SELINUS UNIVERSITY
OF SCIENCES AND LITERATURE

**THE IMPACT OF GOVERNMENT
SPENDING (2008-2024) AND THE
14TH FIVE-YEAR PLAN (2021-2025)
ON THE ECONOMIC GROWTH OF THE PEOPLE'S
REPUBLIC OF CHINA**

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A DISSERTATION

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DECLARATION FORM

This Thesis was submitted for the award of the M.Sc. in Finance and Economics at Selinus University of Sciences and Literature.

No materials included in this thesis have been previously submitted to any University for which a certificate or degree has been previously conferred upon me. The work I have submitted is my effort. I certify that all the material in this research project, which is not my work, has been identified and acknowledged.

Signed: ADEBAYO BUSOLA ENIOLA   Date: *Wednesday, 21 August 2024.*

ABSTRACT

The growth of government spending in China has raised concerns among economists, investors, and policymakers on the expected implications of the emergence of such sporadic growth in China because of the tremendous spending by the Chinese government. Government spending in China has grown in the last three to four decades. The growth of the spending by the government has risen faster than the rate of growth of China's GDP. However, the GDP of China has also experienced a steady growth rate since 2018 until date. Following this fiscal situation, the clarification involved the study of the effects of spending by the Chinese government on the growth of the Chinese economy. The specific and purposeful objective of this research in specific terms was to investigate the relationship between the two identified variables. The second and third objectives were to examine the effects of the independent variable on the dependent variable- China's fiscal spending on the growth of China's economy and to analyze the effects of China's policy reforms on the growth of China's economy. The final objective was to assess the impact of the 14th plan (2021-2025) on China's future growth rate. The data used for the study were government spending component data that included the spending on government consumption, physical infrastructure, economic affairs, science and technology, defense, education, investment, health, national debt payment, general administration, and national security and public order. The data were collected from different sources ranging from Statista Daily, World Bank and IMF Publications, China's Ministry of Finance Data, China State Council Data and National Bureau of Statistics websites; the OECD library, and other international publications. The VAR assessment technique and the time series data for the periods 2008 to 2024 were used to evaluate and synthesize the impact of government spending on the growth of China's

economy within the period estimated. The adopted Johansen cointegration analysis showed the long-term correlation that existed between the rate of growth of the GDP and the selected spending on the different components. Furthermore, the Granger Causality test was carried out to identify the bi-directional causality that existed between the growth rate of China's GDP and the various component spending embedded within the government spending variables of China. The results of different enumerated test estimations revealed that government spending on the different components mentioned above affected positively the growth of China's economy. The study on its third objective established the analysis of the effects of Chinese government reforms and spending on the growth of China's economy. The study emphasized how the rationalization of the budget, privatization, governance, and ambitious environmental targets affected the growth of the economy of China. Evidence was drawn from the Chinese main and supplementary budgets, the privatization policy documents, and her policy document on the protection of the environment. The final part of the discussion of this study assessed the impact of the recent plan (2021-2025) on the future growth of China. The study concludes that there existed a close relationship between the spending by the government and the GDP growth rate. The composition of the spending by China's government and its various reforms were vital to the growth of the Chinese economy. The effect of the 14th Five-Year Plan and National Strategy indicating realignment in the management of the Chinese economy was positive on the growth of the economy.

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<u>DEDICATION</u>

I dedicate this project to the one who preserved my life- My Lord Jesus Christ-
the author and finisher of my faith.

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CHAPTER ONE: INTRODUCTION

1.1 Background Justification for the Research

The rationale for this study begins with the researcher's interest in the growth and development of a country based on policy implementation and injections into the economy. The topic was chosen before and after the provisional certificate of credit for the APEL Program was approved by Selinus University and the enrolment certificate was received for the master's program accredited by the World Certification Institute (**see Appendix 1 and 2**). The exploration of the impact and correlation that exists between government spending and sustainable or potential economic growth has held far-reaching deliberations over the decades by researchers. Despite these extensive investigations, there is still an absence of agreement among researchers. Kirikkaleli and Ozbeser (2022), Gurdal et al. (2021), and Shkodra et al. (2022), among many more researchers, have concluded recently that there is a positive relationship between the two concepts of this study. The growth could be actual economic growth or potential economic growth depending on how the growth in question interferes with competition (Gama et al., 2020). According to Phiri (2019), Onifade et al. (2020), and Hlongwane et al. (2021), among many other scholars established in their findings that government spending could harm the growth of an economy. Keynesians theoretically supported the view that overall national spending is on the level of the growth of the economy of a country. The foremost neo-classical views postulate that the various spending by the government may or may not harm economic growth depending on the channels involved.

Adolph Wagner disputed that the rise in an economy's undertakings is the fundamental effect on economic growth running from government spending (Wagner, 1863). The Ricardian Equivalence model based its argument on the availability of a forward-thinking representative; hence, excessive spending by the government will not harm the growth of an economy (Badaik & Panda, 2022). The relationship between these concepts of spending and growth is a vital subject for analysis and evaluation (Barro and Sala-i-Martin, 1995). The major question to ask in this study is the extent to which national spending increases the long-term potential growth rate of China. The overall and generic views are based on government expenses on physical infrastructural projects, economic and social services, and human capital development can enhance the growth rate of the economy but the sources of revenue for financing such current and capital expenditures can impede growth (Kneller, 1999). The growth rate of an economy can be impeded by the disincentive effect associated with increased taxation that reduces disposable income (Musgrave and Musgrave, 1989). Expenditure of the government may sometimes increase total output with direct interactions with the private sectors and sometimes it may fail to increase total output in an economy. However, Lin (1994) examined some of how government spending can increase growth. These included the development of essential services, and social services, and directed policies through targeted interventions such as subsidies. Concerning the submission of Barro (1990), government spending on portfolio and direct investments and production, including government production activities should contribute positively and directly to economic growth, whereby government consumption spending could impede the growth rate of an economy. Therefore, in empirical research, it is somewhat of a challenging task to control the specific items of public spending that could be classified as consumption or

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investment expenditure. Several other empirical studies have based their research on outmoded channels and impending channels by which the diverse components of government spending can relate directly to economic growth (Bleaney et al., 2001). The identified direct impact could relate to a rise in the country's capital stock accumulation formed by both the physical and human capital formation replicating increased flow of the different tiers of government spending, especially when related to those that were privately funded. The consistent government spending on health and education, for illustration, could add to a rise in human capital. Correspondingly, they could activate the accumulation of physical capital, but most government spending on infrastructural development does not have a positive influence on the growth of an economy (Barro and Sala-I-Martin, 1992). Furthermore, spending made by the government could also indirectly result in economic growth through the growth of the marginal productivity of labor and capital combining the private and public supply of these resources. Spending on research, exploration, and development provides qualitative and increased output through the combination and positive infusion of human and physical production factors. In addition to this, other government spending components related to the administration of rights to properties could also be used as a policy against negative externalities of production, and public law and order maintenance can utilize an unintended effect and impact on the growth of the economy by contributing to improved usage of current capital and labor resources (Trotman, 1997). The experience concerning violent and criminal economies, government spending on security and maintenance of law and order has opportunity costs on the provision of other essential government projects thereby lowering the production costs. The need to safeguard employees and physical properties can be reduced, hence the rise in workers' productivity and the

fostering of private tangible investments (Herd, 2020). There is a piece of growing evidence that suggests that in many underdeveloped countries, positive third-party effects emanating from infrastructural spending may be vital in promoting economic progress (Landau, 1985). Certainly, it has been established by past scholars that infrastructural development spending could have a positive impact on human capital improvement. According to the work submitted by Agenor and Moreno (2007), national spending on infrastructure could singlehandedly affect economic growth through its direct effects on public ventures generated by the employment of factors of production in the private sector. Government spending that is geared towards promoting living standards through the fostering of the multidimensional poverty index indicators such as access to sanitation, a clean environment, and adequate water supply helps to improve labor productivity. This spending on capital expenditure can be geared towards the provision of water, electricity, gas, health care services, and better transportation and communication networks. Therefore, there is enough evidence to support the direct link between infrastructural development and education. Education in the long run leads to increased productivity and increased real GDP. It allows for greater access to better living standards both in the rural and urban communities. To a greater extent, the consequences of education on the growth of the economy cannot be overemphasized but this depends on enrolment and attendance rates and the quality of the education provided. Greater access to a clean environment that is due to government projected spending can also raise the rates of attendance and enrolment (Stiglitz, 1989). The two traditional methods used to explain the effects of national or provincial spending on economic growth. These are the Neo-Classical or Monetarist approach and Keynesianism. Milton Friedman led the monetarist school. He was famous for his quote,

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"**Inflation is always and everywhere a monetary phenomenon**, which means that inflation can only be produced by an excessive increase in the amount of money supplied." He argued that increased monetary growth far and above the growth of output through an excessive increase in money supply would produce inflation (Branson, 1989). To them, the excessive growth of the money supply is the only reason for increased price levels and this can be controlled when government spending is reduced (Brunner and Meltzer, 1992). This school of thought further stated through a constructive argument that in the proper examination of disaggregated effects of government spending by fixed and random effect methods on investment, government spending financed by tax revenue crowds out existing private investment (Ahmed, 1999). It could be because government spending could negatively impact private investment. Therefore, the crowding theory as suggested, involves government-increased spending which results in increased demand for commodities and services, increased rates of interest, and increased inflation rates. This is because when government spending is financed by taxation, any additional spending needs additional taxation. An increased rate of tax raises the burden, demotivative effect, and reduces the disposable income for workers. This disincentive effect on the workers results in a fall in consumption level, reduced savings, lower investment, output, income, and employment. A higher tax on companies results in a higher tax burden and decreased profits and business expansion. The government may decide to borrow to finance its deficit budget from the money or capital markets. The future obligation on the government is the repayment of the loans with additional interest and this could impede sustainable growth expected in the future. All of these results in the crowding out effect on private sector investment which affects the path of funding government spending (Ahmed, 1999). It is imperative to state that in a

free market, the basis for motivated growth is by promoting private sector investment without reducing public sector activities (Stiglitz, 1989). Therefore, the government's important function is to invest in human capital. A certain level of spending in promoting and developing the legal system of the country is required, in maintaining public law and justice, and in civil management is necessary to ensure a sustainable environment that fosters growth (Mackenzie et al., 1997). Furthermore, a second traditional approach is the Keynesian School. The Keynesian school argued that aggregate supply would not spontaneously lead to full employment as suggested by the Monetarists, but the economy could be in a state of equilibrium at any level below or above the full levels of employment and output showing deflationary and inflationary gaps. To the Keynesian school, the nature of the long-run aggregate supply diagram shows three phases. To them, the AS curve assumed the position of perfect elasticity at a low level of economic activity. During this period, the economy would experience a deflationary gap because the equilibrium would be occurring below the full employment level and growth would be retarded. This period requires active intervention and policy implementation by the government for an increased level of supply and demand to be attained thus encouraging government spending. Producers can increase their output levels without incurring unnecessary costs because the economy has 'spare capacity'. Spare capacity means unused factors of production. However, as an economy approaches its full capacity, the spare capacity becomes "used up" and the remaining factors of production are progressively scarce. The more the manufacturers try to raise output, the more costs they incur, and the prices of the goods are raised which results in inflation. As soon as the economy gets to its full potential, it would be impossible for any firm to increase output further because the factors of production are increasingly scarce and expensive.

LRAS becomes perfectly inelastic at full employment level just like the new classical argued. Increased quantity or improvement in quality of factors of production can bring an increase in output. Firms at this stage would like to employ more workers to increase aggregate supply to meet up with increased aggregate demand. This would cause incomes to increase in the economy and increase spending thereafter. Part of these incomes would be spent or saved after tax has been deducted. The additional spending would motivate firms' production increase in the economy, which would directly lead to increased output and employment and therefore eventual growth (Keynes, 1936). Therefore, the Keynesian macroeconomics theory on growth maintains that different government spending on recurrent expenditure contributes more to the economic growth of any country. An increased public consumption level is likely to increase employment level because of increased demand emanating from the increased public consumption. Higher profit and a rise in investment would cause a multiplier effect on firms as shown by the level of aggregate demand. Continuous government spending could increase aggregate demand, causing increased employment and output levels, depending on the magnitude of the effectiveness of the spending multiplier (Branson, 1989). This theory cultivates a justification for government intervention through policy implementation, direct provision of goods and services, and exchange control. This theory, therefore, conflicts with the arguments put forward by the monetarists. The new method through which national spending affects the growth of an economy is endogenous. For productivity to increase, then the employees must be equipped regularly with more adequate resources. The mentioned resources in this context include human, natural, and physical capital. Therefore, an economy's growth is driven by the availability and employment of the factors of production not just by its accumulation. This entails that

one of the ways of achieving the growth of an economy, in the long run, is to improve its spending on capital accumulation, human capital such as education and training, and developmental research programs for improved productivity. The approaches make improved educational training and skills development projects the key to achieving economic growth (Folster and Henrokson, 1997; Hussain (2019).

