the Ghanaian economy from 1990 through 1992 was US$9,103,448, US$12,124,138, and US$17,610,345. Total spending during 1990 (US$9,103,448) represented an approximately 29.29% increase over the total public spending during the previous year (US$7,041,379) and 33.18% short of public spending during 1991. However, total public spending during 1992 (US$17,610,345) was 45.25% and 93.45% more than the respective annual public spending values recorded during 1991 (US$12,124,138) and 1990 (US$9,103,448). The significant increase in total public spending during 1992 relative to 1991 (45.25%) could be attributed to the presidential elections and the quest to increase infrastructure development projects during the period.

A similar pattern of public spending in the Ghanaian economy was observed during the fiscal years 1994 through 1996. The respective annual public spending values recorded from 1994 through 1996 were US$39,641,379, US$59,120,690 and US$ 87,693,104, whereas respective increases recorded during 1995 and 1996 were nearly 49.14% and 32.95%. However, in real or quantitative terms, the increase in total public spending between 1995 and 1996 (US$28,572,414) was higher than the increase recorded between 1994 and 1995 (US$19,479,311). Total public spending recorded during the fiscal year 2000 (US$236,376,689) was US$65,169,792 or 38.07% more than total public spending during 1999 (171,206,897) and US$85,231,861 or 56.39% in excess of public spending during 1998 (US$151,144,828). Again, the real increase in public spending between 1999 and 2000 (US$65,169,792) was nearly 3.3 times the increase recorded between 1998 and 1999 (US$20,062,069).

Respective annual public spending values recorded during fiscal years 2002 through 2004 were US$399,214,932, US$593,122,809 and US$794,198,919. Expectedly, one observes a graduated increase in annual public spending

throughout the years. Total public spending during 2004 (US$794,198,919) was US$201,076,110 or 33.90% higher than total public spending during 2003 (US$593,122,809); albeit the margin between 2004 (US$794,198,919) and 2002 (US$399,214,932) was wider (US$394,983,987 or 98.94%).

The foregoing analysis reveals a consistent surge in public spending values during periods of presidential elections in the Ghanaian economy (1992, 1996, 2000, 2004 and 2008). Quite expectedly, in a democratic dispensation, concerns expressed by some economic experts and a cross-section of the population related to whether the country has sufficient tangible and intangible assets commensurate with the increased levels of public spending witnessed, especially during election years.

The general management problem is a failure of successive elected governments or otherwise to be transparent, ensure effective oversight and accountability of the public financial management systems through efficient allocation of limited national resources to sectors where they are mostly needed while minimising wastes in the resource allocation process to assure positive contribution of public spending to the accelerated development and growth efforts of the country. Available statistics revealed Ghana's total public spending from 2008 to 2010 was US$2,502,888,073, US$2,577,388,945 and US$3,603,555,493. Total public spending during 2008 (US$2,502,888,073) was a nearly 42.41% increase over total public spending in 2007 (1,757,538,753), equivalent to 23.95% of GDP during 2008. Total public spending as a percentage of GDP during 2008 was higher than the 20.55% of GDP and 22.62% of GDP recorded during 2009 and 2010, respectively.

The hike in total public spending relative to GDP during 2008 was attributed to an oversight on the part of the economic management team (Ministry of Finance and Economic Planning, 2011). Recall that 2008 was an election year and may imply the government's decision to embark on increased public spending to have an edge over other competing political parties during the presidential elections. Such an "unnoticed" public spending spree has the potential to adversely impact the country's fiscal strategy and consolidation efforts. Though evidence of the foregoing phenomenon exists, there are limited scientific inquiries to establish clearly the implications of surging public spending for the Ghanaian economy.

The specific management problem is how successive elected governments could effectively harness the expertise of available human capital to assure economic efficiency in public spending by improving the quality of public sector operations and functions, ensuring a significant reduction in waste of public resources, and assuring considerable reduction in transaction costs, so significant increase in public spending may not be perceived as a setback to sustainable and accelerated national development and growth. The purpose of this research was to examine how consistent increases in public spending could impact economic growth.

1.3. Research Objectives

1.3.1. General Objective

The fundamental objective of this research was to assess the implications of public spending for the growth of the Ghanaian economy.

1.3.2. Specific Objectives

Specifically, the study sought to achieve the following objectives:

- Evaluate trends in public spending across global economies.
- Examine the economic relevance of GDP growth measurements to global countries.
- Assess the impact of public spending on economic growth.
- Make recommendations for the successful adaptation and implementation of economic management strategies that assure equity, effectiveness, efficiency, and sustainability in public spending and ensure the meaningful and productive contribution of public spending to the acceleration of economic growth.

1.4. Conceptual Definitions

For the purpose of this research, terms such as *public spending, government spending, public expenditure* and *government expenditure* were used interchangeably with the same underlying meaning. That is, expenditures on goods and services by governments at various levels – local, state and federal – for countries practising the federal system of economic governance, such as the United States and Nigeria, and expenditures on goods and services by governments at the district, regional and national levels for countries such as Ghana that implement the executive system of economic governance.

Finally, *economic growth, GDP growth, economic growth rate,* and *GDP growth rate* were used interchangeably to explain the total percentage increase in total economic output or GDP value for the current fiscal or financial year compared to the previous fiscal or financial year, using either the incremental approach or exponential approach. Each of the foregoing approaches to measuring economic growth rate is explained further in the research methodology section.

2. Literature Review

The underlying topic for development of the current research was: "*Effect of Public Spending on Economic Growth*." The main purpose of this research was to assess how growing levels of public spending impact the growth of the national economy during the research period. This section presents a review of existing literature and a synthesis of literature for the research. As noted in prior works, in a scientific inquiry such as this, it is imperative to identify relationships between the reviewed literature and research objectives and between the research problem and reviewed

literature. Further, it is appropriate for the researcher to ensure these relationships exist, as evidenced by the current research. The principal question that underpinned the current research was: "*What are the identified strategies that managers of developing, emerging and advanced economies could adapt and implement to assure efficiency, effectiveness and due diligence in public spending to improve the latter's contribution to GDP growth?*"

Data required for the development of discussion in this section were obtained from textbooks, peer-reviewed articles published in journals and grey literature. Other sources were Google Search Engine, which included Netcials, MacroTrends, Population Matters, Organisation for Economic Co-operation and Development (OECD), Trading Economics, and databases of the World Bank and Bank of Ghana. The following key phrases were used to generate relevant information from the Google Search Engine and other relevant databases for the discussion: economic growth, GDP growth, public expenditure, public expenditure theory and public spending.

Two major themes were developed to facilitate extended discussion in this section. These included perspectives on public spending and measurement of economic growth and its usefulness. The discussions contributed significantly to the purpose of the current research. That is, they facilitated our identification and understanding of various components essential to the effective measurement of annual public spending, challenges related to the effective management of funds earmarked for public spending, and the effect of public spending variables on economic growth. A theoretical framework preceded discussions on reviewed literature in this section.

2.1. Theoretical Framework

The acclaimed economist Paul Anthony Samuelson (15th May 1915 – 13th December 2009) remained the first American to win the Nobel Memorial Prize in Economic Sciences in 1970. Some textbook publications by this distinguished American economist included *Foundations of Economic Analysis (1947), Economics (1948), Economics: The Original 1948 Edition (1997)* and *Inside the Economist's Mind: Conversations with Eminent Economists (2007)*. The economic legend Paul Anthony Samuelson was also noted for propounding one of the neoclassical theories of public expenditure. His work entitled *The Pure Theory of Public Expenditure,* published in 1954 was considered an archetype for effective development of theoretical underpinnings for the current research.

2.1.1. Assumptions

Samuelson (1954) noted the neglect of the theory of optimal public expenditure for the adaption and implementation of the theory of taxation by most economists, except for economists such as Bowen, Sax, Wicksell, Musgrave and Lindahl, whose works bore semblances of the theory of optimal public expenditure during the period. The Theorist advanced a set of assumptions to buttress the pure theory of public expenditure. He assumed the existence of two categories of goods. These include ordinary private consumption goods and collective consumption goods. Samuelson (1954) described ordinary private consumption goods as those that can be bundled out among different persons (I, 2, …i, …, s) based on the relations Xj = the sum of s up to 1 multiplied by X^ij. The ordinary private consumption goods are denoted by X1, …, Xn.

The collective consumption goods are denoted by Xn+1 …, Xn+m. These collective goods are enjoyed by all persons in common to the extent that each person's consumption of the collective good does not lead to subtraction from any other person's consumption of that good. As a result, Xn+j = X^in+j concurrently for each and every ith person and each collective consumption good. Further, Samuelson (1954) assumed the absence of any mystical collective mind bent on enjoying collective consumption goods. Rather, he assumed each person has a consistent set of ordinal preferences in relation to his or her consumption of collective goods, including private goods. These ordinal preferences can be summarised using regularly smooth and convex utility index $u^i = u^i$ (X^i1, …, X^in+m).

Samuelson (1954) averred that any attempt to subject the utility index to monotonic stretching could amount to an admission to the fact that the utility index is cardinal, which remains a strong preference. As a convention, the Theorist wrote the partial derivative of each function with regards to its jth argument by a "j" subscript, such that u^ij equals $\partial u^i/\partial X^i$j, and so forth.

The Theorist assumed the quantities of economic goods could be grouped into two. The first group relates to goods or outputs that each person always seeks to maximise; the second group refers to factors or inputs that each person always desires to minimise. Suppose these assumptions hold. Samuelson (1954) noted that the algebraic signs of the second assumption could be modified with relative ease to allow for the use of the term "goods," implying issues related to factor inputs have been covered or addressed. On the basis of the foregoing, we are certain that u^ij is greater than zero at all times. Further, the Theorist developed the following equations for the theory:

[(u^i j ÷ u^i r) = (Fj ÷ Fr)]. (i = 1, 2, …, s; r, j = 1, …, n) or (i = 1, 2, …, s; r = 1; j = 2, …, n) (i)

Sum of s up to i = 1 (u^i n+j ÷ u^i r) = (Fn+j ÷ Fr). (j = 1, …, m; r = 1, …, n) or (j = 1, …, m; r = 1) (ii)

(Uiu^{i}k ÷ Uqu^q k) = 1. (i, q = 1, …, s; k = 1, …, n) or (q = 1; i = 2, …, s; k = 1). (iii)

Samuelson (1954) simplified the assumptions related to production. He assumed the production-possibility schedule related to total outputs, both private and collective, is regularly convex and smooth. Alternatively, he assumed F(X1, … Xn+m) = 0, with Fj > 0, and ratios Fj ÷ Fn determinate and subject to the generalised laws of diminishing returns. Controlling for feasibility considerations, the Theorist assumed the existence of a maximal or ordinal utility frontier that represents the Pareto-optimal points. This ordinal utility frontier exhibits an (s - 1) fold infinity with the "property that from such a frontier point you can make one person better off only by making some other person worse off" (p. 387).

Samuelson (1954) argued that to be able to make normative judgements with regard to the relative ethical desirability of different configurations which involve persons considered as being on a higher level of indifference and others on a lower level of indifference, it is imperative to be presented with a set of ordinal interpersonal norms; or with

social welfare function which is representative of all the consistent set of ethical preferences inherent in the possible states of the identified system.

The Theorist contended that it is not the responsibility of the economist to make empirical deductions about the form of the social welfare function because it could have as many forms as there are ethical views. The only limitation placed on the social welfare function by Samuelson (1954) in the theory is its consistent decrease or increase in response to a decrease or increase in the ordinal preference of an individual. However, the indifference level for all others remains the same. Mathematically, the social welfare function could be narrowed, and any of its indices could be written as U = U (u^1, …, u^3) with Uj > 0.

2.1.2. Optimal Conditions and Decentralised Spontaneous Solution Challenges

Discussions on the theory were extended to include explanations of optimal conditions and how the attempt to decentralise spontaneous solutions may be impossible. Under the latter, Samuelson (1954) argued that seeming market failures are not grounds enough for us to object to the fact that it is relatively easy for economies and individuals to weigh all pools of eligible resources around them and to settle for the one believed to be most suitable for the desired ethical welfare function. The Theorist averred that though the solution is not far-fetched, the challenge relates to how to find it. Equations one through three above formed the integral basis of explanation for the optimal conditions and challenges associated with the implementation of a decentralised spontaneous solution, with the following budget equations for each person added:

$p1X1 + p2X^i2 + \ldots + pnX^in = L^i$ (I = 1, 2. …, s) (i)′

In the above equation, L^i represents a lump-sum tax for each person selected in an algebraic value leading to the most desired state of the world. The theorist argued that the solution for equations (i) and (i)′ could be simplified with relative ease if there were no collective consumption goods. Samuelson (1954) concluded that the attempt to explore the concept of public expenditure further has the potential to lead us into the mathematical domain of other disciplines, such as sociology and welfare politics.

2.2. Perspectives on Public Spending

The primary medium of fund mobilisation by governments from the people is through taxation. The funds mobilised are expected to be appropriated to the general population through multiple national implementing schemes which are either operating concurrently or at different time periods. Eventually, the funds or goods and services derived thereof would have to be distributed to the people. The latter strategy is considered a high-level view of the functioning of government systems. Management Study Guide (n.d.) described the appropriation process as bureaucratic; several committees and groups are constituted, and each would have to be answered throughout the process. The author argued that the bureaucratic process witnessed there comes at a very high price, known as *transaction costs*. The implication is that if public spending constitutes quite a large portion of GDP, the odds are a substantial amount of that spending could be attributed to transaction costs; these costs do not provide any value and basically do not require to be incurred. The author noted that the mechanisms that governments adopt in the execution of their operations are unproductive. Moreover, governments demonstrate unproductiveness in their operations.

Generally, a country's ability to spend is contingent on its earnings. Thus, higher national income creates room for increased public spending with little or no debt consequences. However, economies that decide to engage in endless public spending may be compelled to borrow to supplement national income. The decision to borrow locally or internationally leads to debt creation for the implied economy or economies. Borrowing implies that part of national income would have to be allocated to interest payments and principal loan repayments, and this may leave insufficient funds available for other sectors of the economy. This challenging financial situation is usually not encouraged among global economies. An alternative to the foregoing financial situation is the decision to strive to increase national income as a ratio of public spending (Ministry of Finance, 2020b).

Floyd (2019) argued that developing economies require urgent transformational policies to ensure the socio-economic gains recorded over the past two and half decades are consolidated and not lost to increasing economic risks. The author's submission affirms the need for governments of developing economies to improve their management strategies to rewrite the troubling picture that unfolding events were believed to paint. Collaboratively, the Ministry of Finance and Economic Planning (2011) affirmed the need for governments to implement policies and programmes that would ensure increasing social returns to public spending so their respective fiscal stabilisation efforts would have positive effects in the long run. Further, limited investment opportunities in the immediate- and medium term have the potential to affect the growth potential of implied economies in the long run.

Management Study Guide (n.d.) argued that a situation of absurdity is often created where increased wastage in public spending results in increased gross domestic product (GDP) value, thereby compounding the national crisis further. In Singapore, it is believed that the current generation is benefitting a great deal from the toil and contributions of previous generations. Singapore currently boasts a clean and green living environment, a strong education system, public infrastructure developed with high technology, and a pro-business environment (Ministry of Finance, 2020b).

MyAccountingCourse.com (2021) noted that the bulk of funding required by governments for public spending is obtained through tax revenues. Though the foregoing statement may pass the litmus test in advanced economies such as the United States, United Kingdom, Germany and France, among others, it may not pass strongly in developing economies, including Ghana, where the ratio of tax revenue to national income is less than 10%. The United States is noted for being the economy with the highest tax revenue generation across the globe in recent financial periods. To this end, the contribution of tax revenue to public spending in the United States would be very high. Conversely, developing

economies, including Ghana, rely on proceeds from exports of natural resources, grants from development partners, and borrowing to finance most public projects.

Government funding is believed to be primarily sourced from taxes. However, borrowing becomes an option when revenues derived from taxation are not sufficient to pay for planned public spending. CFI (2021) asserted that borrowing by governments could be short- or long-term in nature and involves the sale of treasury bills and bonds. In developing economies, including Ghana, the duration of governments' borrowing could be medium-term, as well as the other forms enumerated earlier. Governments issue treasury bills into the market so they can raise cash in the immediate term to finance planned public spending.

Business Standard (2021) posited that capital spending, which results in the formation of assets, is long-term in nature and allows the economy to generate revenue over several years through additions to or improvements in existing production facilities, and boosts operational efficiency. Increased capital spending helps improve unemployment challenges through increased labour participation in development projects. Further, it allows managers to take stock of their respective economies and to raise their productive capacities to ensure increased production in the near and distant future. Loan repayments help to improve the liabilities of economies; this affirms the usefulness of loan repayments as capital expenditure.

Keynesianism argues that increased public spending has the potential to induce a surge in aggregate demand and an increase in personal consumption. The foregoing has dual economic benefits, namely the possibility of increased production and the possibility of accelerated recovery from economic recession (Kenton & Boyle, 2021).

Investopedia (n.d.) noted that budget deficits are an effective way of determining an economy's financial health. They are recorded when planned public spending for a given financial year is in excess of national income. Budget deficits connote excess spending at the national level, other than the business and individual levels. Accrual deficits over two or more financial years result in national debt.

CFI (2021) noted significant changes in the size and role of governments throughout the world in recent years and a remarkable increase in public spending during the 20th century when governments around the world realised the economic need and decided to invest massively in education and spend more funds on healthcare and social protection. Further, in contemporary fiscal periods, governments' spending as a percentage of gross domestic product is higher among advanced economies than developing economies. This argument was relevant to the current research, which sought to examine the impact of public spending on the growth of the Ghanaian economy.

The World Bank (2019) doubted Ghana's ability to maintain a strong fiscal consolidation stance and to chart a sustainable path in 2020, a year characterised by the presidential election and believed not to be distinct from preceding election years over the past two decades. In essence, the World Bank (2019) shuddered that the fiscal ceiling rule would be violated by the ruling government from 2020 to the provision of more infrastructure facilities in order to have an edge over other competing political parties. Although the fiscal ceiling rule was violated during the 2020 fiscal year, it was attributed largely to the outbreak of COVID-19 and its attendant social and financial costs to over two hundred and thirteen countries, dependencies and territories across the globe.

MyAccountingCourse.com (2021) argued that the effect of public spending on economies is high; it tends to have a cyclical effect. To illustrate, as governments purchase goods and services, firms are encouraged to manufacture more goods and provide more services. All else held constant, the firms may derive profits, and the profits may lead to expansion in production capacity. The latter would imply hiring more people or extending the work hours of existing employees, leading to increases in personal incomes. Further, the expansion would imply acquiring additional production materials and inputs. The author observed that increased public spending has the potential to drive economic growth, at least in the immediate term, whereas a reduction in public spending could lower economic growth.