1.2 The Purpose of the Research

The expansive purpose of the work was to investigate and explore the impact of the spending by the government on the growth of the economy of China. The Chinese economy has witnessed tremendous growth in the last two decades and this growth was considered to be possible due to the huge government spending, devaluation of currency, and massive production of goods in the economy. The core objective of this research study was to explore the impact of the spending of the government (2008-2024) on the growth of China's economy and the impact of the 14th five-year development plan (2021-2025) on the sustainable growth of China. The aims, objectives, and project research questions were linked and synchronized together (**see Appendix 3**) to create uniformity. The specific and purposeful objectives of this research in specific terms were stated below:

(i)   To investigate the relationship between the components of the spending by the government and the growth of China's economy.

(ii) To examine the effects of the components of the spending by the government on the growth of China's economy.

(iii) To analyze the effects of the spending reforms by the government on the growth of China's economy.

(iv)   To assess the impact of the 14th Five-year plan (2021-2025) on the future growth of China.

1.3 Research Aim

The primary aim of this project was to investigate and analyze the impact and correlation between various spending components of the government and the overall growth of China's economy. Secondly, to examine and understand how different categories of spending by the government influence the overall growth of the economy of a country (Sasaki et al., 2021). Thirdly, to investigate and analyze the impactful consequences of the reforms made to the spending by the government on the overall growth of China's economy. This involves examining how changes in government spending policies and allocations affect key economic indicators and long-term growth trajectories and finally, comprehensively assessing and analyzing the impact and outcomes of the specific policies, initiatives, and strategies outlined in the 14th five-year plan on both the social development aspect and the aspect of economic growth of China. This involves examining various indicators, trends, and outcomes to evaluate the plan's effectiveness in promoting sustainable economic growth and fostering social progress within the designated timeframe. The aims of the research are listed as follows:

1. To investigate and analyze the impact and correlation between various government spending components and the overall growth of the Chinese economy.
2. To examine and understand how different government spending components influence the overall growth of the Chinese economy.

3. To investigate and analyze the impact and consequences of the reforms on government spending on the overall growth of the Chinese economy.

4. To comprehensively assess and analyze the impact and outcomes of the specific policies, initiatives, and strategies outlined in the 14th five-year plan on both the social development and economic growth aspects of China.

1.4 Project Research Questions

The research questions for this thesis were formulated on the recurrent and capital spending of the government of China and its impact on the growth of China's economy. The main case study for this study was the impact of the 14th Plan on the growth of the Chinese economy. The study sought and provided answers to the following project questions were put forward:

(i)   What is the relationship between the government spending components and the overall growth of the Chinese economy?

(ii)   What are the effects of the government spending components on the growth of the economy?

(iii)   What is the effect of the spending reforms by the government on the growth of the economy?

(iv)   What is the effect of the 14th Five-Year Plan (2021–2025) on the growth of the economy of China?

1.5 Overview of Methodology

The study reviewed the theoretical and empirical literature on the spending by the government on the growth of an economy. The first section elaborated on the theory and exposed the study to the theoretical basics that underlie the impact of the spending by

the government on the growth of the real GDP. The second section outlined the empirical studies carried out on the subject by past and present researchers, and the third section dealt with the criticisms of the different literature elaborated. The methodology involved in this study discussed the scholarly analysis contained in the study. There was an analysis of diverse arguments and counterarguments submitted by various academic scholars. From these arguments and counterarguments, the close relationships between the dependent and independent variables were discussed appropriately. This research study used numerous theories, methodologies, and findings to specify the model (Shafuda & De, 2020). The study used a correlational research design method which involves studying relationships between variables without experimental manipulations. The direction of such connections could be positive or negative. The methodology that was used involved the Ordinary Least Squares (OLS) or Time series (TS). Data collected was analyzed using the regression statistical analysis model or the Multivariate cointegration technique. The connections between the dependent variable and independent variables could be estimated with the use of Statistical regression analysis. Forecasting and time series modeling are within the estimation of this methodology.

1.6 Research Hypothesis

This study tests the following particular hypotheses.

H1: Government spending (2008-2024) and the 14th five-year plan (2021-2025) on government investment, economic and essential services, general public management, government consumption, science and technology, and debt-servicing commitments have a significant influence on the growth of China's economy.

H0: Government spending (2008-2024) and the 14th five-year plan (2021-2025) on government investment, economic and essential services, general public management,

government consumption, science and technology, and debt-servicing commitments have no significant influence on the growth of China's economy.

1.7 The Statement of the Problem

Many of the causes of the variations in economic growth still pose a lot of difficulty to researchers. However, this research topic has not been deeply explored. Some other studies have tried to examine and explore the different combinations through which diverse categories of government spending can influence an economy's growth rates (Colombier, 2000; Njuguna, 2009a). Despite the acclaimed doubt, the theories recommended that government spending has an encouraging effect on the growth of a country's real GDP not minding the negative impact that could emanate (Keynes, 1936; Barro and Salai-i-Martin, 1992, and 1995; Molefe & Choga, 2017; Hlongwane, 2021). In China, economic growth has been positively stable because of the increased government spending over time as contained in the five-year plans. The Chinese governments at every level spend large sums of money annually on the development of physical infrastructural projects, training, and education, mental and psychological health programs, economic and social services, maintenance of public law and order and national security, internal and external defense through procurement of security gadgets and equipment and the general administration of the country. Theoretically, an increase in spending by the government in the aforementioned sectors could lead to a positive economic growth pattern that is sustainable, which has been the case in China (**See Figure 1.3**). There was growth-enhancing spending which was set up to boost the development of infrastructure and support export-led strategies (Colomber, 2000). The economic growth of China was targeted to allow policymakers to regulate growth objectives to match the macroeconomic variables of the country. The country's long-term

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development plans of becoming an emerging economy by 2035 imply sporadic changes in the size of the economy, and such changes require an average annual GDP growth of 4.8% over the next 10 years. Increasing labor productivity higher than GDP is another planned target that is relevant to an aging economy with a rapidly shrinking working population. Therefore, whether government spending can foster upward growth in the economy becomes an issue for discussion. The Chinese national and provincial governments have undertaken budgetary rationalization policies and reforms targeted toward improving productive government spending in so many sectors of the economy, to curtail the increasing rate over the years. Government spending has also been retargeted to enhance the growth of the Chinese economy in key sectors such as R & D, growth and innovation, environment and climate change, upgrade of human capital, and gained prominence of digitalization, increasing development spending at one point, especially those targeted towards country's investments, such as education, recreation, health care, and the opera. However, the reforms have not shown any effect because the economic growth of China has remained consistent and has kept up with the growth of government spending. There is an urgent need to examine the impact of government spending and the different reforms on the growth of the country's social and economic lives. In summary, the crucial part of this to the policymakers is the understanding of the workings of the different components of government expenditure, changes, reforms, and implementation of the spending on economic growth.

1.8 The Significance of the Study

The five-year structural changes and substantial policy implementation for growth and development have taken place in China from 1949-2025, this study provided an empirical examination of the impact of the different government expenses on the growth

of the Chinese economy. However, the impact of the various government spending components was analyzed. This is important to policymakers both in China and otherwise because it helps them to recognize the intrinsic effort of the spending growth and subsequently be able to efficiently target the appropriate spending components for any fiscal achievement in line with the 14th five-year growth plan of the country. Similarly, most programs stressed the need for an increase in government spending or for embracing an expenditure-switching policy. This study imbibes the policy debate on which government spending could be maintained. The study further enhanced the understanding of the five-year repeated plan and its long-term effect. Finally, the theoretical and empirical literature on the spending patterns of the government and its effect on the Real GDP was enriched by the study's findings, thereby pointing the way forward for future studies.

1.9 The Trends and Composition of Government Spending

For a proper explanation of growth in the entire spending patterns of the government, it is important to know the breakdown categories. Government overall spending could be recurrent and capital spending. Therefore, recurrent expenditure or spending refers to all payments other than for capital assets. It includes payment for goods and services, wages and salaries, employer contributions to welfare, interest payments, transfer payments, welfare services, general administration, and subsidies. Recurrent expenditure affects economic growth because of its consequence on people's willingness and ability to consume and save. Capital expenditure refers to spending on development projects. Capital expenditures are spending on payments for the acquisition of land (fixed capital assets) or intangible assets such as the building of dams, terminals, schools, roads, and hospitals. It also entails investment in the construction of ring roads,

railways, irrigation and communication systems, and the building of power stations. However, it is important to state that mostly the government through foreign aid, donors, and borrowing funds capital expenditures. All these would directly or indirectly foster the growth of the economy through the promotion of private capital investment (Ag'enor, 2007). **Figure 1.1** shows the proportion of Total Expenditure (Recurrent and Capital Expenditure) of the government during 2012-2023.
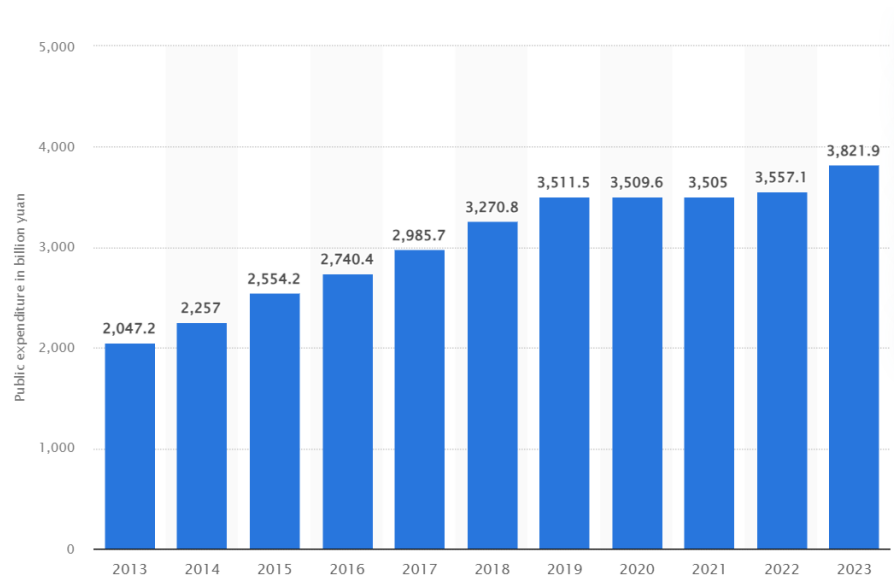
Figure 1.1: *Central government expenditure in China from (2013-2023).*

Source of data: *CSIS China Power Project; Chinese Ministry of Finance.*

Figure 1.1 shows the total expenditure both capital and recurrent expenditure of the national government of China from 2012 to 2023. It was obvious that in the year 2023, the government expenditure of the national government in China amounted to about 3.8 trillion yuan. During the initial years, there was growth in the public expenditure of China up to the year 2019 which was the beginning of the Covid-19 pandemic. Between the years 2020 and 2022, there was a big fall in the amount of public expenditure made

by the central government of China. The post-COVID era has started to witness a tremendous increase in the amount of public expenditure as seen on the graph in the year 2023.

During the early years of opening up of the country, the activities of recurrent and capital spending were gradually increasing and these were the periods that China started to witness a steady rate of economic growth. During this period, there was an upward but slow trend in capital expenditure. This increase was accredited to an increase in the costs of rebuilding and reconstruction (China Power, 2024). The country was rebuilding capital projects, and large sums of funds were diverted to infrastructural development. Construction of Electricity, Railways, Roads, Telecommunications, and Terminal expansion in major cities required huge spending from the budget of the country. Also, a substantial part of the budget was allocated to agriculture, forestry, and water; rural-urban development and defense; science and technology; and health and sanitation. The share of capital expenditure stayed on average at 45 percent of total spending from 2008-2024 and started to gain an increase afterward at about 25 percent of total government spending between 2008-2024. The capital expenditure over this period may be attributed to import-substitution and export-led strategies of the central government and also may be due to a rise in its current account surplus. Bretton Woods conference resolution on structural adjustment programs had little or no impact on the road to steady growth of the Chinese economy. However, the International Bank for Reconstruction and Development's (IBRD) Structural Adjustment Programmes (SAPs) or the stabilization programs of the International Monetary Fund (IMF) had little effect on the development plans of China. Since most recurrent spending of the government is of a fixed nature (debt repayment, interest on debt, salaries, and wages), the freedom the government

experienced in the wake of the aforementioned programs by the World institutions was its planned development programs and budgeting (M'Amanja and Morrissey, 2006). Nevertheless, some of the spending done on recurrent expenditure was affected by a fall in capital expenditure, which contributed to the steady trend rate of the entire government spending, most especially in the 2000s. Capital expenditure continues to show an upward growth between 2003 and 2015. This was due to the increased spending on infrastructural projects in key areas of railways, roads, telecommunication, and the building and extension of airport terminals in Beijing, Nanjing, and Shanghai. Expenditure on Education expenditure also increased due to the policy of nine-year compulsory education for every child and the need to expand on the building of schools and development of educational facilities and equipment, increased teacher wages due to increased employment of teachers, and expanded curricula. The returns on education showed different yearly returns for primary, secondary, and tertiary levels of education at 7.69%, 8.92%, and 13.38% respectively (Bailliu et al. 2016; Barro & Lee, 2021). The share of recurrent spending reached over 50% between 2008-2020, due to huge expenditures incurred on educational institutions and increased salaries paid to the teaching staff and civil servants. The increase was due to the government changing its spending pattern in favor of capital projects most especially education, maintenance, and operations. The central government spending can be categorized into subcategories such as education, rural & urban development, agriculture, forestry and water, energy and environment, foreign affairs, transportation, health care and sanitation, general administration services, defense, social security and employment, monetary affairs, public debts repayments, culture and tourism, and others. **Figure 1.2** shows the different spending in selected government spending subcategories expressed as a

percentage of total government spending. These categories showed the growth of spending in China's 2023 National General Public Budget and the breakdown helps to display a well and balanced knowledge of the composition of the central government spending in different sectors (Barro, 2017).