Business Standard (2021) observed a sharp difference between capital expenditure and revenue expenditure. Capital expenditure is noted for creating assets for the future. However, revenue expenditure neither reduces the liabilities of various governments nor creates assets for future use by economies. Examples of expenditure under this category include interest payments on past contracted debts, payments on pensions, subsidies and salaries of employees on government payroll. Revenue expenditure is recurring in nature.

Spending on goods and services at the local, state and federal levels is termed as government purchases. The value of government purchases forms an integral part of measuring total economic output values. However, the value of government purchases included in the computation of GDP excludes interest payments on debts and transfer payments. Although transfer payments constitute spending, they do not involve purchases. Examples include farm subsidies and payments on social security. The foregoing implies that government purchases include any form of spending at the local, state and federal levels without taking into consideration transfer payments and payments on national debts (Kenton & Boyle, 2021).

CFI (2021) observed increased reliance on the private sector for the production and management of economic goods and services across the globe in recent periods. Moreover, governments across the globe are increasingly appreciating the necessity of relying on public-private partners (PPPs) to finance, design, build, and operate infrastructure projects. The author affirmed that PPPs, which were designed to increase expenditure on public infrastructure projects in low- and middle-income economies, had more than doubled from the 2005 to 2010 fiscal periods alone.

The government's ability to provide better services for residents of their respective communities would depend on a number of factors, including identifying the needs and wants of the affected communities and planning towards the adequate provision of the identified needs. For instance, improving the lives of residents may include providing concessions for private firms in the distribution of water, electricity, and gas so these services can be provided and

supplied uninterrupted. Further, central governments, through local government authorities, could channel resources into the development of infrastructure that would be needed to facilitate operations of private firms in the provision of adequate electricity, water and gas to the people while enhancing structures of the community and making the community more attractive to local and foreign investors (MyAccountingCourse.com, 2021).

Major sources of funding for public projects in Singapore include taxes, fees, charges, and contributions to net investment returns. Management of national income and expenses implies efficient allocation of funds to meet the needs of the people, saving portions for contingencies or rainy days and investing portions for the future. Ministry of Finance (2020b) noted that the ability to ensure sustainable economic growth, assure steady and reliable inflows, and make decisions on the allocation of resources to various sectors of the economy annually are difficult tasks. Generally, several months of intensive planning and discussion precede annual budget preparations and presentations.

OECD (2003) noted that, generally, spending on equipment is recorded as part of capital expenditure. However, minor expenditure on equipment below a certain cost threshold is classified as part of current expenditure. The author identified the components of current expenditure as payment on property income, expenditure on final consumption, subsidies, and other current transfers, including social security, pensions, social assistance and other welfare benefits.

Consistent with OECD (2003), MyAccountingCourse.com (2021) catalogued forms of public spending, including pensions and transfer payments, such as unemployment allowances and benefits. Some economists opined that public spending should be limited to activities and functions believed to fit in the purest roles of governments. The recommendations of these economists are believed to serve as an antidote to the so-called market failures and to ensure the effective provision of public goods. Thus, governments' interventions are needed to provide goods and services that the free market in itself cannot provide or may not consider as financially viable and profitable.

Keynesianism holds that government purchases are a strong contributor to increased national spending and facilitate governments' ability to transform weak economies into vibrant ones (Kenton & Boyle, 2021). The foregoing outlines some of the obvious economic benefits likely to be derived from the efficient and effective implementation of public spending policies in various countries across the globe and the need for public officials to improve their management and implementation skills to ensure the positives (such as the transformation of weak economies into vibrant ones) do not remain theoretical postulations, but quite pragmatic and practical in character.

CFI (2021) advanced three pertinent reasons that impel governments across the globe to engage in public spending. First, the interventions of governments are sought to ensure that goods and services not supplied by the private sector are provided to meet the needs and requirements of citizens. These include construction of roads and bridges; providing protection through defence; providing merit goods such as schools and hospitals; and payments on welfare and benefits, including disability and unemployment benefits. Second, it is likely that some industries may need financial support to meet day-to-day operational needs, expand their productive capacities, or both. In such situations, governments are expected to roll out measures that would ensure the provision of subsidies for firms in potential industries. The foregoing initiatives have the tendency to ensure economic stimulation and eventual growth.

Throughout the world, governments' decision to engage in public spending is believed to be motivated by a number of factors. Notable among these include the desire to produce and supply goods and services that may not be economically attractive to the private sector; or the initial capital outlay serves as a disincentive to investors in the private sector. The supply may include *merit goods* such as schools and hospitals; *public goods* such as defence, construction of bridges and roads; and payments on welfare and benefits including disability and unemployment benefits (Economics Online, n.d.).

MyAccountingCourse.com (2021) noted that funding for public projects is often expected from central government tax revenues collected by local authorities and from contributions from private firms. Some of the facilities that are likely to be considered include roads, street lights and bus stops, among others. Variations in government spending priorities in the United Kingdom were observed in prior fiscal periods. However, public spending during the last two decades is believed to have been nucleated around three major areas. These include health, social protection and education. Spending on infrastructure, healthcare and education provides external benefits to the rest of the economy. This could have long-run effects comparative to reductions in interest rates, which are often of short-term duration.

OECD (2003) described current expenditure as the type of spending incurred by governments on goods and services that are consumed in the current financial or fiscal year; and which requires to be incurred annually and sustained to ensure educational services are provided effectively and efficiently. The foregoing suggests renewal of current expenditure is paramount if it is required to sustain annual government business, including providing essential government services and production of essential goods. Current expenditures also include teaching materials, ancillary services, administrative costs, and staff compensation.

CFI (2021) shared generally, investments in infrastructure projects do not attract private-sector finance; governments are often called upon to provide the needed funding for the industry. Finally, governments are obliged to spend publicly to ensure the promotion of social welfare and the redistribution of income. During the second quarter of 2020, the Chinese government was compelled to issue special government bonds, so that part of the funds mobilised could be allocated to governments in local counties and prefectures to mitigate the effect of unemployment and to meet the basic living needs of their people. An initial US$280 billion was expected to be allocated during the period. This public spending was intended to address extraordinary measures for an unusual economic period.

Generally, it is assumed that the private sector ensures a more efficient allocation of limited resources than the public sector (MyAccountingCourse.com, 2021; Management Study Guide, n.d.). Therefore, governments' resolve to spend on activities and functions other than providing essential public goods would be inefficient. To wit, it is imperative for

public spending to be focused on those goods and services that the private sector may not consider profitable and worth investing in so that the national development continuum can be sustained and devoid of excessive lag.

Empirical research conducted by Devarajan, Swaroop, and Zou (1996) sought to examine conditions under which observed changes in the composition of public spending could result in a record of a higher steady growth rate in an economy. The conditions conceptually adapted for the research were assumed to be dependent on both the physical productivity of the different components of public spending and the initial contribution of each component to total public spending. Data required for the research were obtained from forty-three developing economies over a twenty-year period. The study outcomes revealed positive and significant growth effects of increased share of current spending; and negative relationship between capital spending and per capita growth. The research findings suggested the possibility of seemingly productive public spending components becoming unproductive when used excessively. The research outcomes implied governments of developing economies engage in misallocation of public spending in favour of capital spending; at the expense of current spending.

Shafuda and Kumar De (2020) assessed how government spending affects human capital and human development indicators such as increase in national income, healthcare outcomes and education achievements. The unit of analysis was the Namibian economy. The research was developed using time series data from 1980 through 2015. The study revealed long-run relationship between public spending on healthcare and fertility rate, infant mortality rate and under-five mortality rate was inverse and significant; while cointegration was observed between public spending on healthcare and life expectancy or adult mortality rate. Relationship between public spending on education and gross tertiary enrolment, literacy rate and net primary enrolment rate was determined to be positive and significant in the long-run.

However, findings from the empirical research conducted by Shafuda and Kumar De (2020) revealed no cointegration between public spending on education and gross enrolment rate at the primary and secondary levels. The vector autoregression analysis found significant effects of healthcare and education spending on GDP growth in the long-run. Nonetheless, the foregoing was determined to be contingent on improvement in human resources. The study outcomes suggested that the achievement of faster growth in the Namibian economy is hinged on the continuous implementation of expansionary public spending policy. The research findings affirmed the need for a review of existing policies on primary healthcare and basic education and drastic changes made thereof to accelerate economic growth.

Lupu, Petrisor, Bercu and Tofan (2018) adapted an autoregression distributed lag (ARDL) model to test the importance of various components of government spending, the functional structure and total economic output. Lupu et al. (2018) relied on quarterly data for the period 1995 through 2015 which were collected from ten selected economies that joined the European Union (EU) from central and eastern Europe to document and examine the correlation between real growth in gross domestic product and ten different categories of government spending. Comparative to the outcomes of recent works in the study area, Lupu et al. revealed a positive effect of healthcare and education spending on the economy, whereas spending on economic affairs, defence, social welfare, and general public services had a negative effect.

Forbes (2011) affirmed that governments' resolve to engage in public spending tends to have dire economic implications. For instance, increased public spending has the potential to create chronic inefficiencies, accumulate national debt, create disruptive financial bubbles, and cause inflation through price increases. The author challenged the effectiveness of public spending as a "messiah" for unemployment and economic stimulus; it believed public spending rather deepens economies' woes.

Contrary to the claims of Forbes (2011), Simply Notes (n.d.) recounted a number of benefits associated with governments' decision to embark on public spending. To illustrate, increased public spending has the tendency to cause a surge in the work capacity and savings habits of the population and an increase in the provision of social and economic facilities. The latter further stimulates the work capacity of the population, especially the working population or active labour force. The author averred increased capacity is analogous with greater employment and increased efficiency.

Spark Notes (n.d.) affirmed the existence of a direct relationship between public spending and aggregate demand. It argued that irrespective of the implementation of the tax policy, aggregate demand decreases when public spending decreases. Thus, a shift in the aggregate demand curve towards leftward is observed when public spending in the current year decreases comparatively to the previous year. Further, decrease in net exports has the potential to cause a shift in in the aggregate demand curve from right, inward to left. A decrease in net exports is indicative of an exogenous increase in demand for imported goods with a corresponding exogenous decrease in demand for exported goods.

Nevertheless, Shultz, Cogan and Taylor (2021) argued that increased public spending has severe consequences on economies. They noted that in the United States, the rising national debt has the potential to have a crowding-out effect on private investment. This crowding-out effect could slow down job creation and negatively impact economic growth. Shultz et al. (2021) noted the tendency for increased public spending to discourage savings and to cause interest rates to rise in economies. Further, increased public spending could reduce investments in productive capacity, such as infrastructure and facilities essential to total economic output; and cause a reduction in the investments in homebuilding.

Innovation is pivotal to the success story of markets or economies across the globe. Nonetheless, the success-story of markets in the global economy is assured when entrepreneurs gain their lost innovation rhythms. That is when they are able to identify novel and improved ways of performing their business functions and operations (Management Study Guide, n.d.). Generally, innovation is handicapped in economies with significant portions of the gross domestic product being accounted for by public spending. Public sector operations and activities usually create little room for innovation and more room for task functions. The nature of public sector job descriptions and functions does not encourage with ease, novel ideas and ways of discharging functional duties; the same method and procedure may be

implemented over several decades while the private sector easily adapts; and become abreast of contemporary technology; and globally-accepted methods of business operations and equipment usage.

MyAccountingCourse.com (2021) noted the tendency for public spending in some economies to be motivated by political considerations rather than pure technical analysis, and the likelihood of spending on social programmes is increased a few months before general elections to allow incumbents to score political points and have the edge over other competing political parties.

Management Study Guide (n.d.) argued, the incentives and economic processes established in most countries provide the private sector with an edge over the public sector in operational efficiency. Thus, it is possible for the public sector to play second-fiddle to the private sector no matter how good the government is; and how good its intentions may be. The author noted it is against this background that government or public spending as a component of GDP is watched closely by economic analysts and that GDP growth with an underlying increase in public spending could be described as volatile; such growth may be resting on "shaky grounds."

Albassam (2020) argued that an imminent challenge to most economies across the globe is ensuring that governments' spending is effectively transformed into successful public projects and activities or programmes. Further, effective economic and human development is predicated on good and quality governance of the public financial system. The researcher collected data on public spending from seventy-one economies during the period 1996 through 2017; and suggested a model to evaluate efficiency of government spending. The analysis from the recommended model ensured the determination of whether or not governments' objectives related to public spending were achieved during the research period. These included the ability to control unemployment; enhance economic growth; and to identify factors that would assure sustainable economic development.

To achieve the foregoing objective, Albassam (2020) conducted econometric and statistical tests to validate the chosen model and measure its stability and accuracy. Building on the chosen model helped to apply it to individual economies to enhance our understanding of their respective public spending systems and to improve the efficiency of decision-makers in the execution of national strategic plans.

Gupta (1969) revealed that during the late 1960s and prior periods, most economists focused essentially on the development of normative theories centred on old or new welfare economics. The author noted the development of several hypotheses in the area of consumer behaviour and rigorous testing of these hypotheses against empirical data during the period. However, very few hypotheses were developed, submitted and tested in relation to the behaviour of public spending during the period. Gupta (1969) attributed lack of strong interest in the analysis of public spending during the period to the perceived innate conceptual and statistical challenges associated with the explanation of its complex behaviour.

The foregoing difficulties notwithstanding, some empirical studies such as the one conducted by Peacock and Wiseman (as cited in Gupta, 1969) revealed public spending constituted more than 33% of national output in some economies during the period. This affirmed the relevance of economists devoting considerable time and resources to the study and development of the behaviour of public spending. Gupta (1969) bemoaned the neglect of public spending by growth theorists during the period. Thus, a strong interest in the study of public spending could be described as a recent phenomenon.

Kutasi and Marton (2020) sought to assess the extent to which continuous public spending for several decades could lead to an increase in economic growth; and determination of the level of efficiency of economies in the use of national income through improved structures of public spending. The researchers analysed the correlation between various forms of public spending and GDP growth in different European Union member-countries. Data required for the research were collected from twenty-five European Union member economies during the period 1996 through 2017. The data were categorised into functions of government and public spending. Three econometric models including first-differences general method of moment (GMM), ordinary least squares (OLS) and fixed effects panel models were applied to the research. Findings from the statistical analysis revealed a negative effect of social protection spending on GDP growth, while lagged health and education spending was found to have a positive effect on GDP growth.

The ravages of COVID-19 compelled the Chinese government to project an initial increase of one trillion yuan, equivalent to US$142.86 billion in fiscal deficit during 2020. This translated into debt-to-GDP ratio of 3.6% during the period. In addition, special government bonds issued for project development were expected to increase by 1.6 trillion yuan, increasing the total issuance value to 3.75 trillion yuan. The projects included the construction of new infrastructure to ensure expansion within the reach of 5G and electric car charging facilities for the population. In a related development, investments in national railway development were expected to increase by 100 billion yuan during the period (Li as cited in Cheng, 2020).

The World Bank (2019) reported that Ghana maintained positive fiscal consolidation efforts during 2019 despite the challenges to meeting set fiscal targets occasioned by shortfalls in revenue targets. Ghana's fiscal performance during the first half of 2019 depicted an overall budget deficit of 3.3% of GDP. This budget deficit was on a cash basis and in excess of the target, 2.9% of GDP during the period. Fiscal deficit in most cases resonates with increased public spending relative to total national income. Ghana's fiscal deficit (3.3%) during the first half of 2019 was attributed largely to a disproportionate decrease in public spending (1% of GDP) relative to revenue shortfalls (1.6% of GDP) during the period. Financial challenges saddled with the energy sector implied more government commitments through increased public spending; by extension, there was a higher fiscal deficit during 2019.

Favourable international trade conditions during the first half of 2019 implied strong performance of Ghana's three major export commodities – cocoa, oil and gold – and strong current account balance; as evidenced in an estimated current account surplus of 0.1% of GDP; and trade surplus of 2.8% of GDP during the period. Further, increased inflows to

the financial and capital accounts coupled with the current account surplus led to the record of the overall balance of payments surplus, equivalent to 1.9% of GDP, while gross international reserves (GIR) witnessed a tremendous increase during the period. The country's gross international reserves during the first half of 2019 were estimated at US$8.6 billion, which was equivalent to 4.3 months of import cover. Ghana's gross international reserves were boosted by the issuance of the US$3 billion Eurobond during March 2019, which was over-subscribed by seven times (US$21 billion) (World Bank, 2019).

2.3. Measurement of Economic Growth and Its Usefulness

Amadeo (2021b) asserted that our ability to determine how fast a given economy is growing is contingent on the computation of the growth rate for gross domestic product. The rate could be measured using either the incremental approach or the exponential approach. The incremental approach to measuring the GDP growth rate compares the most recent year of the country's economic output to the previous year. However, the exponential approach compares the economic output of the recent quarter to the previous quarter. Each of these approaches to measuring the GDP growth rate is explained further in the research methodology section.

Lumen (n.d.) described real total economic output as the value of total goods produced during a given fiscal or financial year with minimal emphasis on price changes and described nominal total economic output as the value of total goods with considerations for price changes. Usually, changes in nominal GDP values are observed when there are changes or shifts in price and quantity. However, real GDP value is only influenced by changes in quantity, not changes in price. Real economic values measure purchasing power net of changes in price over a given period of time. Measurement of real GDP takes into consideration both deflation and inflation. Nominal GDP is a money-value measure; real GDP transforms nominal GDP into an index for the quantity of total economic output. The effects of inflation are not considered, and adjustments are not made when nominal GDP values are computed. The reverse holds true for the determination of real GDP values.

Fifield (2020) and Cheng (2020) noted the debilitating effect of the COVID-19 pandemic on the Chinese economy during the 2020 fiscal year. The portentousness of COVID-19 as of May 2020 impelled the Chinese government to set aside growth targets for the fiscal year. The decision was the first since China started setting growth targets in 1994. The decision was attributed to some factors that were considered quite difficult to predict in the country's development journey, as well as the uncertainties that befell global trade and finance during the period. Challenges posed by COVID-19 to China's domestic and external market environments compelled the International Monetary Fund to estimate the country's growth for 2020 at 1.2%, which was less than the 2.6% growth estimated by the Beijing-based China International Capital Corporation (CICC) (as cited in Cheng, 2020). Economic growth estimated by CICC (as cited in Cheng, 2020) for the Chinese economy during 2020 and prior to the outbreak of COVID-19 was 6.1%. The growth target set by the Chinese government for the economy during 2019 was between 6% and 6.5%. However, the economy ended the 2019 fiscal year with a growth rate of 6.1%, which was within the target, but remained the slowest economic growth rate recorded in three decades.

Amadeo (2021b) affirmed that the measurement of growth in economic output is facilitated by gross domestic product. The author estimated the GDP growth rate of the United States during the research period to be 6.4%, implying that the United States economy expanded by 6.4% during the first quarter of 2021. The author's submission was based on the third statistics and growth estimates released by the United States Bureau of Economic Analysis (BEA). The 6.4% growth rate was a result of the respective 33.4% and 4.39% increases recorded during the third and fourth quarters of 2020.