Growth of Spending in China's 2023 National General Public Budget
Year-over-Year % change

Category	% change
Foreign Affairs	16.3%
Social Security & Employment	8.9%
Science & Technology	7.9%
Agriculture, Forestry, & Water	6.5%
Rural & Urban Development	5.7%
Total Expenditure	5.4%
Defense	5.3%
Education	4.5%
Debt Payments	4.2%
Energy & Environment	4.1%
Transportation	1.3%
Culture, Tourism, etc.	1.2%
Health & Sanitation	−0.6%
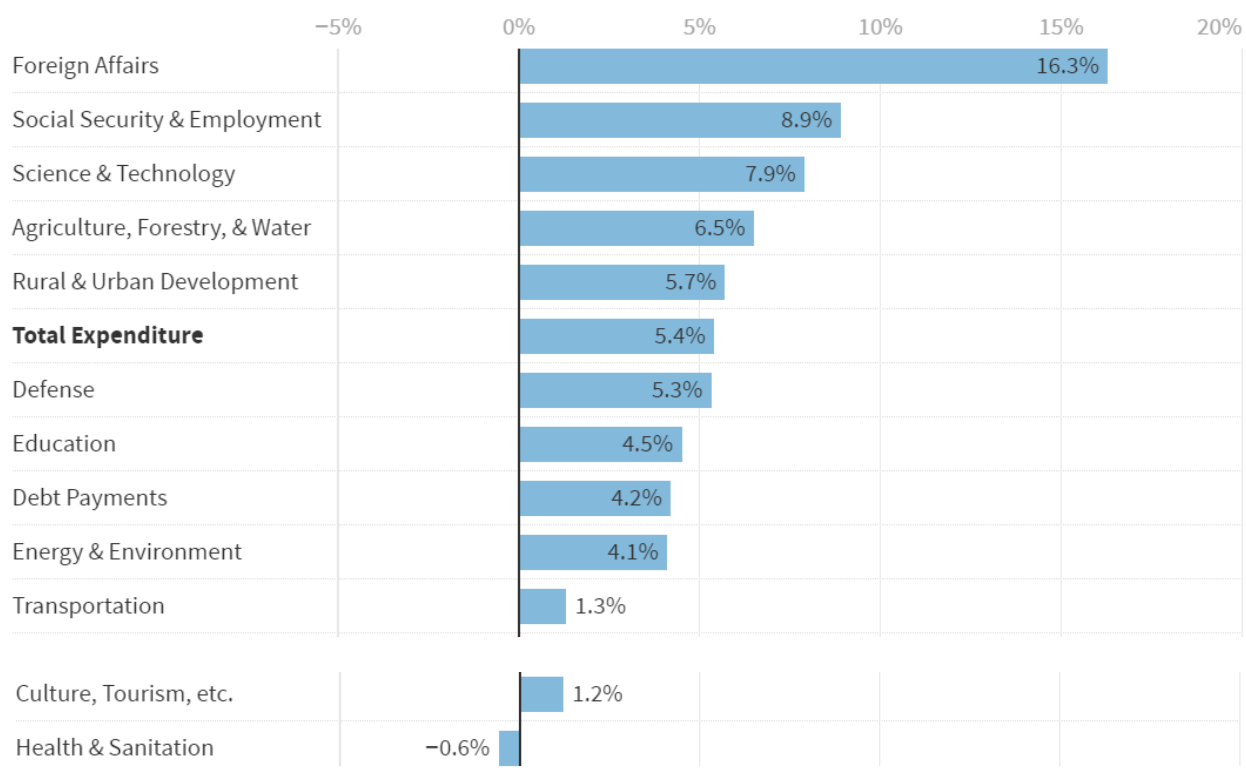
Note: Based on actual spending figures rather than announced budgets.
Source: CSIS China Power Project; Chinese Ministry of Finance

Figure 1.2: *Growth Pattern of Spending in China's 2023 Government Public Budget China Growing (2023).* **Source of data:** *CSIS China Power Project; Chinese Ministry of Finance.*

In addition to the laid-out spending for the year 2024, the budgetary estimations showed preliminary figures for the 2023 actual spending. In the year 2023, China generated RMB 23.4 trillion ($3.3 trillion) as its central budget revenue and RMB 28.2 trillion ($4

trillion) as its spending and there was an official budget deficit of RMB 4.9 trillion ($690 billion). In recent years, both the spending costs and deficits were larger due to the unusual injection of extra deficits (**See Appendix 4**). This has caused a kind of slowdown in the economic growth of China in recent times. The Chinese government has certified an extra 1 trillion Chinese Yuan ($141.4 billion in shares to finance the district projects, especially in areas of poverty relief measures and prevention of diseases. The authorized additional budget was split in half. Half (500 Billion Chinese Yuan billion ($70.7 billion)) was allotted for the year 2023. The other half was to be passed forward for use in the year 2024. There were several identified trends in expenditure in 2023. Also, after the declining budget years, spending on foreign affairs rose significantly to 57 billion Chinese Yuan ($8.1 billion) in 2023 from 49.4 billion Chinese Yuan ($7.3 billion) in 2022. The country also increased its budgetary allocations in science, environment, and technology by 8% in 2023 which doubled the year-after-year growth of 2022. However, spending on the health care system and general sanitation was stabilized in the year 2023 and that was the only area where a drop was witnessed by 0.6%. This fall did not show a reduction in spending but instead reveals the fact that spending on health care, nutrition, cleanliness, and sanitation was at a high rate during the years of COVID-19 pandemic lockdowns. In the year 2022, the investment in health care due to the purchase of medicines, testing kits, and chemicals, personnel employment, and high enforcement costs drove up spending in these areas by 17.7%. This was more than double the rise in the rate of increase in any other budget category in China (ADB, 2022b).

China's rapid economic growth was due to the National Budget which was blown up significantly since the country's change of government in year 2013. In a decade, 2013-2023, total spending grew to 95.8% and revenue generated extended to 80.8%. It was

obvious that expenditure still outpaced revenues generated each year, and China's government deficit has widened reaching a total of RMB 4.88 trillion ($690 billion). This was the highest recorded so far in the national budget. (**See Figure 1.3**)
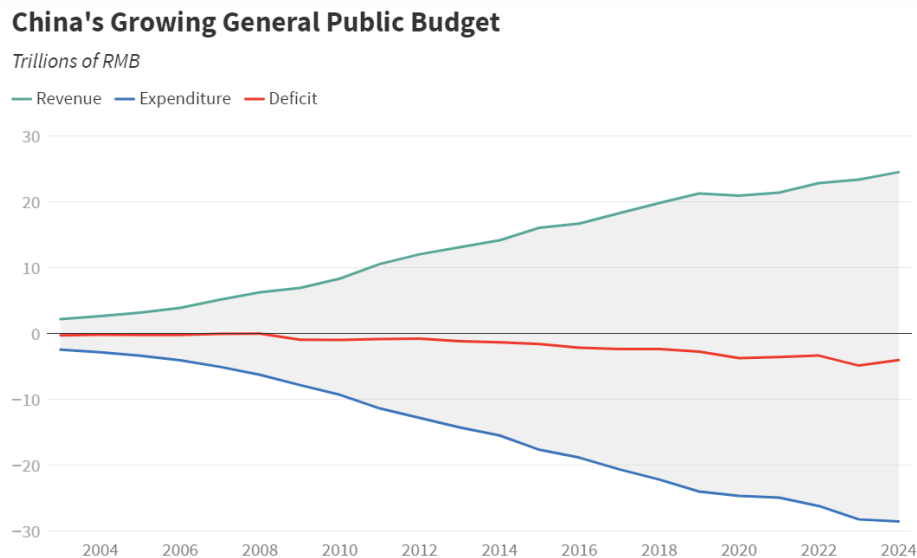
China's Growing General Public Budget
Trillions of RMB

Note: Figures for 2022 and earlier reflect actual spending based on final account data. Figures after 2022 are preliminary.
Source: CSIS China Power Project; Chinese Ministry of Finance

Figure 1.3: *China Growing General Public Budget- Revenue Generated, Expenditure Incurred, and Deficit emanating from the Budget (2004-2024).* ***Source of data:*** *CSIS China Power Project; Chinese Ministry of Finance.*

From the figure above, it is obvious that not all the components of the budget have recorded the same growth rate but between 2013 and 2023, spending on servicing of debt via debt interest payments rose by 287% larger than any other category in the budget components. This increase shows the growing passion of China emanating from increased debt. In year 2023 fiscal year, 10.7% of the US government disbursements were geared towards interest payments on debt (Debt Servicing), and 25% of the nation of Japan's 2024 fiscal year budget is projected to be spent on servicing of debt.

Expenditure on social issues such as social security and employment has also increased substantially in China. This is one of the largest spending categories. It rose by 175% within a decade of 2013-2023. Despite that, the country still lacks the expected social welfare project, thereby, seeking support from many developed countries.

1.10 Government Spending and China's Economic Growth Levels

The change and pattern of government spending growth and GDP in China are presented in **Figure 1.4.**
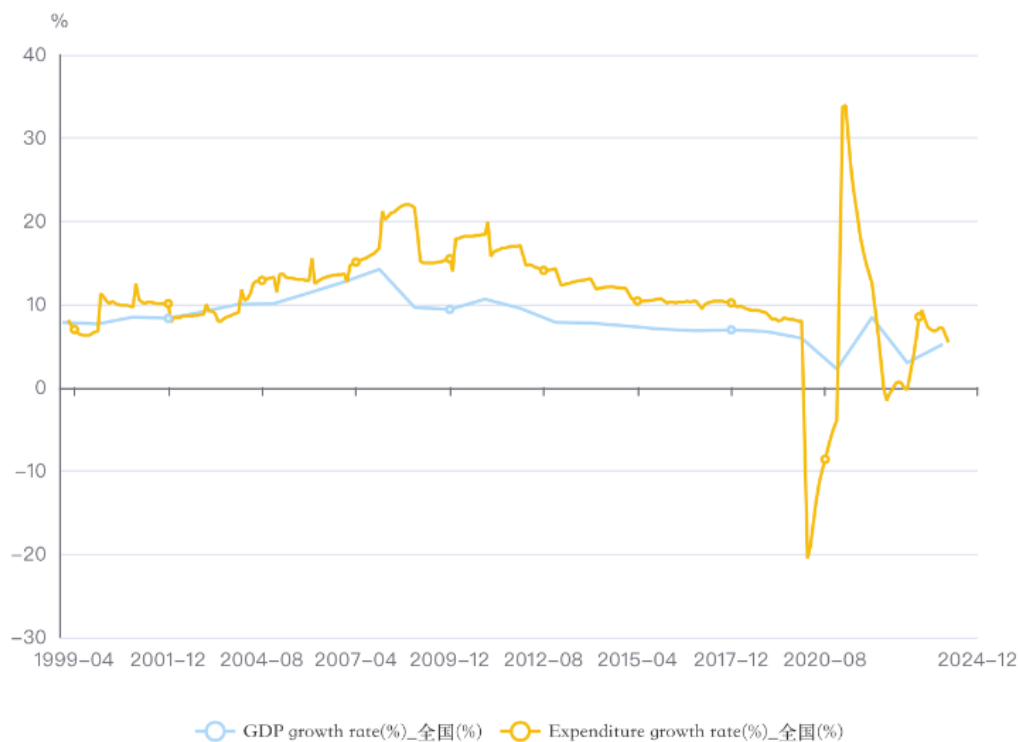
Figure 1.4: Trend in GDP Growth and Government Spending Growth over the period 1999- 2024.

Source of data: *CSIS China Power Project; Chinese Ministry of Finance.*

The above figure **(Figure 1.4)** displays the movement in spending growth rate and how it has steadily increased between 2004 and 2012 and the GDP growth rate followed the same pattern except in 2009 when it slightly dropped may be due to the 2009 recession.

However, it was conspicuous in the above chart that the expenditure growth rate dropped hugely in the year 2020 which was the beginning year of the pandemic but the GDP growth rate dropped slightly and thereafter began to rise during the Covid-19 period. Some researchers submitted that China was the only country that witnessed a rise in its GDP growth rate during the dark years of the pandemic from 2020-2023 (Powell, Sheiner, and Wessel 2021). Before the reforms of 1979, China continued to maintain policies that were vastly inefficient, centrally controlled, and comparatively detached from the globe. Since the adoption of the opening-up policy to international trade, investment, and service transfers embarking on a free-market system, China has taken the lead among the global fastest-growing economies with real GDP growth at an average of 9.5% in the year 2018. The World Bank gave this description as, "the fastest growing economy with a sustained growth." Such acclaimed growth has fostered China's policies in that direction to increase its GDP by 100% every eight years concurrently. This has helped reduce the poverty level among its people. Approximately about 800 million people were lifted above the poverty level. China has been known as the world's largest economy based on merchandise trading, manufacturing, and holding of foreign exchange reserves. In that same manner, the largest holder of the U.S. Treasury Securities, which was used to fund the national debt thereby keeping the U.S. interest rates low (USTR, 2017). Thereafter, the growth in public expenditure increased the highest in 2021 with an increase of about 35%. The rate of growth of the Gross Domestic Product was about 8% increase showing no huge fluctuation in the trend despite the responsive changes in government spending.