Challenges succumbed to by Ghana's economy during fiscal years 2013 through 2015 could be aptly described as a period of recession. However, the economy began to recover towards the last quarter of 2016 and thereafter. The World Bank (2019) noted continued expansion in Ghana's economy, as supported by development indicators, during the first half of 2019. For instance, Ghana's GDP growth, including oil, during the first half of 2019 was estimated at 6.7%. This was 1.3% more than the rate (5.4%) recorded during the same period in 2018. However, the non-oil GDP growth as of June 2019 was equivalent to 6% of GDP. The strong second-quarter growth performance was attributed to significant improvement in the performance of the services sector, which witnessed 7.2% growth compared to the 1.2% recorded during 2018.

During the first quarter of 2020, the Chinese economy contracted by 6.8%. China was noted for recording double-digit growth in recent financial years. As part of measures to accelerate the country's growth and global competitiveness, President Xi Jinping's administration set and sought to achieve some social development goals. However, the realisation of the foregoing goals in 2020 was affected by the COVID-19 outbreak. Some Chinese economists predicted a minimum of 5.6% growth was required to achieve the social objectives set by the President Xi Jinping-led administration. Nonetheless, an analysis of the economic situation during the period revealed difficulties in the realisation of the social goals (Cheng, 2020; Fifield, 2020).

The United States economy suffered a downturn of 31.4% during the second quarter of 2020. This economic setback was believed to have been orchestrated by the outbreak of the COVID-19 pandemic and the subsequent plunge of the economy into recession. Amadeo (2021b) argued that the contraction experienced by the United States economy during the second quarter of 2020 was worse than the one experienced during the Great Depression.

Lumen (n.d.) referred to GDP as the process of measuring the economic production of a given country in terms of financial capital over a given period of time. Gross domestic product is the officially recognised total economic output of a given country. The word "gross" in the term gross domestic product implies that GDP measures production irrespective of the various uses to which the measured product can be put. Economic goods could be useful in several ways; they

could be consumed immediately, used for investment into tangible assets or inventories, and used to replace depreciated tangible assets. The word "domestic" in the term suggests that GDP measurement includes only products within the country's borders.

The World Bank (2019) revealed that Ghana's novel policies for the agricultural sector, including the promotion of agribusiness, began to take effect in 2019. To this end, the economy was projected to grow by 7.6% during the fiscal year. However, non-oil growth was estimated at 6%. The pace of fiscal consolidation was projected to slow, while the fiscal deficit was estimated at 4.5% of GDP and was expected to remain within the fiscal rule ceiling of 5.0% in the medium term. The ominous impact of COVID-19 during the 2020 fiscal year implied that maintaining a fiscal deficit within the ceiling (5%) could not be sustained, albeit it may be feasible during the 2021 fiscal year and beyond.

Amadeo (2021b) noted that the measurement of GDP growth rate helps to determine, with relative ease, how quickly the economy is growing or shrinking. The economic growth rate is driven largely by the four major components of gross domestic product, including government spending, personal consumption, private investment and net exports (total exports value less total imports value). The largest GDP component believed to influence economic growth rate a great deal is a personal consumption. Libraries (n.d.) revealed that personal consumption constitutes nearly 70% of annual GDP estimates for the United States.

China's decision to set aside a growth target for 2020 was considered useful by some experts. For instance, Jianguo (as cited in Fifield, 2020) argued that the central government's decision to set aside a growth target for 2020 was necessary to help Chinese officials refrain from exerting their energy and efforts towards the achievement of growth target and rather, to focus on the government's priorities, including measures that would ensure stability in the job market while pursuing top-class development. Pettis (as cited in Cheng, 2020) believed the decision to drop the economic growth target during 2020 was necessary to ensure sustainable demand. That is, it is necessary to mitigate the effects of COVID-19 on essential GDP components, including private sector investment, consumption, and exports. These variables have the potential to drive economic growth.

Młynarzewska-Borowiec (2020) identified smart growth as one of the priorities of the Europe 2020 strategy, which was rolled out for implementation by member states of the European Union in 2010. The author affirmed theoretical justification for reliance on variables such as implementation of the smart growth objectives, ipso facto, human capital, innovation and knowledge in the pursuit of economic development; and the need for effective implementation of these variables to stimulate growth processes among economies in the European Union. More specifically, Młynarzewska-Borowiec (2020) defined smart growth to include the decision to develop a given economy on the basis of innovation, knowledge and human capital. Thus, these three variables are pivotal to the economic success of countries across the globe. The foregoing implies that the competitiveness of an economy is enhanced when these growth variables (innovation, knowledge and human capital) are effectively implemented. The author noted an interaction between smart, sustainable, and inclusive growth.

Amadeo (2021b) believed that information on GDP growth facilitates our understanding and determination of the state of the economy in the business cycle. That is, whether the economy is in recession or booming. The author identified four stages of the business cycle: peak, expansion, trough and contraction. The foregoing asserts the pivotal role of GDP growth rate measurement in the effective determination of the economic health of a given country. Measurement of real GDP allows for inflation to be adjusted. Therefore, it is imperative for real GDP to be compared between financial and fiscal years.

Generally, labour was severely impacted by the outbreak of COVID-19 during the first quarter of 2020, as unemployment numbers surged in many global economies, including China. Statistics released by the Chinese government (as cited in Fifield, 2020) pegged the unemployment rate at 6% during the period, albeit independent economists argued that the actual rate might be doubled. However, the 6% was an increase over the official unemployment targeted rate of 5.5% for 2020 (Cheng, 2020). Depredations of COVID-19 compelled a downward review of projections for the creation of new jobs in Chinese cities, from eleven million in 2019 to nine million new jobs in 2020.

Jan (2018) described determinants of growth in the stage of an economy as factors that are interrelated and have a direct influence on economic growth. Growth is analogous to the surge in the real total economic output of a country. The author identified six major factors that determine the growth of a given economy. These include demand and efficiency factors, human resources, natural resources, technology, and capital goods. The last four are usually grouped under supply factors. Collectively, the last four factors have a significant effect on the value of goods and services available for supply in economies.

Corroboratively, Anonymous (2020) catalogued the ensuing variables as major factors that influence the growth of a given economy: physical capital or infrastructure, population or labour, technology, human capital, law and natural resources. The author argued that the discovery of natural resources such as mineral deposits, including oil in large commercial quantities, has the potential to boost the growth of the implied economy by increasing or shifting the production possibility curve outwards. Further, increased growth is assured when efforts are made to improve and increase the quality and quantity of production factors such as labour, capital, land and entrepreneurship.

Updates on GDP growth rates have a profound impact on the investment decisions of investors. Amadeo (2021b) observed that periodic updates on GDP growth estimates released by the Bureau of Economic Analysis tend to have effects on the United States stock markets; investors react in diverse ways to revisions on economic growth rates released by BEA. Generally, the GDP growth rate tends to be positive when the economy is expanding. Growth of the economy is analogous to increases in jobs and job opportunities, personal income and businesses.

Młynarzewska-Borowiec's (2020) scientific study sought to determine whether or not any relationship exists between the implementation state of the smart growth targets among the old and new economies in the European Union

and their respective GDPs per capita. The researcher was also interested in evaluating the nature of the existing relationship, if any, between the two foregoing variables. Data gathered and applied to the research covered the period 2000 through 2017. Analysis of the research data revealed varied degrees of advancement of European Union economies in the implementation of their respective targets for smart growth. Findings from the research revealed that the new European Union member-states that showed a slow implementation of the smart growth targets and objectives at the initial stages eventually demonstrated more dynamism and were committed to the implementation process than the old European Union member-states.

Results from the econometric analysis of the research survey conducted by Młynarzewska-Borowiec (2020) showed a positive impact of smart growth targets on GDP per capita among European Union member countries, especially when smart growth targets are effectively implemented and lead to an increased rate of employment and improvements in the quality of human capital. The foregoing was more evident among the new economies than among the old economies in the European Union. The research outcomes further revealed that investments in research and development did not have an automatic effect on the level of total economic output per head among the sampled and analysed economies. Outputs from the econometric models showed the spread of the effect over a considerable period and were restricted to economies with investments in research and development being in excess of 1.5% of total economic output or GDP.

Human resources, natural resources, technology, and capital goods have been identified as supply-side factors that influence economic growth. Both the skilled and unskilled labour forces of a country are termed human resources. A direct relationship exists between the labour force and economic growth rate. Jan (2018) noted a connection between an increase in the quality and quantity of a country's labour force on the one hand and an increase in economic growth rate on the other. The author defined quality to include improvements in skills possessed by the nation's labour force. Ceteris paribus, more goods and services are produced when a large number of the labour force is put to work, and goods and services of high value are produced when more skilled labour is engaged in the manufacturing or production and service delivery processes. Items that exist in flora and have utilisable economic value are referred to as natural resources.

Amadeo (2021b) hinted that the ideal GDP growth rate is between 2% and 3%; an expansion or growth of the economy beyond this threshold over extended financial periods could project the implied economy to its peak. At this stage in the business cycle, the economy could suffer a bubble burst; growth in economic activities may grind to a halt, and this may lead to contraction. During periods of contraction, businesses are motivated to postpone investments in new purchases. For instance, the hiring of new workers may be delayed until businesses are certain the economy is on the path to recovery.

Nonetheless, the delay strategy adopted by businesses during periods of contraction does not benefit the economy; it plunges the economy further into depression. The decision to delay hiring new employees may result in idle hands, and without jobs, it may be difficult for consumers to have more funds available to spend. A negative GDP growth rate is indicative of the implied country being embroiled in a period of economic recession, and this negative business cycle may persist until the economy transforms into the stage of trough (Amadeo, 2021b). Trough is the stage during which the country begins to experience an economic turnaround, and a negative GDP growth rate paves the way for a positive rate.

As of January 2020, the United States economy was projected to grow by 1.7% at the end of the fiscal year, a projection that was 0.8% lower than the 2.5% growth rate recorded during 2019. Similarly, China's growth rate during 2019 was 6.3%, and it is expected to drop to 6.1% in 2020. India's total economic output value was among the top ten across the globe, and it remained the fastest-growing economy among the top ten at the beginning of 2020 (Hawley, 2020). The initial projected growth targets for 2020 for the United States and China suggest early signals picked on the outbreak of COVID-19 in Wuhan, China, during late December 2019 impelled some economic analysts to review selected countries' prospects and respective growths for 2020. The initial estimated impact of the pandemic on individual economies and the global economy, in general, was lower than actually experienced; the eventual impact was dire in terms of social and financial costs to global economies.

Ho and Iyke (n.d.) examined factors that determine the growth of the Ghanaian economy, relying on available data from 1975 to 2014. Specifically, the researchers were interested in investigating the effects of the ensuing variables on the performance of the Ghanaian economy using an augmented Solow growth model: labour, human capital, government expenditure, physical capital, foreign aid, inflation, financial development, foreign direct investment, debt servicing and globalisation. The findings revealed long-run positive effects of foreign aid and human capital on economic performance or output, whereas the influence of debt servicing, financial development and labour on economic performance in the long run was negative. However, the short-run effect of foreign aid and government spending on economic growth was positive, while the short-run effect of inflation, financial development and labour on economic growth was negative. The researchers affirmed that the findings have strong policy implications for the Ghanaian economy.

Jan (2018) listed wildlife, ocean, fossil fuels and valuable metals as notable examples of natural resources that could have a significant impact on a country's economic growth rate. Moreover, economies are often assured of high economic growth rates when there are increases in the quantity and quality of natural resources produced and supplied. Innovative methods and procedures adopted by various economies in the production of goods and services are termed technology. Investments in research and development (R&D) facilitate improvements in existing technologies or, the invention of new technologies, or both. Generally, the production processes for goods and services require the availability of tangible assets such as plants and machinery. These assets which are required to facilitate the production of other goods and services are called capital goods.

Countries with fairly low median ages and large population sizes tend to be attractive to foreign investors as these populations assure investors of stable and extended years of human productivity. Further, young populations are characterised by strong purchasing power for ordinary and luxury goods. This enhances economic stimulation and improves growth rates (Hawley, 2020).

Darko (2015) adapted the restricted vector autoregressive model to analyse the determinants of economic growth in Ghana. The researcher relied on data spanning from 1975 through 2013. Findings from the statistical analysis revealed that mineral rents, exports, and oil were the main drivers of GDP per capita in the long run, while government purchases hindered the growth of the Ghanaian economy. The latter finding is linked to the current research that sought to examine the impact of public spending on economic growth. Darko (2015) stressed the need for policymakers to attach a strong premium to the existing relationship among economic growth variables. Primary commodities constitute the bulk of Ghana's exports. However, global market uncertainties increase the risks of price volatility inherent in export commodities. Without specific mention of a particular commodity or group of commodities, Darko (2015) identified the Dutch disease, which was believed to be self-manifesting gradually, as a possible setback to the growth of the Ghanaian economy in the long run. Contrary to the findings from Darko (2015), the current research revealed a mild effect of public spending on the growth of the Ghanaian economy.

Bruns and Ioannidis (n.d.) relied on the Bayesian model averaging to analyse thirty-seven determinants of economic growth for the period 1960 through 2010. The empirical research conducted by Bruns and Ioannidis (n.d.) served as an extension of prior studies conducted using the Bayesian model averaging, which focused on identifying determinants of robust economic growth from 1960 to the 1990s. The research outcomes revealed that inferences on determinants of economic growth across periods were not stable. Consistent with previous studies, the study revealed robust ambiguity in early growth periods, implying cross-country growth regressions provided little support for some growth determinants presumed to be more important than others. The foregoing notwithstanding, determinants related to trade, investment, demography, and education were found to be important in subsequent growth periods, with education and demography being most important in recent growth periods. The increased number of growth determinants (37 growth determinants) in Bruns and Ioannidis' (n.d.) research may be attributed to variations in country-specific growth determining factors and how social structural changes, dynamics and evolutions might have modified the state of economies and their subsequent growth determinants over the years.

Jan (2018) argued that it is imperative for economies to ensure that increases in the supply of goods and services occasioned by the supply factors are sustained. The foregoing could be made possible by corresponding increases in the demand for goods and services. Attention to efficiency as an economic growth factor is focused on the input-output ratio; a higher output-input ratio indicates improved efficiency, and vice versa. Efficiency, in this context, is defined to include both efficiency in the allocation of resources and productivity. The effect of increased efficiency on a high growth rate is felt when it is accompanied by full employment in the economy. Further, maximum economic growth is achieved when resources available to the country are harnessed in the most cost-effective manner towards the production of the optimum mix of required goods and services to meet both the needs and requirements of the people while reducing the level of total imports of finished goods to the barest minimum.

Mohan and Lakhera (n.d.) advanced a number of reasons why some countries have been more successful than others in the pursuit of economic growth. The first reason relates to the implied countries' decision to adopt unique but similar critical theoretical and methodological approaches, in which the end results are variations in the vantage points for the record of slow growth and cross-country differences in economic growth. Second, some countries implement economic policies that the authors describe as "miraculous" and effective in achieving steady growth. The policy convergence among these "miraculously" successful economies serves as a guide and model to developing economies struggling to achieve sustainable economic growth targets and levels. The third reason is the choice of an econometric model that makes use of panel data in analysing potential growth determinants after all the observable variables have been examined. Mohan and Lakhera (n.d.) argued that differences in development strategies adapted by developing countries contribute to the variations in their economic performance and low growth rates.

Ho and Iyke (n.d.) identified active workforce participation, increased productivity and demographic changes as the major determinants of long-term economic growth. The authors observed that countries tend to grow and thrive when economic growth is analogous to an increase in money supply. The following factors were identified by the researchers as the main drivers of growth among developing economies:

- Foreign direct investment (FDI),
- Fiscal policy,
- Foreign aid,
- Trade,
- Investment,
- Monetary policy,
- Development of human capital,
- Natural resources,
- Political, regional, financial, reforms and
- Demographic factors.

Trend analysis revealed a slow pace of growth among developed economies since the 1990s compared to emerging economies over the period. The slow pace of growth among developed economies was exacerbated by the global financial crisis, which took a nose-dive between 2008 and 2009. Hawley (2020) identified the global financial

debacle as a major contributor to the narrowness of the United States' competitive edge over China in terms of growth in total economic output in recent periods. However, developing and middle-income economies, including Ghana, benefitted from the global financial crisis as Ghana became a destination for capital flights from the most advanced economies. This contributed immensely to Ghana's strong GDP growth rate of 14%, which was recorded in 2011 and remained the highest growth rate from 1960 through 2020. Indeed, foreign direct investments have the potential to increase inflows into developing and emerging economies and to ensure the future growth of these economies.

The European Commission (as cited in Młynarzewska-Borowiec, 2020) lamented the slow growth and competitiveness of economies in the European Union compared to the Union's leading trading partners such as the United States, China and India. The slow economic growth among member countries was believed to be a reflection of structural challenges inherent in the European Union and the Union's comparatively low level of investment in research and development, lower level of professional activities, education, innovativeness and utilisation of new technologies. To address the foregoing phenomenon, the European Union realised the need to urge member countries to transition to knowledge-based economies, with a strong emphasis on smart growth strategies and targets. The quest for smart growth and effective implementation of identified measures towards the achievement of set targets constituted an integral part of the Lisbon strategy during 2010.

As of 2015, countries such as Brazil, China and India were termed emerging economies (Hawley, 2020). However, Hawley (2020) believed it may not be an exaggeration to describe these countries as "emerged" or advanced economies. The author noted disparities in the growth pattern of advanced economies such as the United States, United Kingdom and France on one hand and the growth pattern of "newly-advanced" and "emerging" economies such as China, India and Brazil on the other. The slow economic growth among developed countries is attributed largely to the inevitably slow nature of their mature markets, whereas emerging economies have more prospects for new and expansionary projects.

The inevitable slowness of markets in advanced economies is evidenced in the United States' contributions to global GDP over the past decades (Hawley, 2020). To illustrate, the United States' share of global GDP during 2010 was a little over 20%. This was nearly 4% lower than the 24% contributed in 2000 and about 5% more than the 15% contributed in 2018. Thus, as newly-advanced and emerging economies such as China increase their pace of economic development and growth, they tend to crowd out the economic growth and dominance of "traditionally-advanced" economies such as the United States. As stated differently, the strong economic and growth performance of emerging economies tends to have crowding-out effects on the growth performance of advanced economies; the pace of growth of the former accelerates while that of the latter decelerates.

3. Research Methodology

The current research was developed on the quantitative approach to scientific inquiry. Specifically, cross-sectional design, an example of survey design, was adapted and used in the research. This design allowed the researcher to gather relevant research data over a specific time frame (Ashley, Takyi & Obeng, 2016; Creswell, 2009; Frankfort-Nachmias and Nachmias, 2008). Data required for the conduct of the current research were obtained mainly from secondary sources. These included textbooks, peer-reviewed articles published in journals, grey literature and newspaper publications. Other sources were Google Search Engine including Netcials, MacroTrends, Population Matters, Organisation for Economic Co-operation and Development, Trading Economics; and databases of the World Bank and Bank of Ghana, among other significant sources.

Respective data on Ghana's annual GDP values and growth rates from 1983 to 2020, annual population data from 1983 to 2020, and annual public spending values from 1983 to 2020 were collected and used in the research. Data on Ghana's annual public spending values accessed from the Bank of Ghana were in the local currency (Ghana cedis). To ensure uniformity, the annual public spending values in Ghana cedis were converted into United States dollars, using annual average cedi-dollar exchange rates. Annual public spending values from 1983 through 2020 were measured as a percentage of annual GDP values during the stated period and used in the statistical analysis.

Further, annual public spending per head was computed using available data on annual public spending and annual total population from 1983 to 2020. Although available data on Ghana's annual total population extended to 1950 (MacroTrends, 2021), its application to the current research was limited to 1983 to suit the "earliest" available data accessed on annual public spending, the independent research variable, during the study period. Similarly, available data on annual GDP values and growth rates, which extended to 1960 (MacroTrends, 2020a), were limited to 1983 in table 2 and figure 3. However, results from descriptive statistics tests on the annual GDP growth rate presented in figures 1 and 2 utilised available data from 1960 to 2020.

3.1. Analytical Tools

Descriptive statistics and regression models were used to describe the research variables and to evaluate their behaviour over the stated time frame on economic growth. Measures such as mode, mean, and median were used to identify the desired average of the observations and to summarise the research data, while standard deviation and range were employed to describe the extent of dispersion about the central tendency (Ashley et al., 2016; Creswell, 2009; Frankfort-Nachmias & Nachmias, 2008). Specifically, these measures were used to describe trends in annual public spending and economic growth rates during the research period.

3.2. Research Variables

As affirmed in the preceding section, the *independent* research variable was *public spending, while* the *dependent* research variable was *economic growth*, represented by *GDP growth*. The unit of analysis was the Ghanaian economy.

3.3. Regression Model

The regression statistical model was adapted to measure the effect and level of interaction of annual public spending on economic growth during the research period. With the compelling surge in public spending during the 2020 fiscal year, invariably to mitigate the ominous effect of COVID-19 on the Ghanaian economy, it was imperative to examine the determinants of public spending so we could determine the extent to which increased annual public spending could have a telling effect on GDP growth.

Stated in different terms, it was necessary to examine how increased public spending could slow down the pace of growth of Ghana's economy and whether it remains imperative for managers of the economy to be fiscally disciplined and more strategic in their approach to public spending in the current and future periods. Further, it was imperative to determine whether public spending dominates the economic wealth creation strategy adapted for implementation by previous and current elected Ghanaian governments, whether increased public spending results in the allocation of scarce resources to unproductive sectors and use, whether increased public spending leads to increased transaction costs; and drives economic growth.

It is a truism that countries throughout the world thrive on the throes of effective and efficient economic management systems and strategies. The competitiveness of each economy and its ability to have an edge over other competing economies in the global business environment is predicated on the implied economy's level of operational and functional efficiency and the ability to implement the smart growth strategy with relative ease and finesse. Thus, it was imperative to examine the extent to which surging public spending could affect the rigidity and robustness of the Ghanaian economy and growth thereof.

The research sought to measure the extent to which, in a given fiscal year, public spending could significantly impact the outcome of economic activities and growth at the national level, controlling for other pertinent determining factors of total economic output such as personal consumption, gross private domestic investment and net exports. The Microsoft Excel analytical software was adapted and used in the research. Diagrams and tables were derived from Microsoft Excel to analyse the research data.

3.4. Research Hypotheses

The current research tested the causal relationship between annual public spending and annual economic growth rates, using the null and alternative research hypotheses stated in the following sub-section.

3.4.1. Research Hypothesis

- Ho: $\mu 1 = \mu 2$; this implies that annual public spending has no significant effect on annual GDP growth.
- H1: $\mu 1 \neq \mu 2$; this implies that annual public spending has a significant effect on annual GDP growth.

Mathematically, the equation for gross domestic product is expressed as:

$GDP = G + C + I + Xn$

Where:

GDP = Gross domestic product / total economic output
G = Government purchases or spending
C = Personal consumption
I = Gross private domestic investment
Xn = Net exports. That is, total exports less total imports

Generally, countries measure their respective economic growth rates using either the incremental approach or the exponential approach. The *incremental approach* is mathematically expressed as:

$GDPG = [((GDP2 - GDP1) \div GDP1) \times 100\%]$

Where:

GDPG = Gross domestic product or economic growth rate
GDP2 = Gross domestic product value for the current year
GDP1 = Gross domestic product value for the previous year

The exponential approach to computing economic growth is the dominant model used by the United States Bureau of Economic Analysis (BEA) (Amadeo, 2021). The equation for the *exponential approach* is:

$GDPG = [((RAQGDP \div PAQGDP)^4 - 1) \times 100\%]$

Where:

GDPG = Gross domestic product or economic growth rate
RAQGDP = Recent annualised quarter gross domestic product value
PAQGDP = Previous annualised quarter gross domestic product value

Ghana's annual public spending in recent fiscal periods has the following major components: purchase of goods and services, wages and salaries, interest payments on public debt, transfers to statutory funds, transfers to other earmarked funds, capital expenditure; and payments on public debt (Ministry of Finance, 2019). On the basis of the foregoing, a mathematical description of public spending components is presented as follows:

$PS = \beta 0 + \beta 1GS + \beta 2WS + \beta 3IPD + \beta 4TSF + \beta 5TOEF + \beta 6CE + \beta 7PPD + \mu t$

Where:

PS = Public spending
GS = Purchase of goods and services
WS = Wages and salaries
IPD = Interest payments on public debt
TSF = Transfers to statutory funds
TOEF = Transfers to other earmarked funds
CE = Capital expenditure
PPD = Payments on public debt
β0 = Intercept term (Constant)
β1 = Coefficient of purchase of goods and services
β2 = Coefficient of wages and salaries
β3 = Coefficient of interest payments on public debt
β4 = Coefficient of transfers to statutory funds
β5 = Coefficient of transfers to other earmarked funds
β6 = Coefficient of capital expenditure
β7 = Coefficient of payments on public debt
μt = Error term

Based on the preceding information, the ensuing model was formulated for the current research, specifically in relation to the research hypothesis:

GDPG = PS

Where:

GDPG = Gross domestic product or economic growth rate
PS = Public spending

However, the foregoing equation can be expanded and expressed as:

$$[((GDP2 - GDP1) \div GDP1) \times 100\%] = \beta0 + \beta1GS + \beta2WS + \beta3IPD + \beta4TSF + \beta5TOEF + \beta6CE + \beta7PPD + \mu t$$

OR

$$[((RAQGDP \div PAQGDP)^4 - 1) \times 100\%] = \beta0 + \beta1GS + \beta2WS + \beta3IPD + \beta4TSF + \beta5TOEF + \beta6CE + \beta7PPD + \mu t$$

4. Research Findings and Discussions

4.1. National Population and Public Spending

Evidence suggests the existence of a direct relationship between the growing population and increasing demand for *merit goods* such as schools and hospitals; rising demand for *public goods* including construction of bridges and roads and strengthening internal and external security; and consistent surge in *welfare payments and benefits* such as payments on disability and unemployment benefits (Economics Online, n.d.). However, the ability of global economies to effectively commit to the provision of these merit and public goods, as well as effect prompt payments on welfare and other benefits, comes at a cost. Effective provision of these facilities impels various governments to commit to public spending. Therefore, it suffices to state that a direct relationship exists between the growing population and increased public spending, controlling for inefficiencies in the allocation and utilisation of available limited national resources.

Shared data in table 1 and figure 1 depict essential information on major variables (annual public spending and annual total population) and derived or sub-variables (annual average public spending per head and annual percentage increase in public spending) related to the Ghanaian economy during the research period. Column 2 in table 1 presents data on Ghana's annual public spending from 1983 to 2020, while column 3 in the table outlines data on annual population during the research period. Columns 4 and 5 depict respective data on annual average public spending per head and annual percentage increase in public spending. The data in table 1 and figure 1 reveal that the annual average public spending per head from 1983 to 1991 was less than US$1.00. The highest annual average public spending per head during the period was recorded in 1991 (US$0.80), while the lowest annual average value was recorded during 1983, the year characterised by severe drought, famine and general economic hardships culminating in the adaption and implementation of the economic recovery programme (ERP) in various phases (Phases I, II and III).

Statistics in table 1 and figure 1 affirm that the annual total population from 1983 through 1991 was far in excess of annual public spending during the period. To illustrate, data on the annual total population during 1983 (12,033,573 people) and annual public spending during the period (US$520,690) affirm that the amount spent on each person was equivalent to four cents (US$0.04) [US$520,690 ÷ 12,033,573 people], whereas total population (12,033,573 people) was about 23.11 times total public spending value (US$520,690) during the period. Although annual public spending per head doubled (US$0.08) during 1984 to reflect an 82.12% increase in annual public spending during the period compared to the previous year, the total population (12,405,660 people) was nearly 13.08 times total public spending (US$948,276) during the period.

Sad to relate, geometric increases in national populations with corresponding arithmetic increases in hard and soft infrastructure developments across global economies are creating multiple challenges, including a lack of improved health and better living standards for many people. Population Matters (2021) reported that an estimated 10% of the world's population live on less than $2.00 daily, despite the fact that hundreds of millions of people on the planet Earth are believed to be living decent and economically improved lives during the research period. Sporadic increase in the size of a country's population has some socio-economic consequences; it has the potential to trap individuals, communities

and nations in poverty. The foregoing renders efforts at achieving sustainable population levels at the national and global levels quite pivotal to assisting individuals within an economy to achieve the desired living standards and dignity.

Year	Public Spending US$	Total Population	Av. Pub. Spend. Per Head US$	Annual % Increase in Public Spending
2020	17,006,155,531	31,072,940	547.3	32.95%
2019	12,791,483,844	30,417,856	420.53	2.50%
2018	12,478,966,911	29,767,102	419.22	5.21%
2017	11,861,542,495	29,121,465	407.31	-8.62%
2016	12,981,041,474	28,481,945	455.76	31.08%
2015	9,902,966,017	27,849,205	355.59	-0.85%
2014	9,987,469,655	27,224,473	366.86	17.18%
2013	8,523,219,105	26,607,645	320.33	30.23%
2012	6,544,752,551	25,996,450	251.76	56.54%
2011	4,180,913,815	25,387,712	164.68	16.02%
2010	3,603,555,493	24,779,619	145.42	39.81%
2009	2,577,388,945	24,170,940	106.63	2.98%
2008	2,502,888,073	23,563,825	106.22	42.41%
2007	1,757,538,753	22,963,946	76.54	40.28%
2006	1,252,853,310	22,379,055	55.98	34.97%
2005	928,251,742	21,814,642	42.55	16.88%
2004	794,198,919	21,272,323	37.34	33.90%
2003	593,122,809	20,750,299	28.58	32.69%
2002	399,214,932	20,246,381	19.72	30.0%
2001	307,080,958	19,756,928	15.54	29.91%
2000	236,376,689	19,278,856	12.26	38.07%
1999	171,206,897	18,812,359	9.1	13.27%
1998	151,144,828	18,357,156	8.23	16.44%
1997	129,800,000	17,908,985	7.25	48.02%
1996	87,693,104	17,462,496	5.02	48.33%
1995	59,120,690	17,014,057	3.48	49.14%
1994	39,641,379	16,561,674	2.39	39.92%
1993	28,331,035	16,106,765	1.76	60.88%
1992	17,610,345	15,653,336	1.13	45.25%
1991	12,124,138	15,207,367	0.8	33.18%
1990	9,103,448	14,773,277	0.62	29.29%
1989	7,041,379	14,353,410	0.49	36.22%
1988	5,168,966	13,947,042	0.37	40.23%
1987	3,686,207	13,552,021	0.27	45.84%
1986	2,527,586	13,164,837	0.19	53.03%
1985	1,651,724	12,783,613	0.13	74.18%
1984	948,276	12,405,660	0.08	82.12%
1983	520,690	12,033,573	0.04	-

Table 1: Average Public Spending Per Head – 1983 - 2020
Sources: World Bank (2021d), MacroTrends (2021), Bank of Ghana (2021), Netcials (2021)

Annual percentage increase in public spending during 1984 (82.12%) remained the highest throughout the period, that is, 1983 to 2020, and reasonably so because massive investment in soft and hard infrastructure was required to redirect the Ghanaian economy from the recession during 1983 to the path of strong economic performance and growth during 1984. Accelerated growth remained the primary objective of managers of the economy. Total public spending during 1985 (US$1,651,724) was US$703,448 or 74.18% more than total public spending during the previous year, while the annual average public spending per head (US$0.13) was an improvement over the average per head value recorded during 1984 (US$0.08). Consistent with the preceding years, the total population (12,783,613 people) in 1985 was equivalent to 7.7 times total public spending (US$1,651,724) during the period.

The United Nations (UN) Under-Secretary-General from the year 2000 through 2010, Madam Thoraya Ahmed Obaid (as cited in Population Matters, 2021), affirmed that steps taken by global leaders to address issues related to population and reproductive health are pivotal to finding immediate- and long-term solutions to challenges related to poverty, hunger, environmental destruction and diseases. One of the Sustainable Development Goals (SDGs) of the United Nations stresses the achievement of a decent quality of life for all people and the maintenance of a healthy environment. To be able to achieve the foregoing sustainable development goal, Population Matters (2021) suggested the need for global economies, including Ghana to ensure choice-based solutions for populations are empowered and effectively implemented.

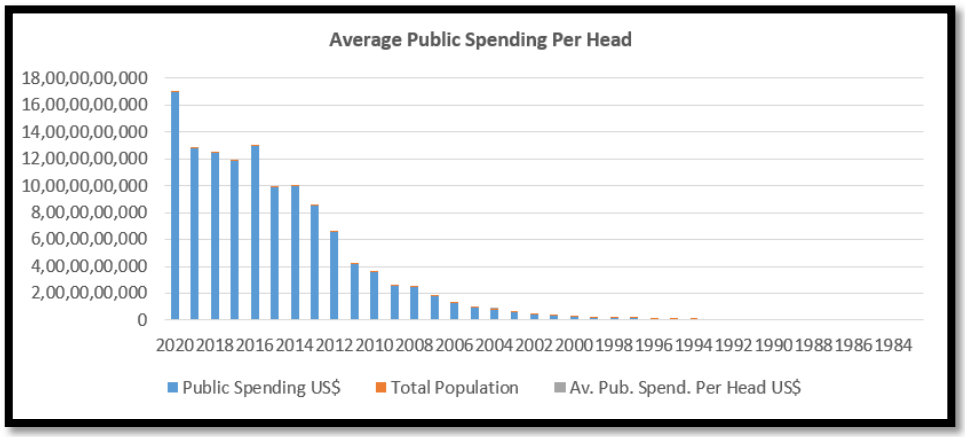

Figure 1: Average Public Spending Per Head (1983 – 2020)
Sources: World Bank (2021d), MacroTrends (2020b), Bank of Ghana (2021), Netcials (2021)

Further analysis of data outlined in table 1 and figure 1 indicates that annual average public spending per head inched very close to one American dollar during 1991 (US$0.80). Total public spending during the period (US$12,124,138) represented US$3,020,690, or a 33.18% increase over total public spending during 1990 (US$9,103,448). Nonetheless, the total population (15,207,367 people) in 1991 was nearly 1.25 times total public spending (US$12,124,138) during the period and nearly 1.03 times the total population (14,773,277) during 1990.

Population Matters (2021) lamented that more than one-tenth of the globe's population lives in poverty, notwithstanding the fact that billions are privileged and live affluently. The author argued that poverty is a by-product of political and economic injustice and not a consequence of limited resources at the national and global levels. Unfortunately, the category of people who are almost always found to be at the greatest risk from damages caused to the environment and risk emanating from competition for resources and climate change is poor. When economies fail to implement policies that would assure sustainable population growth, the negative impacts are first and heavily felt by the poor. Coincidentally, global countries with large family sizes and high fertility rates remain the poorest.

The respective annual percentage increases in public spending from 1986 through 1990 were 53.03%, 45.84%, 40.23%, 36.22% and 29.29%. The corresponding annual average public spending per head during the period was US$0.19, US$0.27, US$0.37, US$0.49, and US$0.62. The respective ratios of total population-to-total public spending from 1986 through 1990 were equivalent to 5.21 times, 3.68 times, 2.70 times, 2.04 times, and 1.62 times, affirming a higher increase in total population relative to total public spending during the period. The levels of annual public spending were indicative of moderation and reflected low infrastructure developments across the country during the period. For instance, the rate of electricity generation, supply and connectivity in the Ghanaian economy during the period was very low. Many homes in the suburbs of the capital city (Accra) remained unconnected to the national electricity grid, and they relied extensively on hurricane lamps and lanterns at night during the period.

Population Matters (2021) asserted that people are compelled to perceive large family sizes as the safest way of securing adequate care during old age, especially when they lack immediate economic security and cannot rely on their respective governments and social safety nets. The desire to have more children is kindled when the population is saddled with a high mortality rate. Over time, the value placed on large family sizes by the community increases, and this has the potential to create a vicious cycle.

Ghana's total public spending value during 1992 (US$17,610,345) remained quite historic. It was the fiscal year during which the annual average public spending per head first exceeded one American dollar (US$1.13); total public spending represented a 45.25% increase over total public spending during the previous year, while total population (15,653,336 people) was less than total public spending (US$17,610,345); albeit total population during the period remained almost 1.03 times the total population during 1991 (15,207,367). Specifically, the total population during 1992 was nearly 0.89 times total public spending (US$17,610,345), compared to the 1.25 times recorded during 1991. The annual average public spending per head recorded during 1996 (US$5.02) was about 1.44 times the value recorded during 1995 (US$3.48 times) and 2.10 times and 2.85 times the respective annual average values recorded during 1994 (US$2.39) and 1993 (US$1.76).

Population Matters (2021) averred that large families with limited financial and material resources may encourage early school drop-outs or give the hands of their daughters in marriage at tender ages and may choose to live in deprived and isolated communities with limited access to modern family planning education and methods. The end results are the maintenance of large and high family sizes and the perpetuation of the vicious cycle. The Indian Politician Karan Singh (as cited in Population Matters, 2021) once argued that development remained the best contraceptive that economies could have. However, a few decades later, he was inclined to assert that contraception remains the most effective means of development by global economies. Singh's (as cited in Population Matters, 2021) emphasis on contraception as a conduit to regulate population increase and to provide economic and financial respite for development is not surprising as India remains the world's second most populous nation with an estimated 1.394 billion people after China whose total population hovers around 1.445 billion people (Worldometer, 2021a & b).