1.11 Government Spending Reforms in China

Ever since China opened up its economy, various government spending reforms have been executed. The reasons were to raise and sustain the growth of the economy. In the vast landscape of global economics, few transformations have been as profound and consequential as the reforms in government expenditure policies witnessed in China. From its humble beginnings to its current level of achievement as the second-largest economy in the world, Her journey has been marked by a series of strategic decisions and bold initiatives aimed at reshaping its fiscal landscape. One of the foremost scholars in this field, Zhang Wei (1996 & 1997), offers keen insights into the evolution of government expenditure reforms in China. He asserts, "China's government expenditure reforms have been instrumental in driving economic growth, promoting social stability, and advancing the country's development agenda." Indeed, the Chinese government's commitment to prudent fiscal management and targeted investment has played a pivotal role in propelling the nation's remarkable economic rise (Saez and Zucman, 2020).

At the heart of China's expenditure reforms lies a deliberate shift towards prioritizing investment in key sectors that drive sustainable growth and development. As Professor Li Ming observes, "The Chinese government has strategically allocated resources towards areas such as infrastructure, education, healthcare, and innovation, laying the foundation for long-term prosperity and competitiveness." This targeted approach has enabled China to enhance its infrastructure networks, boost human capital development, and foster innovation and technological advancement (Zheng, Zhuang, and Wang 2020). Moreover, scholars like Wang & Wu (2011) highlight the importance of fiscal discipline and transparency in driving effective government expenditure reforms. He notes, "China's efforts to enhance fiscal transparency, strengthen budgetary controls,

and improve accountability mechanisms have bolstered public trust, fostered efficient resource allocation, and mitigated fiscal risks." Indeed, by enhancing transparency and accountability, China has bolstered investor confidence, attracted foreign investment, and facilitated sustainable economic growth. However, scholars also acknowledged the challenges and complexities associated with implementing government expenditure reforms in a rapidly evolving economic landscape. Chen Wei (2022) emphasizes the need for continued policy innovation and adaptive governance structures to address emerging challenges and capitalize on new opportunities. He asserts, "As China enters a new era of economic development, policymakers must remain agile, responsive, and forward-thinking in their approach to government expenditure reforms, ensuring alignment with national priorities and global trends." The journey of government expenditure reforms in China is proof of the nation's innovative prowess, adaptability, and purpose to chart a course towards prosperity and shared development. Through strategic investments, fiscal discipline, and institutional innovation, China has emerged as a global leader in driving economic growth and shaping the future of governance in the 21st century. As scholars continue to study and analyze China's experience, one thing remains clear: the reforms in government expenditure policies have been a cornerstone of China's remarkable economic transformation and will continue to shape its trajectory for years to come (Dong & Joffre, 2019). China as an emerging economy, in the third quarter of 2023 grew faster than expected improving the chances of meeting its growth target of around 5% for 2023. However, there are significant concerns about the continued disappearance of the private sector activities and the absence of long-term reforms required to move the economy to consumption-led growth. The main focus should be on how to sustain the unexpected recovery and prevent any economic failure in the future.

Policies for economic stabilization should be implemented for solid economic recovery. However, policymakers believe in more fundamental policy change, especially in the areas of market-based economy which would improve the activities of the private sector.

1.12 Definitions of Terms

There are various terminology associated with government spending and economic growth. These include Real GDP and nominal GDP, GDP Deflator, GDP Growth Rate, Public Expenditure, Private Expenditure, Crowding Out, Capital Expenditure, Recurrent Expenditure, Per Capita Income, Fiscal Year, Budget Deficit, Budget Surplus, and Annual Growth Rate. The understanding of these concepts would support the knowledge and findings of the research study.

Real GDP - refers to the aggregate value of all goods and services manufactured within an economy which are adjusted for inflation. Real GDP is typically measured in a year or a quarter while accounting for fluctuations in the level of prices. It provides an accurate representation of an economy's growth by taking care of the price level by allowing for meaningful comparisons over time. Real GDP can be calculated thus:

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP Deflator}}$$

Another common method to calculate real GDP is using the formula:

$$\text{Real GDP} = \sum_{i=1}^{n} P_{i,base} \times Q_i$$

Where:

- *Pi,* represents the base year prices for each commodity or service.
- *Qi* represents the quantity of each commodity or service produced in the country.
- *n* is the number of commodities and services included in the estimation.

Nominal GDP - refers to the overall value of all goods and services manufactured in a country. It is calculated at current market prices without making any adjustments regarding the price level and as such may provide information that may not be true of the economy. The formula for nominal GDP is:

$$\text{Nominal GDP} = \text{GDP} = \sum_{i=1}^{n} P_i \times Q_i$$

Where:

- P_i represents the price of each commodity/service produced in the country.

- Q_i represents the quantity of each good or service produced in the country.

- n is the number of commodities/services included in the calculation.

GDP Deflator – is a measure used to correct money GDP for inflation or deflation to derive the real GDP. It represents the percentage of money GDP to real GDP, expressed as an index number. The formula for the GDP deflator is:

$$\text{GDP Deflator} = \left(\frac{\text{Nominal GDP}}{\text{Real GDP}} \right) \times 100$$

The GDP deflator provides insight into an economy's level of prices concerning a particular year. This makes it realistic for countries to compare their economic performances over time.

GDP Growth Rate - represents a proportional increase in real GDP from one period to another time, typically expressed on an annual basis. It indicates whether an economy is expanding or contracting in a certain period. The formula is:

$$\text{GDP Growth Rate} = \frac{\text{Real GDP}_{\text{current year}} - \text{Real GDP}_{\text{previous year}}}{\text{Real GDP}_{\text{previous year}}} \times 100\%$$

Where:

- Real GDP $_{\text{current year}}$ is for the current period.

- The Real GDP $_{\text{previous year}}$ is the real GDP for the previous period.

This formula calculates the percentage change in real GDP between two consecutive periods, providing insight into the rate of economic growth or contraction. Economic expansion represents a positive rate of growth and an economic contraction represents a negative growth rate.

Public Expenditure - Public expenditure refers to the spending undertaken by governments at various levels (local, regional, national) to offer goods and services to the public and to achieve socio-economic objectives. It encompasses spending on a wide range of areas, including education, healthcare, infrastructure, defense, social welfare programs, public safety, and administrative expenses. Public expenditure plays a fundamental part in determining an economy's growth position through aggregate demand, redistributing income, and economic development and social welfare. It is typically funded through various sources such as taxation, borrowing, and revenue from government-owned enterprises. Monitoring and managing public expenditure are essential for ensuring fiscal sustainability and the effective allocation of resources to meet the needs of society.

Private Expenditure - Private expenditure refers to spending by individuals, households, and businesses on goods and services for personal consumption, investment, or other purposes. It encompasses all purchases made by private entities in the economy and excludes government spending and exports. Private expenditure can be categorized into different types:

- Consumer expenditure: This includes spending on goods and services for personal consumption by individuals and households. Food, clothing, housing, and transportation are examples of consumer spending.

- Investment expenditure: This refers to firms spending on capital goods intended to increase productivity, expand operations, or generate future income. It includes investments in machinery, equipment, buildings, technology, research and development, and other productive assets.

- Expenditure on services: This includes spending on various services provided by businesses, such as healthcare, education, legal services, financial services, hospitality, transportation, and utilities.

Private expenditure is a key component of aggregate demand in an economy and plays an important function in driving the growth of an economy. It is influenced by factors such as disposable income, interest rates, consumer confidence, business investment opportunities, and government policies affecting taxation, regulation, and incentives. Tracking private expenditure is important for understanding consumer behavior, business investment trends, and overall economic performance.

Crowding Out - refers to a state in which enlarged government spending or borrowing reduces private sector spending or investment. This phenomenon occurs when high levels of borrowing to fund budget deficits raise the rate of interest and lower private consumption and investment patterns. The government issues bonds or borrows from financial markets to finance its spending. The demand for loanable funds increases in the financial markets. Increased interest rates impact the costs of borrowing. And discourages private sector investment in capital projects and discourages consumers from borrowing to finance purchases such as homes or cars. As a result, private

investment and consumption decrease. Crowding out can have negative effects on economic growth and productivity because it reduces the resources available for private-sector investment, which is crucial for long-term economic development. Additionally, it can lead to inefficiencies in resource allocation and hinder innovation and competitiveness in the nation. However, moderate crowding out may be allowed to prevent overheating in the economy and inflationary pressures.

Capital Expenditure - refers to money spent by a firm or country to acquire physical properties such as equipment, machinery, infrastructure, and technology. These expenditures are typically made to generate future benefits for the organization over an extended period, rather than for immediate consumption. Capital expenditure is distinguished from operational expenditure, which includes day-to-day expenses such as wages, utilities, and maintenance costs. Capital expenditure is considered an investment in the long-term growth and productivity of the organization, as it often involves acquiring assets that contribute to increased efficiency, productivity, and competitiveness. Examples of capital expenditure include purchasing or constructing new buildings or facilities, acquiring machinery, equipment, or vehicles, upgrading or expanding existing infrastructure, investing in research and development projects, implementing new technology systems or software, and acquiring intellectual property rights or patents. Capital expenditure decisions are typically made after careful consideration of the expected return on investment, the useful life of the asset, and the organization's overall financial strategy. These expenditures are often significant and require thorough planning and budgeting to ensure that they align with the organization's long-term objectives and financial capabilities.

Recurrent Expenditure - Recurrent expenditure refers to ongoing, regular expenses incurred by a government, organization, or individual to maintain its operations or provide essential services. These expenses occur periodically and are functional in the daily running of the entity. Recurrent spending is often associated with operational costs rather than capital investments. In the context of government finance, recurrent expenditure includes expenses such as wages and salaries for government employees, utility bills (electricity, water, gas), maintenance and repair of infrastructure and facilities, purchases of goods and services for routine operations, interest payments on government debt, social welfare payments and pensions, administrative expenses

For businesses, recurrent expenditure may include employees' salaries, allowances, bonuses, and benefits, rent payments for office space or facilities, utility bills, maintenance expenses, insurance premiums, marketing, and advertising expenses, legal and professional fees, inventory, and supplies, tracking recurrent expenditure is essential for budgeting and financial planning purposes, as it represents ongoing financial commitments that must be met regularly. Effective management of recurrent expenditures helps ensure the sustainability and efficiency of operations, as well as the ability to allocate resources effectively to support the organization's goals and objectives.

Per Capita Income - refers to the income per head.

$$\text{Per capita income} = \frac{\text{Total income}}{\text{Total population}}$$

Per capita, income is a good parameter for measuring the living standards of the residents in a particular country. It provides insight into the average level of income available to individuals and households in a country or region. Higher per capita income generally indicates greater prosperity and purchasing power within a population, however, per capita income alone may not provide a complete picture of income

distribution or inequality within a population, as it does not account for variations in income levels among different segments of the population.

Fiscal Year - A fiscal year is a twelve-month accounting year. It is used by governments and businesses for reporting their financial status and for budgeting purposes. It is not a calendar year. A fiscal year can start and finish at any point during the year, depending on the entity's accounting practices or requirements. The fiscal year is typically chosen based on the organization's operational needs, industry standards, or legal regulations. For example:

Government entities often use a fiscal year that aligns with the government's budget cycle, which may not concur with the calendar year. Many businesses use a fiscal year that corresponds with their industry's peak season or production cycle. For example, retailers might start their fiscal year in February to include the holiday shopping season. Non-profit organizations and educational institutions may follow a fiscal year that aligns with their funding sources or grant cycles. The choice of fiscal year affects financial planning, budgeting, and reporting processes, as well as tax obligations and compliance requirements. It allows organizations to track financial performance and allocate resources effectively over a consistent period.

Budget Deficit – A deficit occurs when the government's proposed spending exceeds its expected revenue within a specific fiscal year. In other words, it represents the sum by which government spending exceeds its income, including taxes, fees, and other sources of revenue. Economic downturns: During recessions or periods of low economic growth, government tax revenues may decrease due to lower income and corporate profits, while government spending on unemployment benefits and other social programs may increase. Governments may deliberately run budget deficits as part of their fiscal policy

to stimulate economic activity, increase public investment, or finance infrastructure projects. This is often done through deficit spending, where the government borrows money to cover the shortfall in revenue. Population aging and increasing healthcare costs can put pressure on government budgets, leading to deficits, especially in countries with large aging populations and generous social welfare programs. Budget deficits are financed through borrowing, by issuing government bonds, or borrowing from domestic or foreign lenders. Persistent or large budget deficits result in a growing national debt, as debt-servicing begins to accumulate over time. Excessive deficits and debt levels can have negative consequences for an economy, including higher interest rates, inflationary pressures, reduced confidence in government finances, and constraints on future government spending and policy options. Therefore, managing budget deficits is an important aspect of fiscal policy and economic governance.