Statistics in table 1 and figure 1 outline a significant common thread. That is, annual average public spending per head depicts consistent and uninterrupted increases in values from 1983 to 2020. From an initial modest ratio of US$0.04 per head in 1983, the total public spending-to-total population ratio increased to US$1.76 in 1993. Over the eleven-year period, total population surged by 4,073,192 people (16,106,765 people - 12,033,573 people) or 33.85% [(4,073,192 people ÷ 12,033,573 people) x 100%]; whereas total public spending increased by US$27,810,345 (US$28,331,035 - US$520,690) or 5,341.06% [(US$27,810,345 ÷ US$520,690) x 100%]. Despite the consistent increase in total annual public spending and total annual population, the annual average public spending per head from 1983 to 1999 was less than US$10.00; the highest value during the period was US$9.10, recorded during 1999. The annual average public spending per head from fiscal year 2000 through 2005 was less than US$50.00, while the annual average value per head between 2006 and 2007 was less than US$100.

Issues related to population growth at the family level extend to national economies. Population Matters (2021) indicated that the provision of infrastructure, health services, and education, as well as job creation in poorer economies with populations growing at constant rates, could be a daunting task, if not impossible. In extreme cases, food supply to the growing population could be a strong challenge. Further, a burden is created when the number of dependent children is significantly in excess of the number of economically productive adults in economies characterised by high population growth. The author revealed that the median age for the entire population of sub-Saharan Africa during the research period was estimated at 19 years, while the median age for Niger was 15.3 years. Niger remained the world's and Africa's youngest population and had the highest fertility rate globally during the research period.

Statistics in table 1 and figure 1 reveal that the respective annual average public spending per head from fiscal year 2008 to 2011 were US$106.22, US$106.63, US$145.42 and US$164.68. The annual average public spending per head during 2012 (US$251.76) was a significant increase in both quantitative (US$87.08) and percentage terms (52.88%) over the annual average recorded during 2011 (US$164.68). Notwithstanding the consistent increase in annual average public spending per head from 1983 through 2020, surges in annual public spending have not been consistent during the period. We observe a consistent increase from 1983 (US$520,690) through 2014 (US$9,987,469,655), a decrease during 2015 (US$9,902,966,017), and another decrease during 2017 (US$11,861,542,495), relative to 2016 (US$12,981,041,474). The respective annual percentage increases in total public spending during 2015 and 2017 were -0.85% and -8.62%.

Further, statistical distribution in the table and figure affirms the annual percentage increase in total public spending in excess of 50% was recorded during five fiscal periods, including 1984 (82.12%); 1985 (74.18%); 1986 (53.03%); 1993 (60.88%); and 2012 (56.54%). Likewise, a percentage increase in annual public spending in excess of 40% but less than 50% was recorded during eight fiscal periods, namely 1987 (45.84%), 1988 (40.23%), 1992 (45.25%), 1995 (49.14%), 1996 (48.33%), 1997 (48.02%), 2007 (40.28%) and 2008 (42.41%). However, the annual average public spending per head from 2013 to 2020 ranged from US$320.33 to US$455.76 and from US$455.76 to US$547.30. The highest annual average public spending per head from 1983 to 2020 was recorded during 2020 (US$547.30), followed by the respective averages recorded during 2016 (US$455.76) and 2019 (US$420.53).

In 2017, the Finance Minister of Malawi, Goodall Gondwe (as cited in Population Matters, 2021), bemoaned the negative implications of the growing population for the Malawian economy. The Minister recounted pressures mounted on the Malawian economy by increasing population size to the extent that tremendous economic gains by the country over the years were believed to have been crowded out, and the Malawian people felt minimal positive impact. These obvious challenges affirm the need for developing economies to intensify their respective campaigns on birth control to assuage the challenges that growing populations pose to the implied economies. Population Matters (2021) argued that countries that have effectively implemented policies and have been successful at controlling their fertility rates have succeeded in moving rapidly from poverty onto the path of economic prosperity.

4.2. Descriptive Statistics

This section presents summaries of Ghana's annual economic or GDP growth rates from the fiscal year 1960 to 2020 and annual public spending values expressed as a percentage of annual GDP values from the fiscal year 1983 to 2020. The foregoing data formed the basis of analysis in this section. Data in figure 2 represent a statistical summary of Ghana's annual GDP growth rates during the period 1960 to 2020. Statistics in the figure are drawn essentially on data in table 2, column 5 and figure 3. Statistical distribution in figure 2 depicts the respective values for sample variance (0.00185828) and skewness (-1.14076322).

The value for Skewness (-1.14076322) explains the distortion or asymmetry of the random variable around the mean in the distribution, whereas the sample variance's value (0.00185828) is indicative of the expectation of squared deviation of the research random variable from its mean. Statistical data in the figure depict respective Kurtosis and standard error values of 2.874190128 and 0.005519385. The standard error value (0.005519385) tells us the extent to which the coefficients are significantly different from zero, while the value for mode (0.052) in the statistical distribution affirms that the GDP growth rate of 5.20% was recorded during fiscal years 1986 and 2003.

The Kurtosis value (2.874190128) indicates the extent to which the tails of the distribution in figure 2 differ from the tails of a normal distribution. Stated in different words, Kurtosis helps in the determination of whether or not some extreme values are contained in the tails of the distribution. The minimum or smallest value in figure 2 is -0.1243. This represents the GDP growth rate recorded by Ghana during 1975 (-12.43%), one of the fiscal years under the political administration of the National Redemption Council (NRC). The value for standard deviation (0.043107773) tells us the extent to which the observations were dispersed around the central tendency or the extent to which the probability distribution is tight.

Mean	**0.036108197**
Standard Error	0.005519385
Median	0.044
Mode	0.052
Standard Deviation	0.043107773
Sample Variance	0.00185828
Kurtosis	2.874190128
Skewness	-1.14076322
Range	0.2648
Minimum	-0.1243
Maximum	0.1405
Sum	2.2026
Count	61
Largest(1)	0.1405
Smallest(1)	-0.1243
Confidence Level (95.0%)	0.011040413

Table 2: Statistics on Annual GDP Growth Rate (1960 – 2020)

The maximum or largest value (0.1405) is representative of GDP growth rate recorded during 2014 (14.05%) under the political stewardship of the National Democratic Congress (NDC) led by the late Prof. Mills. The range explains the difference between the largest and smallest values for the distribution. The value for the *range* (0.2648) in table 2 explains the substantial difference (26.48%) between the respective minimum and largest GDP growth rates recorded during 1975 (-12.43%) and 2014 (14.05%). The value for sum (2.2026) in the figure depicts the total value of annual GDP growth rates recorded during the period (220.26%) and included in the analysis.

Trend analysis of Ghana's annual economic growth rates for the fiscal period from 1960 to 2020 is outlined in figure 3. The economic growth rate during 1960 in the figure is 0%, denoting the non-availability of data for that fiscal year. However, the economy depicted impressive runs in terms of economic growth during the three successive years, recording respective rates of 3.43%, 4.11% and 4.41% from 1961 through 1963. Annual GDP growth rates recorded during 1964 (2.21%) and 1965 (1.37%) were a far cry from the rates recorded in prior years but an improvement over the rate recorded during 1966 (-4.26%); the year during which Ghana's first President, the late Dr. Nkrumah was overthrown; and greater part of the fiscal year (about 83.33%) was under the political stewardship of the National Liberation Council (NLC) led by the late Gen. Joseph Ankrah.

The average GDP growth rate recorded within the Ghanaian economy from 1961 through 1965 was approximately 3.11%, which was superior to the average recorded from 1966 through 1969 (1.3%) but short of the average recorded during 1970 and 1971 (7.47%). The average growth performance of Ghana's economy from 1972 through 1979 was -0.06%. As depicted in figure 3, four (1972, 1975, 1976, and 1979) of the eight years (from 1972 through 1979) were characterised by negative GDP growth rates, with the highest negative growth rate recorded during 1975 (-12.43%).

Nonetheless, the narratives from 1980 through 1983 (as illustrated in Figure 3) were not too distinct from the preceding fiscal years. For instance, with the exception of 1980, during which a positive growth rate was recorded (0.47%), the growth performance of the Ghanaian economy from 1981 through 1983 ended in negatives (-3.50%; -6.92%; and -4.56%).

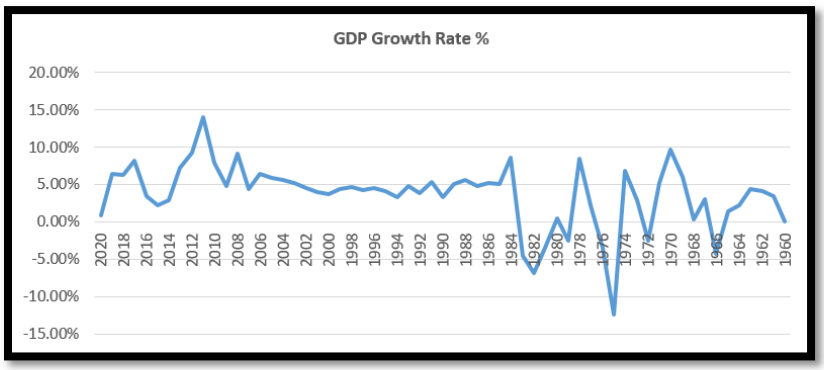

Figure 2: Annual GDP Growth Rate (1960 – 2020)

Data in figure 2 reveal non-record negative economic growth from 1984 to 2020, with the lowest growth rate recorded during 2020 (0.88%) and the highest rate recorded during 2011 (14.05%). Marginal increases and decreases in GDP growth rates were recorded from 1985 (5.09%) through 2007 (4.35%), while an average growth rate equivalent to 9.10% was recorded from 2008 to 2012. Respective performances of the Ghanaian economy from 2013 to 2016 and from 2017 to 2020 culminated in respective average growth rates of 3.96% and 5.44%, which were lower than the average

recorded from 2009 through 2012 (9.02%). Quite significantly, the average economic growth rate recorded during the latter period, that is, 2009 to 2012, remained the highest during the Fourth Republic. The subsequent section further discusses Ghana's average growth performance and other macroeconomic indicators, such as average public spending and average total population during the research period.

The statistical output in table 3 presents a summary of Ghana's annual public spending values measured as a percentage of annual GDP values for the fiscal years 1983 to 2020. The analysis in the figure drew essentially on data in table 2, column 3. Similar to table 2, data in table 3 depict the respective values for sample variance (0.006106827) and skewness (0.839907814) in the distribution.

As noted in the preceding section, the value for Skewness (0.839907814) explains the distortion or asymmetry of the random variable around the mean in the distribution, whereas sample variance (0.006106827) affirms the expectation of squared deviation of the research random variable from its mean. Statistics in the figure depict respective values for standard error (0.012676986) and Kurtosis (-0.517271622). The extent to which the coefficients are significantly different from zero is explained by the standard error value (0.012676986).

Mean	**0.074247368**
Standard Error	0.012676986
Median	0.05955
Mode	#N/A
Standard Deviation	0.078146193
Sample Variance	0.006106827
Kurtosis	-0.517271622
Skewness	0.839907814
Range	0.2524
Minimum	0.0001
Maximum	0.2525
Sum	2.8214
Count	38
Largest(1)	0.2525
Smallest(1)	0.0001
Confidence Level (95.0%)	0.025686014

Table 3: Statistics on Annual Public Spending as % of GDP

Table 3 depicts the minimum or smallest value of 0.0001. This value is representative of Ghana's public spending expressed as a ratio of GDP during 1983 (0.01%), the period of Phase One of the Economic Recovery Programme implemented under the political administration of the Provisional National Defence Council (PNDC). The value for sum (2.8214) in the figure depicts the total value of all public spending expressed as a percentage of GDP during the period and included in the analysis (282.14%). The value for standard deviation (0.078146193) indicates the extent to which the probability distribution is tight or the extent to which the observations were dispersed around the central tendency. The maximum or largest value (0.2525) indicates the ratio of public spending to GDP recorded during 2020 (25.25%). The range explains the difference between the largest and smallest values for the distribution. The value for the *range* (0.2524) in table 3 affirms the substantial difference (25.24%) between the respective ratios of public spending-to-GDP recorded during 2020 (25.25%) and 1983 (0.01%).

4.3. Results

The purpose of this research was to test the underlying hypothesis. That is, to measure the extent to which annual public spending significantly influences annual GDP growth. Data in tables 1 to 3 and figures 1 to 6 proved useful to the analysis in this section. Columns 4 and 5 in table 2 and figure 3 present historical data on Ghana's annual total economic output values and growth rates from 1983 to 2020. Data presented in figures 2 and 3 on annual GDP growth rates cover the fiscal period 1960 through 2020. Data on Ghana's annual GDP values and growth rates over the period from 1983 to 2020, which are presented in columns 4 and 5 in table 2, were accessed from the database of the World Bank (2021d); MacroTrends (2020b) and O'Neill (2021b); whereas data in column 2 in the table on annual public spending were accessed from the database of the Bank of Ghana (2021). Further, data on the annual total population in column 3, table 1, were obtained from MacroTrends (2021), while respective data in columns 4 and 5 in the table on annual average public spending per head and annual percentage increase in public spending were computed and compiled by the researcher.

Secondary data accessed from the World Bank on annual GDP values related to the Ghanaian economy during the research period were stated in American dollars. However, data on annual public spending accessed from the Bank of Ghana were valued in Ghana cedis. To ensure uniformity in currency usage and application to data in the tables and figures, annual public spending values in Ghana cedis were converted into American dollars using the annual average (cedi-dollar) exchange rate. Nonetheless, annual average cedi-dollar exchange rates were accessed from Netcials (2021) for limited fiscal periods: 2020 (5.668561:1); 2019 (5.304788:1); 2018 (4.663604:1); 2017 (4.382731:1); 2016 (3.938439:1); 2015 (3.77105:1); and 2014 (3.200231:1). To facilitate the computation process, the annual average cedi-

dollar exchange rate for 2014 (3.200231:1) was applied to the fiscal years 2000 through 2013; whereas annual average cedi-dollar exchange rate of 2.9000:1 was assumed and applied to the fiscal years from 1983 to 1999.

Generally, some fiscal periods coincide with general election years (presidential and parliamentary) in global economies, including Ghana, where democratic governance is held in high esteem and believed to be a catalyst for accelerated development and growth. Ghana's chequered political history implies that the economy is currently being steered under the Fourth Republic. The latter commenced in 1992 and is operated to date. Ghana implements the four-year, two-term presidential elections system. General elections, including presidential and parliamentary, were held during the following periods under the Fourth Republic: 1992, 1996, 2000, 2004, 2008, 2012, 2016 and 2020.

A careful review of data in tables 1 and 2 and figures 1 and 5 reveal a consistent increase in total public spending during periods of general elections within the Ghanaian economy from 1992 through 2020. The surge in public spending during election years comes in both quantitative and percentage terms relative to the immediate-preceding fiscal years. To illustrate, total public spending during 1992 was US$5,486,207 or 45.25% more than the value recorded during the previous year (12,124,138).

Year	Public Spending US$	Pub. Spending as % of GDP	GDP in US$	GDP Growth Rate
2020	17,006,155,531	25.25%	67,340,000,000	0.88%
2019	12,791,483,844	19.10%	66,980,000,000	6.48%
2018	12,478,966,911	19.03%	65,560,000,000	6.26%
2017	11,861,542,495	20.10%	59,000,000,000	8.14%
2016	12,981,041,474	23.60%	55,010,000,000	3.45%
2015	9,902,966,017	20.39%	48,560,000,000	2.18%
2014	9,987,469,655	18.61%	53,660,000,000	2.90%
2013	8,523,219,105	13.66%	62,410,000,000	7.31%
2012	6,544,752,551	15.86%	41,270,000,000	9.29%
2011	4,180,913,815	10.63%	39,340,000,000	14.05%
2010	3,603,555,493	11.19%	32,200,000,000	7.90%
2009	2,577,388,945	9.89%	26,050,000,000	4.84%
2008	2,502,888,073	8.73%	28,680,000,000	9.15%
2007	1,757,538,753	7.08%	24,830,000,000	4.35%
2006	1,252,853,310	6.13%	20,440,000,000	6.40%
2005	928,251,742	8.64%	10,740,000,000	5.90%
2004	794,198,919	8.94%	8,880,000,000	5.60%
2003	593,122,809	7.77%	7,630,000,000	5.20%
2002	399,214,932	6.47%	6,170,000,000	4.50%
2001	307,080,958	5.78%	5,310,000,000	4.00%
2000	236,376,689	4.75%	4,980,000,000	3.70%
1999	171,206,897	2.22%	7,720,000,000	4.40%
1998	151,144,828	2.02%	7,480,000,000	4.70%
1997	129,800,000	1.88%	6,890,000,000	4.20%
1996	87,693,104	1.27%	6,930,000,000	4.60%
1995	59,120,690	0.91%	6,470,000,000	4.11%
1994	39,641,379	0.73%	5,440,000,000	3.30%
1993	28,331,035	0.48%	5,970,000,000	4.85%
1992	17,610,345	0.28%	6,410,000,000	3.88%
1991	12,124,138	0.18%	6,600,000,000	5.28%
1990	9,103,448	0.16%	5,890,000,000	3.33%
1989	7,041,379	0.13%	5,250,000,000	5.09%
1988	5,168,966	0.10%	5,200,000,000	5.63%
1987	3,686,207	0.07%	5,070,000,000	4.79%
1986	2,527,586	0.05%	5,730,000,000	5.20%
1985	1,651,724	0.04%	4,500,000,000	5.09%
1984	948,276	0.02%	4,410,000,000	8.65%
1983	520,690	0.01%	4,060,000,000	-4.56%

Table 4: Public Spending and GDP Growth Rates (1983 – 2020)
Sources: World Bank (2021d); MacroTrends (2020b); Bank of Ghana (2021); Netcials (2021)

In the same vein, total public spending during 1996 (US$87,693,104) represented a 48.33% or US$28,572,414 increase over the value recorded during 1995 (US$59,120,690). The respective public spending values for 1999 and 2000 were US$171,206,897 and US$236,376,689. However, the latter represented an approximate increase of 38.07% or US$65,139,792 during 2000 compared to 1999.

The respective patterns of public spending between 2003 and 2004, between 2007 and 2008, and between 2011 and 2012 were not distinct from the previous patterns. Total public spending during 2004 (US$794,198,919) was US$201,076,110 or 33.90% in excess of public spending during the previous year (US$593,122,809), while total public

spending during 2007 (US$1,757,538,753) was US$745,349,320 or 42.41% short of the value recorded during 2008 (US$2,502,888,073).

During the 2012 fiscal year, Ghana recorded a total public spending value of US$6,544,752,551, representing an increase of US$2,363,838,739 or 56.54% over the value recorded during 2011 (US$4,180,913,815). The trend continued during 2015 and 2016 as public spending during 2016 (US$12,981,041,474) was US$3,078,075,457 or 31.08% more than the value recorded during 2015 (US$9,902,966,017). The increase in public spending during 2019 (US$12,791,483,844) relative to total public spending during 2018 (US$12,478,966,911) was 2.50%, whereas the increase during 2020 relative to total public spending during 2019 was 32.95%.

Generally, an economy is believed to have experienced economic growth when the value of total goods and services produced in the current financial or fiscal year exceeds the value recorded during the previous year. Investopedia Team (2021) asserted that although other metrics are sometimes adapted and applied, traditional measurement of aggregate economic growth is centred on gross domestic product or gross national product (GNP). Further, it could be measured in terms of real GDP or in terms of nominal GDP, which is adjusted for inflation. Lumen (n.d.) defined real total economic output as the value of all goods and services produced during a given fiscal year with little emphasis on price changes and referred to nominal total economic output or GDP as the value of all goods and services with considerations for price changes.

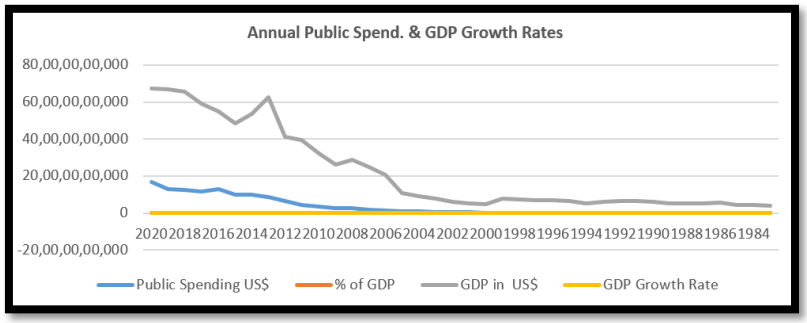

Figure 3: Public Spending and GDP Growth Rates (1983 – 2020)
Sources: World Bank (2021d); MacroTrends (2020b); Bank of Ghana (2021); Netcials (2021)

Data in table 2 affirm the GDP growth performance of the Ghanaian economy from 1983 to 2020. Statistical description and trend analysis of Ghana's GDP growth rate on an annual basis from 1960 to 2020 are presented in figures 2 and 3, while figure 3 depicts growth rates from 1983 through 2020. The GDP growth rate recorded during 2012 (9.29%) was 4.76% lower than the rate recorded in 2011 (14.05%) but remained the second-highest rate from 1983 to 2020 and the third-highest rate from 1960 to 2020 after 14.05 % (2011) and 9.72% (1970) respectively. During 2008, the country's GDP growth rate was estimated at 9.15%. This was nearly 2.10 times the rate recorded during 2007 (4.35%); it remained the third-highest growth rate from 1983 to 2020. Figure 3 affirms that the economic growth rate recorded during 2008 (9.15%) remained the fourth-highest from 1960 to 2020.

Usually, changes in nominal GDP values are observed when there are changes or shifts in price and quantity. However, real GDP value is only influenced by changes in quantity, not changes in price. Real economic values measure purchasing power net of changes in price over a given period of time. Measurement of real GDP takes into consideration both deflation and inflation. Nominal GDP is a money-value measure; real GDP transforms nominal GDP into an index for the quantity of total economic output. The effects of inflation are not considered, and adjustments are not made when nominal GDP values are computed. The reverse holds true for the determination of real GDP values (Lumen, n.d.).

The respective annual GDP growth rates recorded within the Ghanaian economy from 1998 through 2002 were 4.70%, 4.40%, 3.70%, 4.00% and 4.50%. The growth rate recorded during 1998 (4.70%) remained the highest, although the fiscal year's total economic output value (US$7,480,000,000) was the second-highest during the comparative period (1998 through 2002). Total public spending during 1998 (US$151,144,828) remained the lowest during the comparative period; it represented only 2.02% of GDP during 1998. The fiscal year 1999 recorded the highest GDP value (US$7,720,000,000) during the period 1998 through 2002. However, the GDP growth rate recorded during 1999 (4.40%) remained the third-highest during the period.

Total public spending during 1999 (US$171,206,897) was equivalent to 2.22% of GDP and represented US$20,052,069, or a 13.27% increase over total public spending during the previous year (US$151,144,828). Graduated increase in annual public spending values was recorded from 2000 through 2002: US$236,376,689, US$307,080,958 and US$399,214,932. The respective public spending values from 2000 through 2002 were equivalent to 4.75% of GDP (US$4,980,000,000), 5.78% of GDP (US$5,310,000,000), and 6.47% of GDP (US$6,170,000,000).

The increase in economic growth during a given fiscal year is enhanced when the country witnesses a surge in the quantity and quality of human capital, capital goods, and labour force produced, as well as an increase in the application of technology compared to the preceding year. An increase in total economic output is assured when the foregoing variables are available in their desired quantities and expected standards to facilitate production and increase production capacity. Increased economic growth is indicative of an increase in the aggregate market value of all additional goods and services produced during the current fiscal year compared to the previous year (Investopedia Team, 2021).

Total public spending in the Ghanaian economy during 1993 (US$28,331,035) increased by US$10,720,690 or 60.88% over the public spending value recorded during 1992 (US$17,610,345), while GDP growth increased from 3.88% to 4.85% during the period. Increased public spending during the period reflected an increase in foreign inflows in response to the fulfilment of the development partners' conditionality of returning the country from military to civilian or democratic rule. Nonetheless, total public spending (US$28,331,035) was equivalent to less than 1% of GDP (0.48%) during 1993.

Respective GDP growth rates during 1994 and 1995 were 3.30% and 4.11%. These growth rates reflected respective GDP values of US$5,440,000,000 and US$6,470,000,000, as well as respective public spending values of US$39,641,379 and US$59,120,690 during the period. Annual public spending was expected to stimulate the economy towards accelerated development and growth. This objective inspired an increase in public spending from US$59,120,690 in 1995 to US$87,693,104 and US$129,800,000 in 1996 and 1997, respectively. Respective public spending values during 1996 and 1997 represented 1.27% and 1.88% of GDP during the period. However, GDP growth plummeted from 4.60% in 1996 to 4.20% in 1997. The average economic growth rate from 1993 through 1997 was almost 4.21%.

In some cases, a correlation between increased average marginal productivity and aggregate gains in production is recorded. This has the potential to stimulate the economy through increased income and a corresponding increase in aggregate demand or consumption. All else held constant, increased aggregate demand is analogous with an increase in material wealth or improved living standards. That is the former leads to significant improvements in the latter. Ghana's total public spending during 1988 (US$5,168,966) remained US$1,482,759 or 40.23% more than the value expended during 1987 (US$3,686,207) and equivalent to 0.10% of GDP (US$5,200,000,000) during 1988. Performance on total economic output during 1988 (US$5,200,000,000) represented an improvement over the previous fiscal year (US$5,070,000,000) and an increase in GDP growth during 1988 (5.63%) relative to 1987 (4.79%). Annual GDP growth slowed from 1989 (5.09%) through 1992 (3.88%) compared with 1988 (5.63%). The average economic growth rate from 1988 to 1992 was approximately 4.64%.

Amadeo (2021b) noted that our ability to effectively measure economic growth is facilitated by total economic output and its related components or determinants. Gross domestic product refers to the aggregate value of all goods and services produced within an economy during a given financial year. Strategic implementation of national policies leading to positive fiscal expansion could lead to accelerated development and growth of the economy. Data in table 2 and figures 3 and 5 affirm Ghana's economic growth rate during 1984 was 8.65%. This growth rate represented a significant improvement over the negative 4.56% recorded during 1983. In effect, the difference between the respective growth rates recorded during 1984 (8.65%) and 1983 (-4.56%) was 13.21% (8.65% - (-4.56%) = 8.65% + 4.56% = 13.21%).

Ghana's economic growth during 1984 (8.65%) affirmed the rapid implementation of policies on fiscal expansion; it also concerted efforts toward accelerated development after the severe drought and other socio-economic challenges experienced by the country in 1983. The strong economic growth flight observed during 1984 (8.65%) was lowered by 3.56% (8.65% - 5.09%) during 1985 (5.09%), while the increase during 1986 (5.20%) comparative to 1985 (5.09%) was marginal (0.11%).

The performance of the Ghanaian economy during 1987 in terms of total economic output (US$5,070,000,000) was a pale shadow of the performance recorded during the previous year (US$5,730,000,000). Expectedly, economic growth during 1987 thumped to 4.79%, from 5.20% during 1986. However, total public spending during 1987 (US$3,686,207) increased by US$1,158,621 or 45.84% compared with public spending during 1986 (US$2,527,586). Total public spending represented 0.07% of GDP during 1987. The average economic growth rate recorded from 1983 through 1987 was 3.83%.

Some macroeconomic indicators related to the performance of the Ghanaian economy under various political administrations and their respective economic management teams during the Fourth Republic are outlined in table 3 and figure 4. Data in the table and figure cover the period from 1993 to 2020 and reflect the respective average performances of each political administration during the period. As noted in the preceding section, Ghana's Republican Constitution allows for four-year two-presidential terms. Column 1 in table 3 presents the years' interval (four years) for each elected government's administrative term in office during the Fourth Republic. Column 2 in the table sheds important light on average public spending under each political administration from 1993 to 2020; respectively, columns 3 and 4 indicate the average economic growth rates and average total population values during the period. These indicators fairly reflect the stewardship and general performance of each elected government during the period under review.

Year	Average Public Spending US$	Average GDP Growth Rate	Average Total Population
1993 – 1996	53,696,552	4.22%	16,786,248
1997 – 2000	172,132,104	4.25%	18,589,339
2001 – 2004	523,404,405	4.83%	20,506,483
2005 – 2008	1,610,382,970	6.45%	22,680,367
2009 – 2012	4,226,652,701	9.02%	25,083,680
2013 – 2016	10,348,674,063	3.96%	27,540,817
2017 – 2020	13,534,537,195	5.44%	30,094,841

Table 5: Average Public Spending, GDP Growth and Total Population (1993 – 2020)
Source: Computed & Compiled by the Researcher

The data shared in the table, and figure affirms a progressive increase in average public spending during the period. As stated in different terms, we observe a steady rise in average public spending values from one administrative term to the other, albeit the quantitative and percentage increases varied from one administrative period to the other. To illustrate, Ghana's average total public spending during the period 1997 through 2000 amounted to US$172,132,104, which was nearly 3.21 times (US$172,132,104 ÷ US$53,696,552) the average recorded from 1993 through 1996 and equivalent to US$118,435,552 or 220.57% increase during the period.

The average GDP growth rate recorded from 1997 to 2000 (4.25%) represented a marginal increase (0.03%) over the average growth rate recorded from 1993 through 1996 (4.22%). The average total population during the period increased by 1,803,091 people or 10.74%. The foregoing analysis reflects the performance of one elected government over an eight-year (two-term) period, from 1993 to 2000.

The years 2001 through 2004 reflect the term of another elected government. Average public spending during the period (US$523,404,405) was approximately 3.04 times and equivalent to US$351,272,301, or a 204.07% increase over the value recorded during the previous period (US$172,132,104). Further, the average increase in GDP growth during the comparative period was marginal (0.58%), whereas the average total population increased by 1,917,144 or 10.31% during the comparative periods.

Total average public spending during the fiscal period 2005 through 2008 was in excess of the million-dollar threshold recorded in prior periods. Specifically, average public spending during the period represented US$1,086,978,565 or a 207.68% increase over the average public spending during the fiscal period 2001 through 2004 (US$523,404,405). Increased average public spending from 2005 to 2008, which was nearly 3.08 times the value recorded from 2001 to 2004, reflected a 10.60% surge in the average total population from 20,506,483 people (2001 - 2004) to 22,680,367 people (2005 - 2008). The average economic growth rate recorded from 2005 through 2008 (6.45%) was a sharp increase over the respective average growth rates recorded during the preceding fiscal periods.

Ghana's average total population during the fiscal period from 2009 to 2012 (25,083,680 people) affirmed 2,403,313 people, or a 10.60% surge over the average from 2005 to 2008 (22,680,367 people). Average public spending during the period (US$4,226,652,701) was nearly 2.63% of the value recorded during the previous period (US$1,610,382,970), whereas average economic growth (9.02%) was 2.57% more than the average recorded during 2005 through 2008 (6.45%). Reiteratively, the average economic growth rate recorded during 2009 through 2012 (9.02%) remained the highest during the period under review. That is, from 1993 to 2020.

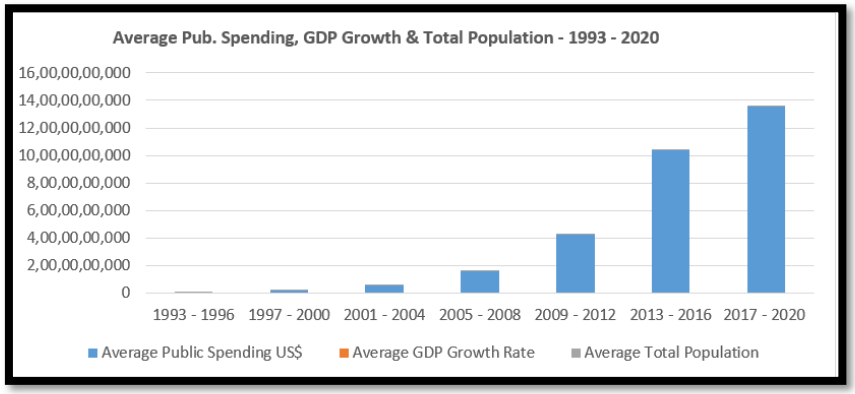

Figure 4: Average Public Spending, GDP Growth and Total Population (1993 – 2020)
Source: Computed & Compiled by the Researcher

Although public spending during the fiscal period from 2013 to 2016 (US$10,348,674,063) remained US$6,122,021,362, or 144.84% increase over the average recorded during the previous fiscal period (US$4,226,652,701), average economic growth recorded during 2013 through 2016 (3.96%) was 5.06% short of the average recorded during 2009 through 2012 (9.02%). The average total population increase during the comparative periods was 2,457,137 people or 9.80%.

The average total population of people within the Ghanaian economy from 2017 through 2020 was estimated at 30,094,841. This number represented 2,554,024 people, or a 9.27% increase over the average recorded during the previous period (27,540,817 people). The average economic growth from 2017 to 2020 (5.44%) was an improvement over the average recorded from 2013 through 2016 (3.96%) but remained a pale shadow of the average recorded from 2009 through 2012 (9.02%). The increase in average public spending (US$3,185,863,132 or 30.79%) relative to 2013 through 2016 fairly reflected the surge in average population growth (2,554,024 people or 9.27%) during the comparative periods.

All else held constant: growing population increases the socio-financial responsibility of each global economy to the people. The surging population increases the average public spending per head. That is, the financial commitment of the economy towards each person surges through increased spending on health and education facilities and services and increased payments on welfare benefits to qualified persons. A major determinant of increased public spending during the 2020 fiscal year was the outbreak of COVID-19 and its attendant costs related to preparatory, responsive and containment measures, among others. The adverse socio-economic impact of the portentous COVID-19 pandemic was felt

not only in Ghana but also in over two hundred and twelve other sovereign countries, dependencies and territories across the globe.

4.3.1. Test of Hypothesis

Among the approximately two hundred and eighteen (218) global economies officially recognised by the World Bank (2021b), Ghana was randomly selected for the conduct of the current research. These global economies, with recognition by the World Bank (2021b), comprise sovereign states or countries, dependencies and territories (Worldometer, 2021). Ghana's historical data on annual public spending and GDP growth rates from 1983 through 2020 were used to test the alternative hypothesis under the set of hypotheses in sub-section 3.4.1, which predicted that annual public spending has a significant effect on GDP growth. To test this hypothesis, the researcher drew on data in table 2 and figure 3. The table and figure present historical data on annual public spending measured as a percentage of annual GDP values and economic growth rates for the fiscal years 1983 to 2020.

Column 3 in table 2 outlines public spending in the Ghanaian economy expressed as a percentage of GDP, while column 5 in the table presents data on annual economic growth rates for the research period. Data on annual public spending in column 2 was accessed from the database of the Bank of Ghana in Ghana cedis, while data on annual GDP values were accessed from the database of the World Bank in United States dollars. The annual average cedi-dollar exchange rate facilitated the conversion of the annual public spending values from Ghana cedis into American dollars prior to the computation of annual public spending as a percentage of annual total economic output.

4.3.1.1. Model Summary

Outputs from the regression analysis on the research hypothesis are presented in tables 4 to 7 and figures 7 to 9. As noted in prior works, summary constitutes an important aspect of the regression model. To this end, an overall description of the regression model is presented in table 4. The data in the table indicates that 38 values were observed during the analysis. Values for R (0.122984054), R^2 (0.015125078), and adjusted R^2 (-0.012232559) are displayed in the table. Value for the multiple correlation coefficients between the independent variable (annual public spending) and the dependent variable (annual GDP growth) is presented in the R row (0.122984054).

The extent to which variability in the dependent variable is accounted for by the independent variable is explained by the R^2 value (0.015125078). Thus, the R^2 value in table 4 infers that the annual public spending accounts for only 1.51% (0.015125078 x 100% = 1.5125078 % = 1.51%) of the variation in annual GDP growth. The results suggest that more than 98% (100% - 1.51% = 98.49 %) of the outcome is explained by external random factors. To wit, more than 98% of the variation in annual GDP growth is explained by other components essential to the effective measurement of annual total economic output, including personal consumption, gross private domestic investment and net exports.

Regression Statistics	
Multiple R	0.122984054
R Square	0.015125078
Adjusted R Square	-0.012232559
Standard Error	0.028496927
Observations	38

Table 6: Summary Output

Management Study Guide (n.d.) argued that the bureaucratic nature of the national fund appropriation process in various global economies often comes at a very high price, known as transaction costs. Assuming public spending constitutes quite a large portion of GDP, the odds are that a substantial amount of that spending could be attributed to transaction costs, albeit these costs do not provide any value and basically do not require to be incurred. Moreover, the mechanisms adopted by various governments in global economies in the execution of their operations are unproductive, while actual operations of various global governments are also characterised by unproductivity. To this end, any significant relationship between public spending and GDP or between public spending and economic growth is perceived by most economists as unsustainable. Further, due to gross inefficiencies in public spending, an increase in GDP growth driven by increased public spending is believed to be transient and unsustainable in the long run.