Budget Surplus - occurs when government expected revenue exceeds government proposed spending within a specific fiscal year. In other words, it represents the amount by which government income exceeds its expenditures, including taxes, fees, and other sources of revenue. During periods of strong economic growth, government tax revenues tend to increase because of higher incomes, corporate profits, and consumer spending, while government spending may remain relatively stable. Governments may deliberately pursue policies aimed at achieving budget surpluses as part of fiscal discipline or to reduce government debt levels. This may involve controlling spending, increasing tax revenues, or a combination of both. Governments may receive unexpected or one-time windfall revenues from sources such as asset sales, dividends from state-owned enterprises, or legal settlements. Budget surpluses are typically used to reduce government debt, finance future expenditures or investments, or provide tax cuts or

other forms of fiscal stimulus. They can improve the government's fiscal position, reduce borrowing costs, and enhance economic stability. However, excessively large or persistent surpluses may indicate that the government is overtaxing or underinvesting in public services, which could have negative implications for economic growth and social welfare. Therefore, achieving an appropriate balance between surpluses and deficits is important for effective fiscal management.

Annual Growth Rate - It is a measure of how much a quantity or variable, such as GDP, population, or revenue, has changed on average over the course of a year, expressed as a percentage. It is commonly used to assess the rate of change or expansion of a particular phenomenon over time. The formula is below:

$$\text{Annual Growth Rate} = \left(\frac{\text{Final Value} - \text{Initial Value}}{\text{Initial Value}}\right) \times 100\%$$

Where:

- "Final Value" represents the end-period value of the variable.
- "Initial Value" represents the beginning-period value of the variable.

The annual growth rate provides insight into the trend of change of a variable over a specific period and allows for comparisons across different periods or entities. It is commonly used in economics, finance, demography, and other fields to analyze trends, forecast future developments, and assess the performance of economies, industries, or companies.

1.13 Scope, Limitation, and Organization of the Study

The research was limited to the periods (2008-2024) and (2021-2025) following government spending and the 14th five-year plan of the country respectively. These

chosen periods were characterized by sustainable growth achieved through government capital and recurrent expenditures. Adequate time series data was available for the chosen period but would require trusted personnel to release them. The growth of any country's economy can be influenced by demand-side policies and supply-side policies, but this research studied the fiscal and supply-side outlooks of the country without a deeper emphasis on the monetary policy measures. The fiscal policy as a demand-side policy focuses on government spending and taxation. However, this study concentrated on the national government spending concerning the arrangement, restructuring, fluctuations, levels, and influence on the growth of the Chinese economy and to what extent can the 14th five-year plan achieve this purpose. The study did not pay so much attention to the sources of financing of the different spending. The study was structured into five chapters. The first chapter (Chapter One) introduced the study's purpose, aims, objectives, and research questions. Chapter Two presented the conceptual, theoretical, and empirical contexts. Chapter Three focused on the research design and research methodology. Practical results were presented analytically and evaluatively in Chapter Four and Chapter Five contained the summary, conclusions, recommendations for further research, and policy implications.

1.14 Summary

The introduction chapter of the thesis focused on the effect of the spending by government spending on the growth of China's economy, focusing on the 14th five-year plan (2021-2025). The chapter begins by highlighting the significance of government spending as a crucial policy tool for stimulating economic growth and development in China. It discusses the historical perspective of China's economic reforms and government intervention in shaping the country's growth trajectory. The introduction

outlines a few objectives of the study, which include examining the connection between government spending and the growth of an economy, identifying key sectors targeted for investment in the 14th five-year plan, and assessing the effectiveness of government policies in promoting sustainable and inclusive growth. Furthermore, the chapter provides an overview of the 14th five-year plan, discussing its objectives, priorities, and strategies for achieving economic transformation and structural reforms. It highlights the importance of government spending in supporting key initiatives such as technological innovation, infrastructure development, environmental sustainability, and social welfare. Chapter Two of this study provided information about the conceptual and theoretical framework. The next chapter focused on the empirical exploration of what other scholars have found. Are the findings of this study consistent across the scholars' submissions or are there variations? This research was well entrenched in the theoretical framework.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The second chapter comprised an appraisal of the theoretical and empirical literature on the spending made by the governments of countries and the growth of economies. The first part contained the theoretical foundations of the above-stated research study. Some theoretical models were described in detail to form the basis for the empirical literature in the same concepts and principles. The second part of this chapter reviewed different studies carried out by different scholars on the subject of the growth of economies and the spending of the governments of those economies. The final part of the literature review chapter dealt with the critics of the different studies displayed.

2.2 Theoretical Literature

This refers to intellectual works that primarily focus on developing or exploring theoretical frameworks, concepts, or models within a particular field of study. These works contributed to advancing understanding, generating hypotheses, and providing frameworks for further research. The theoretical literature was supported with empirical data or experimental findings in the later part of the literature review. Theoretical literature encompasses a wide range of formats, including academic papers, books, essays, and reviews, and it plays a critical role in reshaping the intellectual discourse and direction of this study area of inquiry. There are numerous theories on government spending or expenditure. The theories are described according to the time when they were proposed.

2.2.1 The Wagner's Organic State-Owned Theory

The Wagner theory, proposed by the German economist Adolph Wagner in the late 19th century (1835-1917), postulates that as societies develop economically and socially, their governments tend to expand in both size and scope. This expansion is often likened to the growth of an organism, hence the term "organic." Wagner argued that increased societal complexity leads to greater demands for government intervention to address various social needs, such as infrastructure, education, healthcare, and social welfare (Azwar, 2016). According to Wagner, several factors contribute to the expansion of the state (Facchini and Seghezza, 2018). Facchini and Seghezza (2018) stated that public sector expenditure on health care and compliance costs of protecting property rights positively promotes economic growth, while other spending may not show any significant effects in the short run. He postulated the essence of the increased Complexity in society. To him, as societies become urbanized and industrialized, their needs become more complex, increased, and diverse, requiring government intervention to maintain order and provide essential services. Economic activities often generate external costs or benefits that are not adequately addressed by the free market. Government intervention through effective policy implementation becomes necessary to correct these market failures. Wagner believed that as societies become more interconnected, there is a growing demand for social cohesion and solidarity, which governments can promote through policies such as social insurance and welfare programs. He also agreed that technological advancement can lead to greater productivity but also create new challenges and inequalities that governments may need to address through regulation and redistribution (Oseni & Adekunle, 2020). Overall, Wagner's organic state theory suggests that the expansion of the state is a natural consequence of societal development

and the increasing complexity of modern life. While the theory has been critiqued and modified over time, it remains influential in understanding the relationship between economic and political development (Wu et al., 2019). Wagner pushed this theory stronger by proposing a law of increased government spending due to the growth of the economy. This theory was primarily focused on GNP growth. The well-known Wagner principle concludes, "As income per head grows, the comparative size of government spending grows as well." The government would need to increase spending on administration, expenditure on maintaining order; increase concern for the environment and climate issues; control of private monopolies, and preferred solutions to other types of market imperfections. However, Wagner compared an economy to an organism thus depicting the changes that occur in every society when government decisions are well-targeted and decisions are made to benefit the entire people (Brown et al. 1996).

Wagner's theory was criticized for its inability to consider the choice of the public. The problems of public choice were adopted by the law by the employment of the organic theory of the state but do not assume that the state can in a certain manner and that decisions can be made independently for the societal members. Therefore, the law concentrates solely on the spending by the government from the demand-side illustration. Much consideration was not put into the supply-side justifications (Shi et al., 2017). Comparatively, Wagner's law offers a decent foundation for the growth model of the public sector. However, the law concentrates on the aspect of demand for public-sector services (Sedrakyan et al., 2019).

2.2.2 The Political Constraint Model of Peacock and Wiseman

The Political Constraint Model, developed by Alan Peacock and Jack Wiseman (1890-1935), seeks to explain government-spending patterns within a political-economic framework. The model posits that government spending is influenced by both economic and political factors, particularly the constraints imposed by the political process. The key components emphasized by the Political Constraint Model include political influences whereby the governments are subject to political pressures from various interest groups, including voters, special interest groups, and political parties. These pressures influence the allocation of government spending. The governments also face limitations on their ability to raise revenue, whether through taxation, borrowing, or other means. These constraints can influence spending decisions by limiting the available resources for government programs. The process through which government budgets are formulated and approved can shape spending priorities. Political negotiations, lobbying efforts, and institutional structures all play a role in determining the final budget allocations. Sometimes bureaucratic behavior can be a major constraint. Bureaucratic agencies and officials within the government also influence spending decisions. Their priorities, incentives, and capacity to implement policies can affect the allocation of resources. According to Peacock and Wiseman, external factors, such as economic conditions, international obligations, and public opinion, can also constrain government spending decisions. Above all, the Political Constraint Model emphasizes the interplay between political dynamics and economic constraints in shaping government expenditure patterns. It highlights the importance of understanding the political context in which budgetary decisions are made and how political factors interact with economic considerations to influence policy outcomes (Adil et al., 2017). The model is based on

the government's political theory of spending determinants. While the government prefers to spend more, the citizens prefer to pay less tax; however, the government has to place much consideration on the welfare of its people. This model agrees that there is a rate of taxation that constrains government-spending behavior (Forte and Magazzino, 2018). Tax revenue grows constantly when the economy expands, thereby enabling government spending to increase in the same proportion as the Gross National Product (Peacock and Wiseman, 1961).

During periods of social disruptions and natural disasters such as floods, famine, war earthquakes, the steady upward trend in government spending would be distorted because there would be increased government spending. For effective financing of an increase in government spending, the tax rates have to be raised by the government (Funashima, 2017). According to Peacock and Wiseman (1961), this is known as a displacement outcome. However, there is also a Ratchet effect to this theory arising from the citizens' awareness of the social and economic problems during periods of natural disasters. The government is expected to expand its spending to improve these unexpected conditions. The idea behind a tolerable level of taxation has no standing at this moment and the level of taxes cannot be reversed. The government can finance these higher levels of spending by generating additional revenue through taxation and other methods of revenue generation (Brown et al., 2016). The government budget deficit would grow due to increased borrowing and debt servicing. One major criticism of the theory was that the theory relied heavily on political influences and factors on the level of government spending. Gemmell, Kneller, and Sanz (2016) found that government spending financed by contractionary taxes and deficit financing generally damages the growth of the real GDP (Brunkhead and Miner, 1979).

. However, the theory did not isolate all relevant reasons. Furthermore, some criticisms were raised as questions for this theory to gain recognition. One such question is, "What happened to government spending in the post-war period? There is a piece of supportive evidence that after delayed government expenditure has taken place following the outbreak of any form of natural disaster or war, the government spending returns to its previous level.

2.2.3 The Keynesian Theory

The Keynesian theory of the expenditure of the government and the growth of an economy is based on the ideas of John Maynard Keynes (1936), a British economist. Central to this school is the belief that the intervention of the government in the economy, especially through fiscal policy, could help stabilize any economic instabilities and promote long-term growth (Sedrakyan et al., 2019).

Aggregate demand, demand management, multiplier effect, full employment, and counter-cyclical policies are the key elements of the Keynesian theory of government expenditure and economic growth. Keynes argued that fluctuations in total demand in an economy, are the primary drivers of economic cycles (Shafuda & De, 2020). When aggregate demand is insufficient to stimulate production and employment, economies can fall into recessions or depressions. Keynes also advocated for active government intervention to manage aggregate demand, particularly during periods of economic downturn. This intervention typically encompasses reducing taxes and increasing government spending to stimulate consumption and investment. There is an emphasis on the multiplier effect, whereby an initial rise in the spending by the government leads to a greater increase in the total economic activity. This occurs because the additional

spending creates income for households as well as for firms, which creates further spending and economic expansion. Keynes believed that economies could operate below full employment equilibrium for extended periods due to insufficient aggregate demand. He argued that government intervention could help restore full employment by boosting demand for goods and services. Keynesian school of economics advocates for countercyclical fiscal policies, meaning that government spending should increase during economic downturns and decrease during periods of economic expansion. This approach aims to ease fluctuations in economic activity and restabilize the economy over the long term. Overall, the Keynesian theory of the government's expenditure and an economy's growth emphasizes the role of the government in managing aggregate demand thereby promoting stable growth of the economy and full employment. While it has been subject to various criticisms and modifications over time, Keynesian ideas continue to influence economic policymaking, particularly during times of economic crisis. Keynesian economics endorsed a mixed economic system that involved the government, firms, and households' participation in the economy. Keynesian economics emphasized the failure of the market system liberalism which was advocated by the monetarists that the market operates better without the involvement of the government (Trotman, 1997; Pintu Parui, 2021).