Analysis of the statistical outcomes suggests the non-existence of a direct relationship between public spending and GDP growth. That is, GDP growth does not increase in response to increases in public spending. Thus, the statistical results reject the significant effect of public spending on GDP growth, reject the potential of increased public spending to slow down the pace of growth of Ghana's economy, confirm the urgent need for managers of the economy to be fiscally disciplined and more strategic in their approach to public spending in the current and foreseeable future; reject dominance of public spending in the economic wealth creation strategy adapted for implementation by previous and current elected Ghanaian governments; reject the argument that increased public spending results in the allocation of scarce resources to unproductive sectors and use; and reject the argument that increased public spending leads to increased transaction costs. The analysis suggests that public spending has a mild effect on the rigidity and robustness of the Ghanaian economy and its growth. In essence, public spending is not the main driver of Ghana's economic growth.

Trend analysis revealed a slow pace of growth among developed economies since the 1990s compared to emerging economies over the period. The slow growth among developed economies was exacerbated by the global financial crisis, which took a nose-dive between 2008 and 2009. Hawley (2020) identified the global financial debacle as a

major contributor to the narrowness of the United States' competitive edge over China in terms of growth in total economic output in recent periods.

However, developing and middle-income economies, including Ghana, benefitted from the global financial crisis as countries like Ghana became destinations for capital flights from the most advanced economies. This contributed immensely to Ghana's strong GDP growth rate of 14.05% in 2011, which remained the highest growth rate from 1960 through 2020. The relatively young and ever-growing Ghanaian population increases the potential for increased demand and consumption of ordinary and luxury goods within the economy in the immediate, medium, and long term.

The adjusted R^2 remains one of the measures that determine the generalisability of the regression model. An ideal adjusted R^2 value is closer to zero or the R^2 value. The equation used to determine the adjusted R^2 value (-0.012232559) generated by the Microsoft Excel analytical software in table 4 is not specified. In order to test the uniqueness and ability of the equation in the Microsoft Excel analytical software to predict different sample data selected from the same population, Stein's equation was applied. This equation illustrates the effectiveness of the regression model in cross-validating. Stein's formula is given as:

$$\text{Adjusted } R^2 = 1 - \left[\frac{(n-1)}{(n-k-1)}\,\frac{(n-2)}{(n-k-2)}\,\frac{(n+1)}{n}\right](1 - R^2)$$

Where:

R^2 = Unadjusted value

n = Number of cases or participants in the study

k = Number of independent variables in the regression model

To cross-validate our regression model, we computed the adjusted R^2 value using Stein's equation:

$$\text{Adjusted } R^2 = 1 - \left[\frac{(38-1)}{(38-1-1)}\,\frac{(38-2)}{(38-1-2)}\,\frac{(38+1)}{38}\right](1 - 0.015125078)$$

$$= 1 - [(1.0277777777777)\,(1.0285714285714)\,(1.0263157894736)]\,(0.984874922)$$

$$= 1 - (1.0849624060148)\,(0.984874922)$$

$$= 1 - 1.0685522649967$$

$$= -0.068552264996$$

The above computations depict an adjusted R^2 value of -0.068552264996. This value is not too distinct from the adjusted R^2 value (-0.012232559) in table 4. In that, both values are negative and close to zero. Further, the adjusted R^2 value (-0.012232559) in the table is not significantly different from the observed value of R^2 (0.015125078); the difference between these two values is 0.027357637 [(0.015125078 – (-0.012232559) = 0.015125078 + 0.012232559 = 0.027357637)]; while the value for either the R^2 value (0.015125078) or adjusted R^2 value (-0.012232559) is close to zero. The foregoing implies that the cross-validity of the regression model is good; the model could accurately predict the same dependent variable from the given independent variable in a different group of participants (Field, 2009, p. 221).

Similarly, the R^2 significance was computed to cross-validate the value for the F-ratio (0.5528649) in table 5 using an F-ratio formula. The ideal F-ratio formula for measuring R^2 significance is:

$$F = \frac{(N-k-1)}{k}\,\frac{R^2}{(1 - R^2)}$$

Where:

R^2 = Unadjusted value

N = Number of cases or participants in the study

k = Number of independent variables in the regression model

Value for the F-ratio was determined as follows:

$$F = \frac{(38-1-1)}{1}\,\frac{0.015125078}{(1 - 0.015125078)}$$

$$= \frac{0.544502808}{0.984874922}$$

$$= 0.5528649332387$$

Our computations affirm that the change in the amount of variance that can be explained gives rise to an F-ratio of 0.5528649, which is equivalent to the F-value (0.5528649) in table 5. This F-ratio is non-significant ($p = 0.462$, $p > 0.05$), as presented in tables 5 and 6.

One of the challenges associated with public spending relates to the decision to allocate resources to non-productive sectors and uses. It is a truism that both the public sector and private sector compete for access to limited resources, especially financial resources, in the open market. However, the public sector has an unfair advantage over the private sector in this regard. Generally, financial institutions prefer to lend more to governments than to corporate bodies and individuals since the debt repayment default risk associated with governments' borrowings is far lower than the risk associated with corporate and individual debt defaults.

Moreover, governments could decide to impose taxes on the private sector to raise more revenues when they so desire. However, effective utilisation of resources available to governments has always come under scrutiny; some economists argue that the public sector is characterised by negligence and unproductivity, while the private sector is noted for ensuring efficient utilisation of limited available resources and deriving maximum economic productivity from those limited resources. As a result, if public spending constitutes a significant portion of total economic output, the stakes are that a significant amount of national resources are being underutilised and possibly being allocated to less productive sectors of the economy (Management Study Guide, n.d.).

The high level of inefficiency in the public sector's activities makes it unattractive to most economists as the "messiah" for national unemployment challenges and economic stimulation. To reverse the trend, it is imperative for public-sector reforms to consider measures that allow the private sector to thrive and to have an edge in terms of efficiency and effectiveness over the public sector. Undoubtedly, the private sector remains the pace-setter in efficient and effective management of limited available resources.

Results from the statistical outputs affirm a fairly good contribution to or mild effect of public spending on GDP growth and the efficiency and effectiveness of successive governments' decisions with regard to the allocation of scarce financial and other national resources to the development of key sectors of the economy. To infer, the non-significant effect affirms the usefulness of the contribution of public spending to the measurement of GDP and growth of the Ghanaian economy. Further, the non-significant effect is indicative of the positive contribution of public spending to the rigidity and robustness of Ghana's total economic output and growth during the research period.

Hawley (2020) hinted that the inevitable slowness of markets in advanced economies, such as the relatively slow pace of the United States market, is evident in the country's regular contribution to annual global GDP over the past decades. We observed that the United States' share of global GDP during 2010 was a little over 20%. This was nearly 4% lower than the 24% contributed in 2000 and about 5% more than the 15% contributed in 2018. Thus, as "emerging" and "newly-advanced" economies such as Brazil, India and China increase their pace of economic development and growth, they tend to crowd-out the economic growth and dominance of "traditionally-advanced" economies such as the United States, Germany, France and Japan, to mention a few. As stated differently, the strong economic and growth performance of emerging and newly advanced economies tends to have crowding-out effects on the growth performance of advanced economies. The pace of growth of these economies accelerates while that of traditionally-advanced economies decelerates.

The general economic and growth performance of most countries (advanced, emerging, developing and least developed) was severely impacted during the fiscal year 2020, owing largely to the outbreak of the predatory COVID-19 pandemic. This setback is evidenced in the negative economic growth performance of the ensuing countries during the period: Libya (-60.30%), Lebanon (20.30%), Iraq (-10.90%), Sudan (-8.40%), Sao Tome and Principe (-6.40%), Zimbabwe (-4.10%), North Korea (-4.50%), Madagascar (-4%), Mauritania (-3.60%), South Sudan (-3.60%), Liberia (-3%), Sierra Leone (-2.70%), Mali (-2.50%) and Somalia (-1.50%). However, in the midst of the brazing economic storm, the economic management teams of the following countries demonstrated resilience and robustness and ended the 2020 fiscal year with positive GDP growth rates: Guyana (48.70%); Guinea (5.20%); Nepal (4%); and Myanmar (2%), among others (Trading Economics, 2021a).

4.3.1.2. ANOVA

Our ability to determine whether or not regression analysis provides a better and significant prediction of the outcome than the mean is facilitated by the analysis of variance (ANOVA). Data in table 5 show the degree of freedom (between) of 1 (2 - 1 = 1), degrees of freedom (within) of 36 (38 - 2 = 38), total degrees of freedom (df) of 37 (38 - 1 = 37), and an F-value of 0.5528649.

	df	**SS**	**MS**	**F**	**Significance F**
Regression	1	0.000448968	0.000449	0.5528649	0.461974884
Residual	36	0.029234695	0.0008121		
Total	37	0.029683663			

Table 7: ANOVA

Further, statistics in table 7 depict values for the model sum of squares (SSM), represented by *Regression*; the residual sum of squares (SSR), represented by *Residual*; the total sum of squares (SST), represented by *Total*; and the degrees of freedom (df) for each group of squares. The degree of freedom for the SSM is 1, comprising one independent variable (annual public spending). The mean squares (MS) values in the table were obtained by dividing the sum of squares by the degrees of freedom. That is, 0.000448968 (0.000448967709299235) ÷ 1 = 0.000449 (0.000448967709299235); and 0.029234695 (0.0292346954485955) ÷ 36 = 0.0008121 (0.000812074873572098).

4.3.1.3. Model Parameters

A normal probability plot on the relationship between annual public spending (APS) and annual GDP growth (AGDPG) is presented in figure 3. The figure depicts a steady rise in comparative values over a thirty-one-year period. That is, from the 3.95th percentile through the 17.11th percentile to the 80.26th percentile. The figure depicts no flat distribution of comparative values over the thirty-eight-year period. Rather, the distribution depicts a steep rise in comparative values over the remaining seven-year period. That is, from the 82.90th percentile through the 96.05th percentile to the 98.68th percentile for the normal probability.

Fiscal years characterised by unforeseen natural occurrences such as pandemic outbreaks and lingering challenges in the global financial markets could disrupt planned national economic programmes, targets and expectations. This notwithstanding, the economic utilisation of resources allocated to public sectors from public spending funds could churn out multiple benefits. This initiative has the potential to eliminate waste, accelerate the development of various sectors, improve total economic output, accelerate economic growth, and enhance the country's competitiveness at the sub-

regional, regional and global levels. Efficient and effective utilisation of funds earmarked for public sector projects would invariably add economic meaning to additional borrowings by economies through their respective elected governments.

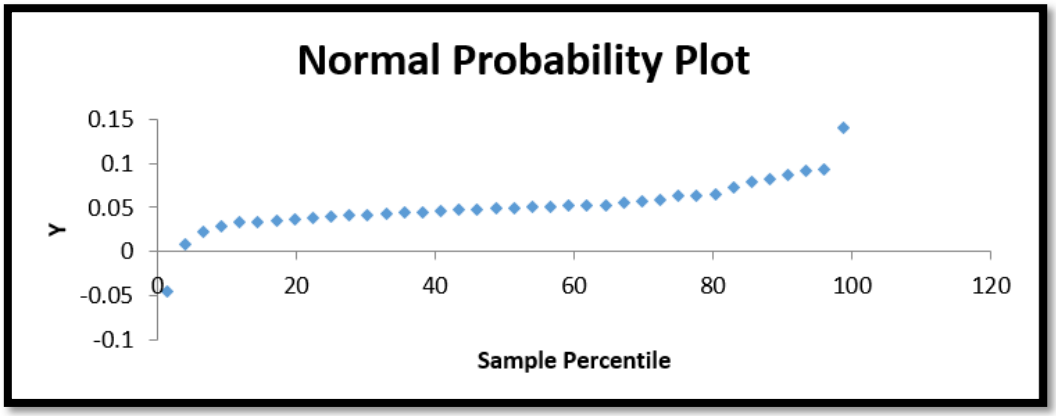

Figure 5: Normal Probability Plot for APS and AGDPG (1983 – 2020)

Results on parameters of the regression model are presented in table 6. Data on the coefficients, standard error, test statistic, significance, and confidence intervals for the coefficients are shared in the table. The coefficients in the table hint at the contribution of the independent variable (annual public spending) to the regression model. Generally, a positive coefficient connotes a positive relationship between the independent variable and the dependent variable, whereas a negative value is indicative of a negative relationship between the two variables. Results in table 6 show a positive coefficient value (0.044575771). This means a positive relationship exists between annual public spending and annual GDP growth.

	Coefficients	Standard Error	t-Stat	P-value	Lower 95%	Upper 95%
Intercept	0.048011419	0.006417395	7.4814495	7.748E-09	0.034996338	0.0610265
X Variable 1	0.044575771	0.059950023	0.7435489	0.4619749	-0.07700851	0.16616005

Table 8: Model Parameters

Further, the relationship between the two variables is non-significant ($p = 0.462$, $p > 0.05$), implying that annual public spending has no significant influence on annual GDP growth. However, it has been argued that economic growth that is engendered by a surge in public spending is not ideal. Further, economic growth that is driven by increased public spending implies the country's growth is resting on volatile grounds or hanging on a straw and could drop at any moment. To wit, the foundation of such economic growth is not grounded in robust and rigid components of total economic output to assure its sustainability over considerable periods. Thus, the non-significant value ($p = 0.462$, $p > 0.05$) affirms the relevance of the contribution of annual public spending to annual economic or GDP growth.

From the foregoing analysis, it is evident that results from the statistical output validate the relevance of the share of public spending in total economic output, non-dominance of public spending in economic wealth creation strategies of government management teams, non-excess allocation of limited national resources to unproductive sectors and use; minimal effect of transaction costs on public spending; and non-significant influence of annual public spending on annual economic growth. In summary, the statistical outcomes lend strong credence to the need for managers of the Ghanaian and other global economies to be fiscally disciplined, apply due diligence and not perceive every fiscal space as an opportunity to increase public spending without recourse to cogent analysis on efficiency, effectiveness, value-for-money; economic and financial implications thereof.

The preceding prompts or important economic considerations notwithstanding, the statistical output suggests that the contribution of public spending to GDP growth in the Ghanaian economy remains relatively modest and indicates some level of efficiency in allocating limited national resources to various sectors of the economy. The results affirm the need for the current national resource allocation strategy and trend to be sustained while striving to improve the level of efficiency through the practical illustration of a significant reduction in or elimination of avoidable transaction costs.

The magnitude of the t-test ($p = 0.744$, $p > 0.05$) in table 6 avers that the independent variable (annual public spending) has no strong impact on the dependent variable (annual GDP growth). A standard error is identified with the coefficients in the table. The standard error affirms how much the coefficients would vary in different research samples (Field, 2009). The probability that a parameter would fall between a pair of values around the mean is measured by the confidence interval. As stated differently, confidence interval values affirm the extent or level of uncertainty or certainty in a method of sampling (Hayes, 2021). Statistics in table 6 depict the respective upper and lower 95% confidence interval values for the *Intercept* (0.0610265 and 0.034996338) and *X Variable 1* (0.16616005 and -0.07700851).

Though not significant compared to annual GDP growth, the research revealed a steady increase in annual public spending values within the Ghanaian economy from 1983 through 2020. The steady increase in annual public spending values during the research period was expected, given the general shift in the paradigm of economic management from monetary policy to fiscal policy approach over the last decade by most global economies and the need for accelerated development of the Ghanaian economy during the mid-1980s after several years of economic stagnation. Makin (2020)

asserted that the global financial crisis impelled many countries to shift their economic management focus from monetary policy run by central banks and involving the use of policy and interest rates to fiscal policy implemented by governments through economic management teams and involving the use of tax and public spending.

Discussion in the preceding section corroborates the fact that rapid population increase coupled with extended average life span of citizens compels global economies through their respective elected governments to increase public spending, invariably to address pressing social needs and wants. Public spending as a percentage of GDP recorded by some economies during 2020 was as follows: Burundi (31.16%), Norway (26.69%), Namibia (26.40%), Seychelles (26.21%), Netherlands (25.87%) and France (24.78%). Others included United Kingdom (22.81%), South Africa (22.57%), Germany (22.50%), Greece (22.38%) and Nigeria (8.71%) (Global Economy, 2021).

4.3.1.4. Test of Assumptions

Statistical tests were conducted to determine the linearity of the relationship between the independent variable (annual public spending) and the dependent variable (annual GDP growth) and to measure the variance in residual values. Minimising the level of residuals or errors underlies the objectives of regression models. Due to the foregoing, residual diagnostics tend to play a critical role in diagnostics tests related to economic modelling. Generally, ideal error terms are expected to be white noise, implying they must be *independent and identically distributed (iid)*. Fortunately, residual diagnostics facilitate our determination of whether or not the error terms in a given set of variables are independent and identically distributed (Shrestha & Bhatta, 2018).

The statistical outputs on residuals are presented in figures 8 and 9 and table 7. The plots in figure 6 depict the residuals scattered around the predicted variable on a horizontal or straight line. This asserts that the relationship between the independent variable and dependent variable is linear; it implies that the linear regression model fits the analysis.

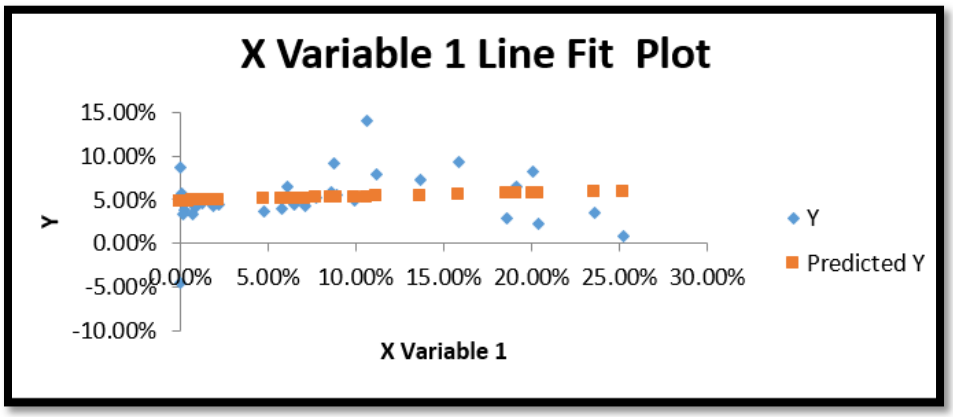

Figure 6: Linear Relationship between X and Y Variables

Moreover, the residual plot in figure 6 depicts the independent variable (annual public spending) on the horizontal axis and the residuals on the vertical axis. The residual plots in the figure show a random pattern. That is, the points are randomly dispersed around the horizontal axis, affirming the appropriateness of the linear model for the research data. Stated differently, the scatter plots in figures 8 and 9 affirm the fitness and appropriateness of the linear regression model for the current research.

Homoscedasticity tests remain one of the major test methods for residual diagnostics. Generally, residual diagnostic tests provide reliable information, which facilitates our ability to determine the robustness of estimated coefficients. The *residual* values in table 7 allow us to test the *homoscedasticity* of the model. That is, whether or not the residual values at each level of the independent variable depict constant or homogeneity of variance. Residuals in the table show constant variance values. This implies that the assumption of homoscedasticity is met.