Keynesian principle proposed overwhelming macroeconomic tendencies over the microeconomic behavior of firms and individuals. Keynesian submission focused on the assumptions of fixed wages and prices in the economy in the short run (Wang et al., 2019). Taxation is seen as a lump sum taxation. Consumption, saving, and investment are all functions of income. The theory supported the view that the policies of the government are made to promote aggregate demand and lower unemployment (Branson,

1989). If the government increased its spending, then consumption and investment, spending would increase because there would be increased money in circulation. The variation in the expenditure of the government is shown as ∂G. ∂Y shows the related impact on output while the effect and the net impact on the increase in the spending of the government on output (Y) is given as:

$$\partial Y = \left[\frac{1}{1-b}\right]\partial G \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.1)$$

Where: b= MPC= Marginal Propensity to Consume is the slope of the curve. The variation in income is a function of the change in the spending by the government as a result of the multiplier effect of government spending (Meyer and Sanusi, 2019). Therefore, an increase in the spending made by the government could cause a larger increase in output. The opposite of this statement is also true. Keynesian (1936), holds a central opinion that the move towards full employment does not require a strong automatic tendency for employment and output.

The criticisms of the Keynesian theory are that the theory focused on the increase in the phenomenon called, "stop-go". This is because, at a time of high unemployment, the government automatically increases its spending to increase aggregate demand. However, unemployment would reduce but it would put upward pressure on prices (Inflationary Pressure) and this would force the government to reduce its spending again. The government is required to always maintain a balance when adopting policies to reduce unemployment or price levels. The Philips Curve depicts the negative relationship between unemployment and inflation. It becomes very difficult for the government's long-term economic growth to be achieved. The second limitation is that it lacks consideration

for the effect of inflation and the problems that could emanate from it. Thirdly, the theory inclines to minimize the impact of money on the important variables. To them, any change in the supply of money would only affect the economy's total income by influencing the interest rate. This theory was consistent with the findings of Meyer and Sanusi (2019). They further suggest that an increase in capital formation affects the growth of an economy in the short run (Van et al., 2021).

2.2.4 Monetarist Theory

Economists like Milton Friedman advocated the monetarist theory on spending and growth, emphasizing the role of monetary policy over fiscal policy. Monetarists argue that excessive spending by the government could lead to an increase in the price level by increasing the supply of money, which in turn erodes the value of money. They believe that controlling the supply of money with the use of measures like adjusting the rates of interest is a more effective way to stimulate economic growth while keeping inflation in check. In this view, government spending should be limited to essential functions, with a focus on maintaining stable monetary conditions to foster long-term economic growth. The theory emphasizes the importance of money in circulation and its ability to determine the price level and money GDP and the level of prices (Ahmed, 1999). According to Milton Friedman in 1956 submitted that the increase in levels of prices was due to the excessive supply of money. The effectiveness of any policies was to control the quantity of money in circulation. The monetarists based their argument on the positive relationship between the supply of money and national output. They argued that with the lack of government interventions, the country's economy would automatically move towards its long-run aggregate supply situation known as the Natural Rate of

Unemployment or Equilibrium state. The velocity of money in circulation is then anticipated, money changes would only affect real GDP indirectly (Odhiambo & Nyasha, 2018). They believed that the country is continuously in equilibrium at full employment. The Keynesian School hugely criticized this submission when they suggested a different shape for the LRAS with the economy going through three phases before arriving at the full employment level of output. Monetarists passionately disliked government interventions and tended to believe in the self-correcting nature of the free market. They disliked government spending and assumed that fiscal policy did not bring about the growth of an economy. Whenever it tried to achieve economic growth, then, monetary policy was present. Excessive interventions by the government through spending interfere negatively with the success of free markets. Government interventions take with them unnecessary social programs, bureaucracy, red tape, and large deficits (Cullison, 1993).

While the monetarist theory offers valuable insights, it has several shortcomings. Monetarists often assume that individuals and firms have rational expectations, meaning they accurately anticipate future economic conditions. However, in reality, people's expectations can be influenced by various factors, leading to unpredictable behavior. Monetarist models tend to oversimplify the real-world economy, neglecting factors such as imperfect information, market frictions, and institutional constraints, which can significantly impact economic outcomes. They downplayed the relevance of the effectiveness of the fiscal policy in managing the economy and emphasized strongly the effectiveness of the monetary policy. However, fiscal policy, including the spending by the government and taxation, can play a crucial role, especially during times of recession; or when specific sectors require targeted support (Lavoie, 2014; Tavani &

Zamparelli, 2017). Monetarist policies may struggle to prevent or mitigate asset bubbles, such as housing or stock market bubbles, which can lead to financial instability and economic downturns. Strict adherence to monetarist principles, particularly during economic downturns, could increase the risk of deflation, as it may lead to insufficient aggregate demand and downward pressure on prices, exacerbating economic problems (Drumetz & Pfister, 2021). Finally, Monetarist policies may be less effective in addressing supply-side shocks that could have significant implications for the growth of an economy and inflation. It has limitations in capturing the complexities and dynamics of real-world economic systems.

2.2.5 Crowding Out Theory

Bacon and Eltis (1970) developed the crowding out theory. The theory states that policy intervention by the government leads to a fall in private investment undertakings. The crowding-out theory of the spending by the government and the growth of an economy suggests that increased spending by the government can decrease spending by the private sector, thereby offsetting the intended stimulus effect (Aydin & Esen, 2019). According to this theory, when the spending made by the government is increased, borrowing by the issuance of bonds may be applied. This increases the demand for loanable funds, causing rates of interest to rise. A higher interest rate can discourage investment of private firms and consumption, as borrowing becomes more expensive for businesses and individuals. As the government expands its spending in certain sectors, it can lead to higher wages and increased demand for resources, which may crowd out private investment in those sectors. However, if the spending of the government is financed through taxation, it reduces disposable income for individuals and profits for

businesses, thereby reducing private sector spending and investment. Overall, the theory suggests that increased spending by the government can have the unintended consequence of reducing private-sector economic activity, potentially limiting the overall value of fiscal stimulus measures in promoting the growth of an economy. However, the extent of crowding out depends on various factors such as the size of the government's

The first type is a direct crowding out. A situation whereby the public sector utilizes the resources that the private sector would have used (Trotman, 1997). This activity prevents private sector spending and limits the growth of an economy. The use of tax revenues to finance spending causes a displacement effect. The second type of crowding out is indirect which happens when the spending by the government through taxation and borrowing causes a disincentive effect on production (Trotman 1997; (Afonso & Ibraimo, 2020).). Demotivation could occur because excessive government borrowing leads to an increase in inflation. However, if the government-owned sector increases production capacity, then the other sector would be ineffective (Bailey, 2020).

2.2.6 Musgrave-Rostow's Theory

The Musgrave-Rostow theory on expenditure and growth was developed by economists Richard Musgrave and Walt Rostow and focuses on the role of spending by the government in promoting economic development. This theory emphasizes two main functions of government spending:

Allocation Function: According to this function, government spending should allocate resources efficiently to promote the growth of an economy and its development. This involves the development of infrastructure, education, healthcare, and other essential sectors that can enhance productivity and stimulate economic activity. By deliberately

allocating resources, the issues of market failures, promoting equity, and a clean environment can be addressed by the government in the long term.

Stabilization Function: The stabilization function of government spending aims to mitigate fluctuations in the business cycle and maintain macroeconomic stability. During economic downturns, the spending by the government can increased to stimulate aggregate demand and reduce unemployment.

The Musgrave-Rostow theory advocates for a more balanced method of government spending, where fiscal policy is used not only to address short-term economic challenges but also to support long-term economic development objectives. By effectively allocating resources and stabilizing the economy, government spending fosters sustained and inclusive growth. The theory emphasizes the different stages of development. In the early stage of the growth of an economy, government investment is seen as a proportion of the economy's aggregate investment. The main function of the public sector is to provide social infrastructure such as railways, roads, transportation, sanitation and maintenance services, and other human capital investments. These are all important to boost the take-off of an economy into the mid-stage of growth and development away from the traditional society and precondition stage for take-off (Musgrave and Musgrave, 1989).

ROSTOW'S MODEL

05 High Mass Consumption
04 Drive To Maturity
03 Take Off
02 Traditional Stage - Preconditions for Take-Off
01 Traditional Society

Development

Time
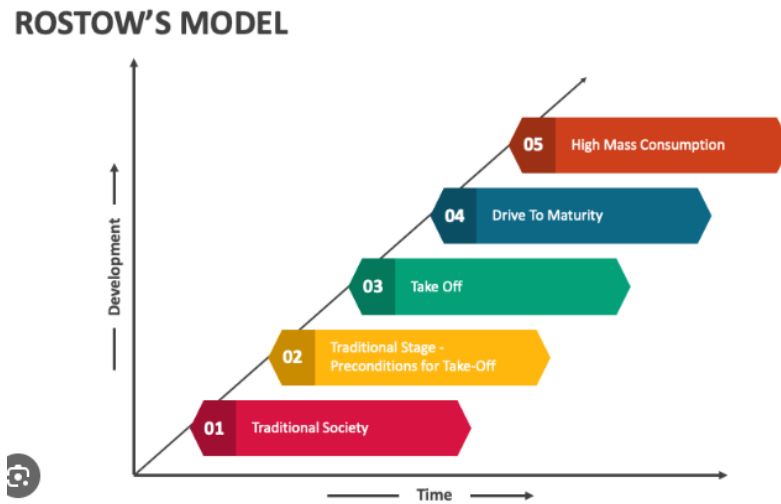
Figure 2.1: Model of Rostow on the Stages of Economic Growth

From the middle stage upwards, the government is expected to continue spending on investment goods that would be complementary to the growth of private sector investment (Bai, Hsieh, Song, & Wang, 2020).

2.2.7 Growth Theory of the Neo-Classical

This theory on an economy's growth also known as the Solow growth model is a framework developed by economists like Robert Solow to explain long-term economic growth in market economies. Neoclassical submissions emphasize the role of capital accumulation in the drive to achieve economic growth. Increasing the stock of physical capital leads to higher levels of productivity and output (Chandio et al., 2016). The model assumes diminishing earnings to capital, meaning that the more capital increases in an economy, the more marginal productivity of capital decreases. This implies that adding more capital to an economy eventually leads to smaller increases in output. While capital accumulation is crucial for economic growth, the neoclassical theory also recognizes the importance of technological progress. Technological advancements, such as innovations

in production techniques or the introduction of new technologies, may lead to increases in output and growth. In the neoclassical model, economies tend toward a steady state where the rate of growth of the output per capita stabilizes. At this steady state, the rate of capital formation and growth of the population balance out, resulting in stable levels of output per capita over time. Neoclassical theory advocates that an economy with a low level of capital per worker experiences a faster growth rate, prompting convergence in living standards among countries over time. This convergence occurs as less developed economies catch up to more advanced ones through capital accumulation and technological progress. According to the neoclassical theories, growth could be achieved by increasing the labor supply, capital stocks, productivity, and output, thereby holding land fixed. Real output increases as more and more people participate in the production process. This can be achieved by increasing both human capital and physical capital. Increased quantity and quality of human capital geared up productivity and real output. Physical capital, on the other hand, increases productivity and output because it improves the production capacity of labor directly through investment in equipment and machinery, thereby reducing labor hour loss. The public sector finances its programs to reduce alterations to private sector investment decisions (Burda and Wyplosz, 2001; Wang et al., 2019).

The shortcomings of this theory include the fact that it provides an insufficient explanation of how economic growth can be achieved and the theory failed to give a perfect understanding of the differences that exist among countries in terms of wealth accumulation. Some countries are rich nations while some are impoverished, and some countries are emerging while others are stagnated.

2.2.8 Endogenous Growth Model

This theory was proposed by Paul Romer and Robert Lucas (1990). It is a modern theory of economic growth that contrasts with the neoclassical growth theory, particularly in its treatment of technological progress. Unlike the neoclassical theory, which treats technological progress as exogenous (externally determined), the endogenous growth theory emphasizes that technological progress is endogenous (internally determined). This means that technological advancements accelerate research and development (R&D), human capital accumulation, and spillover effects from knowledge creation. Endogenous growth theory often assumes increasing returns. This implies that as the output level increases, the marginal productivity of capital and labor also increases. This implies that economies can experience sustained growth without facing diminishing returns, as in the neoclassical model. The theory highlights the importance of knowledge spillovers, where the benefits of technological innovation spread beyond the firm or individual that created it. This leads to positive externalities, as innovations can benefit other firms and sectors, fostering further innovation and the growth of the economy. Human capital accumulation, through training, and skill development, plays a crucial role in driving the advancement in technology and long-term growth of the economy in the endogenous growth theory. A more educated workforce is equipped to innovate and adapt to new technologies, and contribute to productivity growth (Gemmell, Kneller, and Sanz 2016, 524). The endogenous growth principle advocates that the policies of the government play a significant role in promoting the growth of an economy by fostering innovation and human capital development. Policies that support R&D, education, infrastructure, and institutions that facilitate knowledge creation and diffusion can enhance long-term growth prospects (Butkiewicz and Yanikkaya, 2011; Bucci et al.,

2021a; Bucci et al., 2021b;). The theory provides a dynamic framework for understanding the foundations of the growth of an economy, emphasizing the role of some internal factors such as human capital accumulation, technological advancement, and knowledge spillovers in driving sustained increases in productivity and living standards over time. This theory goes further to highlight the increased productivity as a function of an increased labor force in terms of quantity and quality. Therefore, growth is solely driven by the accumulation of resources while such accumulation is driven by increased investment of the private sector firms (Endogenous factors). However, unlike the neo-classical theory on growth, technical and technological change is not based on chance, but on fostered policies.