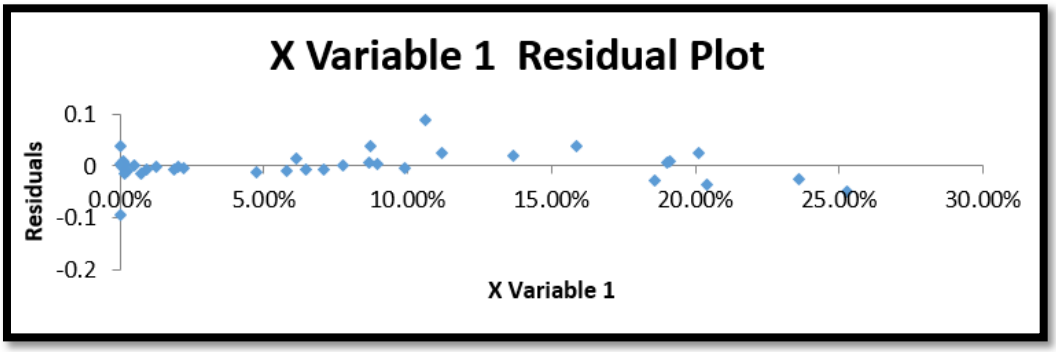

Figure 7: Linear Relationship between X (APS) and Y (AGDPG) Variables

Further, data in figures 6 and 7 indicate that the relationship between the X and Y variables was measured at the interval level and beyond, while the variability of the dependent variable (annual GDP growth) was not constrained. The foregoing analysis indicates that most of the assumptions have been met, rendering the regression model fit and appropriate for the research.

Observation	Predicted Y	Residuals	Standard Residuals
1	0.059266801	-0.050466801	-1.795384
2	0.056525391	0.008274609	0.2943737
3	0.056494188	0.006105812	0.2172176
4	0.056971149	0.024428851	0.8690697
5	0.058531301	-0.024031301	-0.8549267
6	0.057100419	-0.035300419	-1.2558317
7	0.05630697	-0.02730697	-0.9714604
8	0.054100469	0.018999531	0.6759187
9	0.055081136	0.037818864	1.3454267
10	0.052749823	0.087750177	3.1217604
11	0.052999448	0.026000552	0.9249838
12	0.052419963	-0.004019963	-0.1430124
13	0.051902884	0.039597116	1.408689
14	0.051167384	-0.007667384	-0.2727714
15	0.050743914	0.013256086	0.4715925
16	0.051862766	0.007137234	0.253911
17	0.051996493	0.004003507	0.142427
18	0.051474956	0.000525044	0.0186787
19	0.050895471	-0.005895471	-0.2097346
20	0.050587898	-0.010587898	-0.3766703
21	0.050128768	-0.013128768	-0.4670631
22	0.049001001	-0.005001001	-0.1779133
23	0.048911849	-0.001911849	-0.0680151
24	0.048849443	-0.006849443	-0.2436727
25	0.048577531	-0.002577531	-0.0916971
26	0.048417058	-0.007317058	-0.2603083
27	0.048336822	-0.015336822	-0.5456158
28	0.048225383	0.000274617	0.0097697
29	0.048136231	-0.009336231	-0.3321415
30	0.048091655	0.004708345	0.1675019
31	0.04808274	-0.01478274	-0.5259041
32	0.048069367	0.002830633	0.1007013
33	0.048055995	0.008244005	0.293285
34	0.048042622	-0.000142622	-0.0050739
35	0.048029249	0.003970751	0.1412616
36	0.048029249	0.002870751	0.1021285
37	0.048020334	0.038479666	1.3689351
38	0.048015876	-0.093615876	-3.3304359

Table 9: Predicted Y Values and Residual Values for Variable X

4.3.1.5. Report on P -Value and Confidence Interval

Data in table 6 depict a respective *P*-value of 0.744 and a positive coefficient value of 0.044575771. These values are not significant at Alpha level α = 0.05. Data in the table further show a confidence interval of -0.07700851 and 0.16616005. The Alpha level, a priori, for this study is α = 0.05. The inference is that there is a 5% probability that we would be wrong, and there is a 5% likelihood that the population mean would not fall within the interval (Ashley et al.; Bowerman & O'Connell, 1990; Frankfort-Nachmias & Nachmias, 2008). However, we are 95% (100% - 5%) certain our conclusions would be right. Again, the Microsoft Excel output in table 5 shows the degree of freedom (between) of 1 (2 - 1 = 1); degrees of freedom (within) of 36 (38 - 2 = 36); total degrees of freedom (df) of 37 (38 - 1 = 37); and F-ratio of 0.5528649. These values could be interpreted as: *F (1, 36) = 0.5528649, p > 0.05, two-tailed.*

4.3.1.6. Interpretation and Rejection of Alternative Hypothesis

The outcomes of the foregoing analysis indicate that public spending has minimal effect on GDP growth. Therefore, we reject the alternative hypothesis (H1: μ1 ≠ μ2), which states that annual public spending has a significant effect on annual GDP growth, and accept the null hypothesis (Ho: μ1 = μ2), which states that annual public spending has no significant effect on annual GDP growth.

5. Recommendations

Public spending remains one of the elements or components in the effective measurement of the total economic output of a country during a given fiscal or financial year. Although it attracted minimal attention from economic theorists up to the late 1960s (Gupta, 1969), public spending remains the most deeply analysed GDP component by economists in recent years (Management Study Guide, n.d.). Consistent analysis of the concept revealed a major common thread. That is, gross inefficiency and ineffectiveness are associated with the appropriation of funds earmarked for public spending by public officials in countries at all levels of economic development across the globe – least developed, developing, emerging, and advanced economies. The perceived and actual level of inefficiency inherent in public sector funding negatively impacts its acceptance among many economists as the main driver of growth in global economies.

Findings from the research revealed a positive but non-significant relationship between public spending and economic or GDP growth. This affirmed the mild effect of public spending on GDP and growth and the need for proactive initiatives and implementation of pragmatic measures by economic management teams of countries dotted across the globe, including Ghana, to modify the perception of economists on increased public spending as the driver of unsustainable growth in the long-run. In view of the foregoing, the following recommendations are proffered. It is worth stressing that although Ghana remained the unit of analysis in the current research, the recommendations outlined in this section are applicable to all global economies.

- The high level of inefficiency that characterise activities of the public sector makes the sector unattractive to most economists as the "messiah" for national unemployment challenges; and effective stimulation of global economies, including Ghana. To reverse the trend, *it is imperative for public-sector reforms to take cognisance of measures that allow the private sector to thrive and to have an edge in terms of efficiency over the public sector*. *The private sector, in the opinion of most economists, remains the pace-setter in the efficient management of limited available resources. Nonetheless, governments' ability to roll out measures leading to increased productive capacity has been found to be analogous with a surge in employment numbers and rates and an increase in the level of operational efficiency*. On the basis of the foregoing, *increased productive capacity of various elected governments through due diligence is strongly recommended. This has the potential to limit the extent of laissez-faire that clouds functions and operations in the public sector and to assure adherence to contemporary universally acceptable standards in the execution of governments' businesses to the common benefit of the entire population*.
- One of the significant lessons gleaned from the current research is *that maximum economic growth is achieved when resources available to the country are harnessed in the most cost-effective manner towards the production of the optimum mix of required goods and services to meet both the needs and requirements of the people; while reducing the level of total imports of finished goods to the barest minimum*. Public sectors throughout the world must strive to redeem their lost image in the "eyes" and "minds" of economists. Stated in different terms, *public sector managers must endeavour to reverse the long-held unfavourable perception of economists on their functions and operations, so large contributions of public spending to total economic output may not be perceived as curse and wasteful but as strong conduits for accelerated economic development and growth*. This affirms the need for significant improvement in the level of efficiency in the public sector. However, *the attention of various elected governments to efficiency as a strong economic growth factor should be focused essentially on the input-output ratio, where a higher output-input ratio is indicative of improved efficiency and vice versa*. *It is important for stewards of global economies, including Ghana, to be guided by efficiency in both the allocation of resources and productivity*.
- The study revealed that governments' resolve to increase spending on infrastructure, healthcare, and education tends to provide external benefits to the rest of the economy. *The increased public spending could have long-run effects compared to reductions in interest rates, which are often of short-term duration*. *This underscores the need for the provision of quality infrastructure and healthcare facilities and the need for the provision of quality education facilities and training to dominate governments' planned capital expenditure and public spending in general*. Indeed, *economies endowed with quality healthcare professionals and systems, productive intellects and human capital trained by existing strong and functional systems of education tend to have an edge over their competitors in the global business environment.* Thus, *the provision of quality healthcare, education, and infrastructure should always be prioritised in the opportunity cost of providing public goods and services to ensure economic stimulation and eventual growth*.
- Some economists are of the firm belief that governments' resolve to engage in public spending tends to have some dire economic implications. For instance, *increased public spending, it is argued, has the potential to create chronic inefficiencies, accumulation of avoidable national debt, disruptive financial bubbles and inflation through price increases*. The foregoing setbacks bring to question the effectiveness of public spending as a solution to national development challenges and ensure the effective stimulation of economies. It is further argued that *public spending deepens, rather than extenuates, the woes of economies.* Thus, *it is incumbent on global governments of all forms, elected or otherwise, to strive to correct this decades-long "negative" economic impression held of the public sector through the institution of proactive and practical measures that would facilitate the projection of the public sector in a positive limelight*. Further, *it is imperative for elected governments to ensure public spending is motivated by pure technical analysis rather than political considerations to mitigate the "harmful" effects of increased public spending on global economies*.
- Contrary to the foregoing argument, Keynesianism holds that government purchases are a strong contributor to increased national spending and facilitate governments' ability to transform weak economies into vibrant ones.

The foregoing spells out some of the overt economic benefits likely to be derived from the efficient and effective implementation of public spending policies in various global countries, including Ghana, and the need for public officials to improve their management and implementation skills to ensure the positives do not remain mere theoretical postulations, but quite pragmatic and practical in character. Moreover, *good and quality governance of the public financial system in each global country is required to ensure effective human capital and economic development*.

- Functions of governments throughout the world are believed to be clothed in some form of monopoly, while public officials operate integrally in less competitive environments. As a result, *countries that have relied more on public spending other than the other major components of GDP, such as personal consumption, private investment and net exports to drive their respective economies are believed to have been left behind the development and growth curve by those that implement the smart growth strategy*. Thus, *the other major determinants of total economic output coupled with the implementation of the smart growth strategy are believed to have a trump card over increased public spending. The latter creates little opportunity for innovation, creativity and competition when it comes to the choice of strategies for accelerated development and growth of global economies*. *This renders implementation of the smart growth strategy important economic desideratum, so the interaction among smart, sustainable and inclusive growth would not become apparent but manifest in governments' businesses and operations and overall national economic success*.
- *Countries that implement the smart growth strategy value creativity, innovation, and competition, and these attributes drive their respective economies towards success, shared prosperity, and desired levels of growth*. *The foregoing makes a strong argument for urgent implementation of the smart growth strategy by Ghana and other countries that are yet to have a firm grip on its effective implementation*. It is imperative to affirm that the smart growth strategy has dominated economic endeavours in the European Union during the last decade, with new European Union member countries demonstrating their dominance in the implementation process. Although the smart growth strategy is a European Union initiative, the benefits and success associated with its implementation transcend borders of the Union to include all other regional economies dotted across the globe. Hence, *the need for implementation and achievement of smart growth goals is of prime concern to each and all global economies that have yet to roll it out into action*.
- Keynesianism avers that increased public spending has the potential to induce a surge in aggregate demand and an increase in personal consumption. The foregoing has dual economic benefits, namely the possibility of increased production and the possibility of accelerated recovery from economic recession. *These positive attributes notwithstanding, extant literature revealed more challenges than economic success stories regarding the higher contribution of increased public spending to total economic output*. *The over-preponderant challenges underscore the need for improvements in the level of public-sector operational efficiency to render economic meaning to the identified benefits associated with increased public spending*.
- Some economists argued that countries driven by communist ideologies with strong leanings toward public spending, with the latter constituting a larger portion of total economic output, have been outperformed in terms of development and growth by other countries with different economic development ideas, such as capitalism. *These economists perceived reliance on public spending as the least effective way for any global country to aspire to create sustainable national wealth. The foregoing "legitimate" argument borders on the chronology of inefficiency that has characterised public sector functions and public spending in prior and recent periods*. However, *this researcher is of the conviction that government officials could up their management strategies through practical demonstration of innovative ideas and thinking and by shirking or reviewing the traditional approach to staff recognition and promotion to redeem the "lost image" of the public sector*.
- *The orthodox approach to staff recognition kills initiative, inventiveness and creative thinking. Further, it breeds stagnation, inefficiency, and increased transaction costs and requires urgent readdressing by all global economies – advanced, emerging and developing economies, including Ghana*. Thus, *it is imperative for public sector policy with excessive reliance on the longevity of service or extended years of active service in a particular public institution or group of public institutions as the basis of service recognition and promotion to be reviewed and provisions made for inventiveness, innovation, dynamism and creative thinking as alternatives to extended years of active service towards promotion, awards and recognition of public-sector employees including professionals*. *This policy review has the potential to pave the way for creativity, innovation and competition in the public sector, so the sector's strong contribution to GDP may not be described as overbearing and unproductive but meaningful to the socioeconomic edifice of the implied economy. Further, it has the potential to attract more skilled professionals from the private sector to the public sector*.
- In most cases, public sector institutions tend to possess and utilise state-of-the-art equipment in their day-to-day operations relative to their counterparts in the private sector, who have integral access to less sophisticated equipment. However, it is worth emphasising that although the private sector has limited resources compared to the public sector, the level of efficiency and effectiveness exhibited in the former outweighs the latter. *It is imperious for government officials to apply due diligence or meticulousness to the process of identifying simmering challenges that cause the public sector to play second-fiddle to the private sector in terms of economic utilisation of limited available resources*. *This initiative would allow the public sector to repose lost confidence in increased public spending as a viable and necessary tool for accelerated development and growth of individual economies across the globe*. Further, *it behoves public sector workers to eschew complacency, which some economists believe strongly*

characterises their functions and operations; it also serves as a setback to higher achievements and success in the public sector.

- The research revealed the need for global countries to be economically prudent today so they can invest and have enough funds for public projects in the future. Further, *it is important for national resources to be effectively allocated to where they are essentially and economically needed through due diligence and careful planning to eliminate waste and avoid transaction costs*. *Ensuring limited state resources are effectively distributed and reach the targeted population draws the implied economies closer to the realisation of their long-term goals*. *The foregoing economic management attributes are expected to guide current and subsequent governments of Ghana and other global economies in preparing, presenting and implementing annual budgets on behalf of the people*.
- Since the public sector and public spending are noted for gross inefficiencies compared to the private sector, *it behoves various national economic management teams to ensure plans, proposals and budgets presented by various public sectors (ministries, departments, agencies, regions, metropolis, municipalities, districts; states, counties, and so forth) are effectively scrutinised to assure complete elimination or considerable minimisation of wastes; reduction in unwarranted transaction costs; and judicious allocation of national resources to areas where they are mostly needed*. *This inventiveness has the potential to secure the collective future of global economies while improving on the inefficiencies that render increased public spending unattractive for accelerated and sustainable economic growth*.
- Consistent with OECD (2003) and MyAccountingCourse.com (2021), *it is recommended for economic management teams of various global countries, including Ghana, to ensure public spending components are limited to activities and functions believed strongly to fit in the purest roles of governments*. This has *the potential to sustain the national development continuum devoid of any excessive lag. It has the tendency to provide the much-needed solution to the periodic market failures, which are often initiated and observed in individual economies and later escalate to negatively impact the global economy*. Further, *such policy stance has the potential to assure the effective provision of merit and public goods, so governments' interventions and continuous provision of goods and services that the free market in itself cannot provide or may not consider as financially viable and profitable or the initial capital outlay may serve as a disincentive to investors in the free market would be sustained*. *The overall effect on the economy would be sustainable development and accelerated growth in the medium- and long-term*.
- The economic cohesiveness, security and competitiveness of global countries are predicated on effective planning, savings and investments toward the achievement of long-term goals while striving to meet the current needs of the people. However, *effective planning and strategic investments into the future tend to ease the national debt burden on future generations when pursued vigorously and diligently*. *Reasonable control of public spending through the avoidance of waste and unwarranted transaction costs, among others, has the potential to result in the legacy of meaningful and economically-moderated debts for subsequent generations*.
- Innovation is pivotal to the success story of economies across the globe. Nonetheless, *the success-story of markets in the global economy is assured when entrepreneurs gain their lost innovation and inventive rhythms. Thus, global countries are placed on the development accelerator when entrepreneurs identify novel and improved ways of performing their business functions and operations*. *Extant literature revealed that innovation is handicapped in economies, with significant portions of the gross domestic product being accounted for by public spending.* Unfortunately, *current global bureaucratic structures imply that public sector operations and activities usually create little room for innovation and more room for task functions*. Further, *the nature of public sector job descriptions and functions does not encourage with ease, novel ideas and new ways of discharging functional duties; the same method and procedure may be implemented over several decades, while the private sector easily adapts and becomes abreast of contemporary technology and globally-accepted methods of business operations and technology applications*. *This is a bane that public sector officials must be seen to be working assiduously to address*.
- The study revealed *constant exposure of global economies, including Ghana, to internal and external natural occurrences such as droughts, floods, attacks of army worms on farms, pandemic outbreaks, unstable prices of major exporting commodities in the global market, and lack of easy access to credits in the international financial markets have the potential to wreak havoc on a sustainable fiscal stance of governments; breed new public financial management challenges while exacerbating inherent challenges*. The foregoing *underscores the need for economic management teams of various countries across the globe to strive to save part of their respective national earnings for a rainy day.* That is, *consistently striving to uphold the basic tenets of efficient utilisation of scarce national resources so enough could be saved, kept in reserves and invested into the future to effectively mitigate the adverse effects of unforeseen external contingencies such as the sudden "visit" of COVID-19 from its origin to most global economies during 2020 fiscal year and the attendant untold economic hardships and challenges reined on all global countries, especially developing countries*.
- It is instructive to note that although nearly all advanced countries were negatively impacted by the pandemic outbreak during 2020, *the rigidity, robustness and resilience which often characterise their respective economies were indicative of their ability to weather the brazing economic storms with relative ease, regain their lost economic development and growth rhythms and to continue with normal business operations as usual in the medium- and long-term; albeit some advanced economies were already making giant strides during 2021, barely a year after the outbreak of COVID-19*. The foregoing *sterling attributes are expected to constitute the description of economic*

management capabilities of developing countries such as Ghana to facilitate their transition or migration from lower-middle-income to upper-middle-income status in the not-too-distant future.

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