2.2.9 Summary of Theoretical Literature

The above theories offer different perspectives on the relationship between expenditure proposed by the government and the expected reaction to the growth of the economy, highlighting the complex interplay of factors that influence a country's economic trajectory.

Wagner proposed that as a country's economy develops, government spending tends to increase relative to GDP. This is driven by the rising demand for government-provided services like education, healthcare, and infrastructure. Peacock and Wiseman suggested that government spending tends to rise during times of crisis or war, leading to a ratchet effect where expenditure remains high even after the crisis has passed. Keynesian schools argued that the spending by government spending can stimulate the growth of an economy, particularly during recessionary periods, by boosting aggregate demand and creating jobs through fiscal policy measures like infrastructure spending and tax

cuts. Crowding Out theory posits that increased government spending can crowd out the investment made by private firms, potentially leading to higher interest rates and reducing private sector activity. Neoclassical economists emphasize the role of market forces and the importance of factors that drive the growth of an economy. They generally advocate for limited government intervention in the economy. On the part of Musgrave and Rostow, government expenditure should focus on promoting economic development by investing in human capital, infrastructure, and institutions that support long-term growth, rather than solely on consumption or redistribution. The Endogenous Theory of Growth popularized by economists like Romer and Lucas, emphasizes the role of innovation, human capital, and institutional factors in driving the growth of an economy. Government expenditure fosters innovation and education, thereby promoting long-term growth. Monetarist economists, influenced by Milton Friedman, argue that the intervention of the government in the economy should be limited to maintaining price stability and avoiding arbitrary monetary growth, which can lead to inflation and hinder long-term growth. Almost all the theories discussed above apply to the growth of China's economy. The most effective theory as submitted by some earlier researchers is the Keynesian theory of growth. Keynesian economists argue an economy can achieve growth through government spending during a recession by boosting aggregate demand and creating jobs through fiscal policy measures (Hall and Kudlyak, 2022).

2.3 The Empirical Literature

Numerous pragmatic and experiential literature were compiled on the impact of the expenditure of the government on the steady growth rate of an economy. The related empirical literature on the subject matter of the expenditure of the government and the

growth of the economy is vast and multifaceted, with studies providing a range of findings and interpretations. The following are delve into some key empirical findings and discussions from various studies:

Landau (1983) compiled panel data from twenty-seven (27) Developing Countries to study the relationship between the categories of government expenditure and the growth of an economy. The technique adopted was the Ordinary Least Squares (OLS) methodology. The variables used were government-spending patterns categorized as consumption and investment expenditure. The study adopted the model given as:

$$\frac{\Delta Y}{Y} = \alpha\left(\frac{I}{Y}\right) + \beta\left(\frac{\Delta L}{L}\right) + \left(\frac{G}{Y}\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2.2)$$

Where; **Y** = GDP; **I** = Productive Spending of the Government; **G** = Consumption Expenditure of the Government; β = Elasticity of the nongovernmental output concerning labor; α = Marginal Production of K in the other sectors; and **L** = Labour input.

The results of the survey were given that consumption spending harmed economic growth, while productive expenditure was positively correlated to economic growth. Public investment in communication and transportation was positively correlated to economic growth. Landau's conclusion was sustained by the findings and outcomes of Canning and Fay (1995) which was done using infrastructural growth and showed a connection between the growth of physical stock and roads revealed in their research. However, public-sector investment sloped negatively related to private-sector investment. Infrastructural development and investment were the major strengths of the findings, but the general government investments were not. The research was weakened because it did not conduct a causality test to show connections. The Ordinary Least

Squares (OLS) methodology was adopted but no economic theory was introduced to support the study.

Koori (1984) studied the intricacies of the crowding-out effect in LDCs. He also used the Ordinary Least Squares method. He established that growth as a result of government deficit financing crowds out private sector activities. The work utilized the time-series data. Koori's study measured public investment which was just one aspect of the spending by the government. The public consumption was not given due consideration. The main flaw of Koori's study was the inability to account for the long-run effect of the variables used for cointegration analysis.

Landau (1986) stretched his earlier study by researching another sixty-five (65) countries with similar rates of growth in income per head to other independent variables. The variables include the structure of production, human and physical capital, political and historical factors, geo-climate and resources, three-year lagged average as a proportion of the spending, foreign conditions of the economy, and population from the GDP disaggregated into defense, education, and transfer payments. The impact of military spending and the net effect on taxation was essentially zero. This was shown in the final results. Thus, the previous study was substantiated and its findings were re-affirmed (Landau, 1983).

Ram (1986) investigated the magnitude of government and its impact on the growth of an economy based on cross-section and time-series analyses. Private investment, growth of the labor force, and government spending were variables used for the study. Ram (1996) conducted a comprehensive study using data from 76 countries over 20 years to analyze the long-term relationship between the expenditure of government and the

economy's growth levels. He found a relationship that was considered to be positive between government investment in physical infrastructure and the growth of an economy but noted that excessive government consumption expenditure could impede growth.

$$\frac{dY}{Y} = \alpha \frac{I}{Y} + \beta \frac{dL_D}{L} + \lambda \frac{dG}{Y} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2.3)$$

where $(\frac{dY}{Y})$ is the a measure of economic growth, $(\frac{I}{Y})$ is the ratio of gross investment to GDP, $(\frac{dL_D}{Y})$ is the growth of labour force, and $(\frac{Cg}{Y})$ is the ratio of government consumption to GDP.

The study is relevant to China's economy since as an emerging economy, the composition of the spending by the government is important as it was based on a mixed economic system that allowed for the co-existence of both the public and private sectors. However, the result findings were not reliable because they were subjected to researcher bias because of the failure to create provisions for some related variables. The specification and researcher biases resulting from the growth lapses refer to the linear relationships between the variables and growth, whereas it is nonlinear.

Robert Barro's seminal work (1990) on the topic established a mixed connection between expenditure and the growth of an economy across countries. He stated, "The aggregate evidence of the weakness of this relationship. Perhaps the most striking feature of this evidence is its lack of robustness." Barro's study emphasized the importance of GDP per capita, human capital, and political stability. He explored the connection between growth

and finance. See below the formula used to make evaluative comments about growth and the spending of the government by Barro:

$$\gamma = \lambda(1-\tau)(1-\alpha)A^{\frac{1}{(1-\alpha)}}\left(\frac{g}{y}\right)^{\frac{\alpha}{(1-\alpha)}} - u \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.(2.3)$$

Where; λ and **u** = Parameters for Utility Functions; τ = Rate of Tax

G = Productive Spending of the Government; γ = Rate of Growth in the Long-Run; **A** = Factor of Production; **y** = GDP; and α = Elasticity.

It was concluded by Barro that the real GDP per capita growth rate was positively correlated to the accumulation of human capital but consumption and investment were negatively associated with real GDP per capita. The submission stated further that the consumption of the government did not relate in any way to private sector productivity instead it reduces growth and savings through its distortionary impact on taxation and spending patterns. Barro (1991) in his later work, found that government spending could harm economic growth. An increase in the spending of the government by 5 percent reduced growth by 0.66 percent. Barro (1991), in a follow-up study, Barro analyzed the consequences of the forms of expenditure made by the government on the growth of an economy. He found that while public investment in infrastructure could positively influence growth, government consumption expenditure had a negative impact. Barro concluded, "The evidence also suggests that higher government consumption spending is associated with lower growth rates."

Kweka (1995) investigated the Tanzanian economy and explored the impact of the spending by the government on the economic performance of the country. He based his findings on the period 1965 to 1995. The model used by Kweka is given below:

$$\frac{\partial Y}{Y} = \frac{I_p}{Y} + \frac{I_G}{Y} + \frac{\partial l}{L} + \left[\partial G + \frac{\partial K}{1}\right]\left(\frac{\partial G}{G}\right)\left(\frac{G}{Y}\right) \dots\dots\dots\dots\dots\dots\dots\dots(2.4)$$

Where; **Y** = GDP; **Ip** = Investment by Private Firms; **IG** = Investment by the Government; **K** = Capital Input; **L** = Labour Input; and **G** = Government Expenditure.

Auto-Regressive Distributed Lag (ADL) was the estimation technique used for the single equation study. The study used time-series data from Tanzania (1965 - 1995). The study's findings showed that an economy reacts differently to different types of government spending. It showed that two economies cannot respond the same way if the same spending is injected. The results showed that Recurrent expenditure contributed more to the economic growth of the country than capital expenditure. Specific sectoral spending on specific sectors such as defense, health, and other social services contributed positively to the growth of the economy in question. Spending on administration and services was less contributive to growth while spending by private investors on private investments had an increased impact on growth and a multiplier effect on spending on education, health, education, and social services. Spending on defense and general Administration posed a negative impact on the growth of an economy. Furthermore, the restrictive methodology used posed a weakness to the study because it was conducted for a single equation which failed to test for causality.

Easterly and Rebelo (1993) explored the relationship between the magnitude of the government and growth level using a panel dataset of over 100 countries both developed

and developing from 1970 to 1988. They found mixed evidence, stating, "There is no consistent correlation between the chosen variables in cross-country data. Budget Surplus, investment consumption, taxes, human capital, and other spending of the government were variables used for the study. The findings were concluded on the negative impact of investment made by the government investment on the growth of an economy. Government consumption was seen to harm growth but benefits private investment. Above all, infrastructural development spending positively affects private firms' investments and growth.

Lin (1994) followed the same pattern as the study presented by Easterly and Rebelo (1993). They also used panel data to investigate 62 developing and developed countries for the periods of 1960-1985. Lin adopted a different methodology for the study. He used the General method of Moments (GMM). Public investment, spending, rates of growth, and labor force were the variables used. The results of the study were not convincing enough because the economies studies were mixed and the study failed to present its findings about developed or developing economies.

Another notable scholar who presented reliable findings regarding the spending by the government and the growth of an economy was Cashin. This study was carried out in the year 1995. He scrutinized the endogenous growth theory to study the impact of transfers, government investments, and tax reductions on the growth rate of an economy. 23 advanced nations were the sampled population for the study between the periods of 1971 and 1988. The research's methodology was the time-series data with an in-built cross-sectional framework. What made the study unique was the fact that it considered a model infinitely which gave room for dynamic government spending by

growth of the private and public sectors and by building their capacities which were endogenously determined. It was presumed by the study that a given sample of homogenous economic stakeholders maximized a fixed inter-temporal elasticity of the substitution utility function:

$$U = \int_0^\infty u[c(t)]e\text{-}\rho t \ dt \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2.5)$$

where **c** = Per head consumption and **ρ** = represents the rate of time preference. The model was:

$$\rho + \delta y = \left(1 - T_1 - T_2\right)A^{\frac{1}{(1-\alpha-\beta)}}y^{\frac{-\alpha}{(1-\alpha\beta)}}T_1^{\alpha(1-\alpha-\beta)}T_2^{\frac{\beta}{(1-\alpha-\beta)}} \ldots\ldots\ldots\ldots\ldots\ldots \ (2.6)$$

where; **A** = represents the level of technology; **β** = the elasticity of output; **T1** = the Marginal rate of tax on output and capital; **T2** = the Transfer Tax used; **y** = the inherent rate of GDP growth; and **ρ** = the rate of time preference.

$$\text{Given} \qquad \text{that} \qquad T_1 = \frac{G}{Y} = IGOV; T_2 = \frac{T}{Y} = SOCSEC \qquad \text{and}$$

$$\left(1 - T_1 - T_2\right) = \left(1 - CURREV\right)$$

IGOV = the ratio of the investment of the government to GDP.

SOCSEC = the transfer to GDP.

CURREV = the ratio of tax revenue to GDP.

Acclaimed Ordinary Least Squares were the estimating techniques with an input of the panel data. The linearity of the variables was assumed, though it might be wrongly

presumed. The OLS conclusion added the short-run and long-run effects of the spending by the government on the growth of an economy. The study tested the Granger causality between the spending by the government spending and national output. Examples of productive spending included in the study are public investment intergenerational equity and transfer payments. However, the magnitude of the government was restricted by the availability of the funds of such government which could be spent by the levying of contractionary taxes. The study failed to generate more data through important variables that could impact the growth of an economy.

Kneller et al. (1999) investigated Twenty-Two OECD countries. He based his study on the period from 1970 to 1995 using the panel data. The selected variables used by this scholar were not too far from the ones adopted before the study was carried out. Government investment, government spending, government consumption, and taxes were the variables considered in this study. The method deployed to evaluate the effect of the spending by the government on the growth of an economy was General Methods Moments (GMM). Major investments made by the government enhanced economic growth while consumption by the government deterred economic growth. This was consistent with the submission of Easterly and Rebelo (1993). Ghali (1999) also did a study in the same year as Kneller et al. (1999) on the effect of the spending by the government on the growth of the economy of OECD countries from 1970-1995. He used time-series data to analyze his study. The variables used by Ghali were government investment, imports, and exports. The consideration of this study was the Granger Causality Test but not the direct consequence of spending on growth in the OECD countries.

Njuguna (1999b) investigated ASEAN countries from 1960-1995. He used time-series data for his study. The variables evident were the balance of the current account, exchange rate, and budget deficit. The study used the OLS technique to explore how the exchange rate, budget deficit, and the positions of the current account of a country can affect the growth rates of that country. Increased public debt is the aftermath effect of the huge budget deficit. The increased debt places serious weight on the rates of interest leading to a total crowding out effect. The rising rates of interest cause the nominal exchange rate to appreciate leaving the country with more available foreign currency because domestic assets would be greatly demanded by foreigners. The appreciation of in exchange rate value raises the export prices and makes imports cheaper and the current account of such a country would be worsened. This automatically reflects on the nation's income. The study is weakened by the inclusion of overall budget utilization without a focus on the allocation of government resources. Another shortfall was that the study did not utilize the cointegration test.

Dunne and Nikoloidou (1999) also used time succession data to study the effect of the spending by the government on the growth of an economy using Greece as a case study from 1960-1996. On their part, they used military expenditure, government consumption, and defense as the variables. They adopted the Ordinary Least Squares (OLS) method. In the analytical part of the study, they later introduced the stationarity tests and cointegration analysis tools for more validation. The results from this study showed that spending on military/defense would harm economic growth while spending on government consumption would not harm the growth of the economy. The weakness of the study was the use of OLS methodology. This method would not give an accurate estimate when the variables are not linked with sufficient theories.

Njuguna came up with another in 2009 described as (Njuguna, 2009a). This study was based on time series data from 1963 to 2006 on the spending by the government on the growth of the economies in East Africa. The study examined the points of real capital spending on education, defense, health, agriculture, and other levels of spending as they affect the growth of an economy. It implemented a parallel test based on the supportive argument that the spending by the government on its projects does affect the activities of private firms. The below model used adopted:

$$ZI_t = g(E_t)$$

$$\text{where } E = I_{Br} + W_{gr} + D_{Br} + \gamma_{gr} \text{---} \tag{2.7}$$

$\mathbf{ZI_t}$ = Level of Real Private Investment at time t; $\mathbf{I_{Br}}$ = Capital Spending; $\mathbf{W_{gr}}$ = Government Real Wage Bill; $\mathbf{D_{Br}}$ = Real Debt Servicing; $\mathbf{E_t}$ = Real Aggregate Government Spending; and $\mathbf{\gamma_{gr}}$ = Real Maintenance and Government operations.

The result of this study displayed a need for spending prioritization by the government in the allocation of spending in the different sectors by adopting the basic concept of the scale of preference. Such that places priorities on the most important sectors to the least important sectors. The problem with this would be the determination of which sector is most important and which is least important.

This study's strength was the disaggregation of the total government spending into different sectors. This allows for balanced growth because various sectors would receive allocations in the economy for all-around growth through numerous contributions. However, M'Amanja and Morrisey in 2005 sum the total spending of the government in both productive spending patterns and unproductive spending patterns. The failure to

test for causality is a major weakness. The study did show the desired responses of the spending by the government on the growth of an economy. The study by Njuguna (2009a) conducted the Causality test and used the Vector-Auto Regression method for its analysis.

Alesina and Perotti (1996) examined the impact of the government's magnitude on the economic performance across OECD countries. They found evidence supporting that high spending by the government, particularly on consumption, was associated with lower growth of the economy. Their study concluded, "We find a significant negative connection between consumption spending of the government and economic growth."

Blanchard and Perotti (2002) studied the fiscal policy effects on the economy's growth in OECD countries. They found that increases in government expenditure could have short-term positive effects on growth during periods of economic downturn but could also lead to long-term negative effects if not accompanied by fiscal discipline. Their study concluded, "The effects of spending made by the government spending on output have a short run significance but tend to be damaging in the long run."

Dreher and Schneider (2010) conducted a meta-analysis of 671 estimates from 52 studies to assess the relationship between this subject matter of government size and the growth of an economy. They found that the impact of expenditure of the government on growth varied depending on factors such as country size, level of development, and institutional quality. The study concluded with the fact that the growth of the economy is heterogeneous across studies and difficult to generalize."

These empirical studies highlight the complexity of the concepts of the expenditure of the government and the growth of an economy, with findings varying factors such as the

expenditure types, country-specific characteristics, and the time under consideration. While previous studies suggest a negative relationship, others find positive effects of public investment on infrastructure.

Cerra and Saxena (2008) analyzed data from 98 countries over a period of four decades to investigate the relationship under investigation. They found that the spending by the government on education and health correlated positively with the long-term growth of the economy. The study concluded, "Expenditure of the government on education and health have a proven significance on the growth of output."

Romer and Romer (2010) conducted a study on a cross-section of 112 countries from 1960-1985. He surveyed the impact of changes in the expenditure of the government on the growth of an economy using a narrative approach. They found that increases in government spending, particularly on investment and infrastructure, could have positive effects on economic activity. Their study stated, "Our estimates suggest that an increase in the purchases of the government by 1% of GDP raises real GDP by about 0.8% within two years."

Davoodi et al. (2011) investigated the relationship between controlled expenditure and the growth of an economy using panel data from sampled low-income countries. They found that while government investment in physical and human capital positively influenced growth, excessive government consumption expenditure could impede economic development. Their study concluded, "Government investment in infrastructure and training has a positive consequence on the growth of an economy, while excessive consumption expenditure government has a negative influence."

Mulas-Granados (2005) conducted a meta-analysis of 41 studies to measure the relationship between the expenditure made by the government and the level of growth experienced by an economy. He found that while there was heterogeneity in the results across studies; government investment in infrastructure consistently showed a positive association with growth. His study concluded, "The evidence suggests that the investments of the government in infrastructure can significantly impact on growth."

Eicher and Turnovsky (2010) developed a dynamic general equilibrium model to explain some consequences of the expenditure of the government on long-term growth. They found that government spending on infrastructure and education could enhance efficiency and stimulate the growth of the economy in the long run. Their study stated, "Government spending on productive infrastructure and human capital accumulation can have a positive effect on the long-term growth of an economy thereby enhancing productivity."

Baum and Crosby (2015) conducted a study focusing on the Australian economy and found evidence suggesting that increases in government expenditure, particularly on infrastructure projects, could have multiplier effects, and stimulate economic growth. Their study concluded, "Government investment in infrastructure has the potential to boost economic growth through multiplier effects, particularly during periods of economic downturn."

Recent empirical studies highlight the nuanced relationship between expenditure proposed intermittently by the government and the expected growth witnessed in the economy, emphasizing the importance of expenditure composition, fiscal sustainability, and the quality of public investment in influencing long-term economic outcomes. While

some studies suggest positive consequences, others underscore the potential drawbacks of excessive consumption expenditure or high levels of debt.

Bergman and Giancarlo (2016) conducted a study focusing on Latin American countries and found that expenditure of the government on education and infrastructural development can positively correlate with the growth of an economy. They highlighted the importance of efficient public investment in boosting productivity and fostering long-term growth.

Akhmat et al. (2017) analyzed the expenditure of the government and its impact on an economy's growth level in emerging markets. Their study found evidence suggesting that investment of the government in infrastructure projects, particularly those aimed at improving transportation and communication networks, could have significant beneficial effects on the growth of an economy and its subsequent development.

Wong and Choong (2018) investigated the effect of expenditure on the growth of the economies in ASEAN countries. They found that while government spending on education and healthcare contributed positively to growth, excessive government consumption expenditure could crowd out private investment and hinder long-term economic development.

Abdelmoula et al. (2019) investigated the effects of the categories of expenditure of the government in terms of its composition on the growth of the economy in Northern African nations. Their study found that increases in government investment in infrastructure and human capital positively influenced growth, while high levels of government consumption expenditure had negative effects.

Thanh & Canh (2019) investigated the changes in the spending by the government and the growth of the Chinese economy by affecting the growth of productivity of investment in human capital by the application of Markov Switching Estimates in its calculations for China's yearly time series data from 1952 to 2014. The study relied heavily on the productive growth analysis when examining these impacts.

Firstly, the researcher found that China's economy occurs in two conditions. Levels one and two exist with a low and high growth level respectively. Secondly, the expenditure on consumption has a huge positive impact on the two conditions mentioned. Excitingly, the growth impact of the consumption spending level is different in both conditions. Thirdly, the joint impact of consumption and the spending on the military and the development of human capital is dependent on the state. The study adopted the MSR model. The switching mechanism is an outstanding characteristic of this illustration. It is determined by an economy-disregarded variable.

$$P = \begin{bmatrix} p_{11} p_{12} \\ p_{21} p_{22} \end{bmatrix}$$

where $p_{11} + p_{12} = 1$ and $p_{21} + p_{22} = 1$.

$p_{11} = P_r[s_t = 1|s_{t-1} = 1]$ and $p_{12} = P_r[s_t = 2|s_{t-1} = 1]$

$p_{22} = P_r[s_t = 2|s_{t-1} = 2]$ and $p_{21} = P_r[s_t = 1|s_{t-1} = 2]$

.... (2.8)

Where;

S_t = the first-order chain of Markov

$S_{t-1}, S_{t-2}....., S_{t-k}$ = State's variables current values.

Probability of S_t = $Pr(S_t = j!S_{t-1} = i)$ = P_{ij}.

Values of Probability closer to 1 = More persistent process.

S_t (1,2) = Two-state process

Transition can be expressed in a 2 by 2 matrix.

Narayan et al. (2021) investigated the consequences of spending allocations of the government in the Pacific Island countries. Their study found that the spending by the government on education and healthcare had a significant impact on growth, especially in countries with low levels of human capital. They emphasized the role of effective public policies in promoting inclusive and sustainable economic development.

Alimi et al. (2022) studied the relationship between the spending by the government on the growth of the economies in Sub-Saharan African countries. Their study found that government investment in infrastructure and education positively influenced growth, but the effectiveness of expenditure varied depending on institutional factors and governance. They highlighted the importance of targeted and efficient public investment policies in driving economic development.

Basher et al. (2023) led a meta-analysis of studies on the topic of spending distribution and growth outcomes across a diverse set of countries. Their evidence was drawn from emerging ASIA and the effect of capital flight on economic growth. They found that while there was heterogeneity in the results. Government investment in physical and human capital consistently showed positive associations with growth, highlighting the importance of targeted public investment policies.

These studies from the specified time frame (2008-2024) illustrate the ongoing relevance of expenditure and growth, with findings emphasizing the importance of spending composition, efficiency, and effectiveness in shaping long-term economic outcomes across different regions and contexts.

Overall, the empirical literature continues to provide valuable insights for policymakers seeking to optimize the role of the spending of the government in fostering sustainable economic development. The empirical literature underscores the importance of careful empirical analysis and consideration of contextual factors in understanding the relationship being investigated.

2.4 Literature Overview of the Empirical Studies

The empirical literature showed that most of the research was specific to different countries and the time series data used were different from one another. Therefore, it is evident that the policymakers of other countries cannot adopt the conclusions drawn by the different researchers. The usefulness of those conclusions is limited to the environment in which the study was conducted. The diversity of the experiences of the researchers and the different variables used also limit the adoption of the findings from these studies. Current studies have tried with various attempts to reduce the limitations identified with the past studies by making provisions for generalization by identifying key areas in the components of government spending and analyzing the identified key areas. Moreover, the current studies have attempted to adopt the same variables for different countries of study for easy comparison and generalizing with findings emanating from the different studies because the variables and methodology used are the same. Most of the research done by different scholars on the concept of the spending

of government and the growth of an economy adopts the Ordinary Least Square (Arestis et al., 2021). The mentioned econometric approach is adequately efficient in estimating the complexity of the relationship between the economy's macroeconomic variables. This calculation of operational research equations required Causality testing given that most of the macroeconomic variables did not theoretically and directly relate to each other. Failure of any methodology tool to verify the cointegration of two or more variables could result in false submissions and spurious outcomes. To ameliorate the foreseen shortfalls, time series data has to be adopted to check for unit roots (Pesaran, 2007). Cointegration would be implemented so that inferences could be drawn on relationships between the chosen variables. The conduction of the Granger-causality test was effective in showing an accurate relationship between variables. Vector Autoregressions (VAR) produce the impulse reaction roles to interpret the outlined impact of the components of government spending. The VAR method was the favorite of current researchers on the topic of the spending of the government and the growth of an economy because of the theoretical link between the components. Wagner's law in the Chinese context posits that as economies develop, government expenditure tends to increase. The rapid economic growth and industrialization in China have been accompanied by significant increases in government expenditure, particularly on infrastructure, healthcare, and education. The Endogenous Growth Theory recommends that the expenditure of government can be crucial in promoting the long-term growth of an economy by investing in human capital, technology, and infrastructure. In China, government policies aimed at fostering innovation, education, and infrastructure development align with the principles of endogenous growth theory. Developmental State Theory emphasizes the position of the state in guiding and supporting the development of the economy through

strategic interventions, including targeted government expenditure. In China, the central role has been taken by the government in driving the growth of the economy through investments in key industries, infrastructure projects, and technological innovation. Neoclassical economists argue that market forces and efficient resource allocation are essential for economic growth. While China has embraced market-oriented reforms, the government continues to play a substantial role in directing and managing the levels of development in the country, challenging some aspects of pure neoclassical theory. Numerous empirical academic submissions have highlighted the relationship between expenditure and growth in different parts of the world but this study is unique because of its dominance on China's infrastructural projects and the growth of the economy. Investments in transportation, energy, telecommunications, and urban development have been shown to stimulate productivity, attract investment, and facilitate economic expansion. Government expenditure on education and healthcare has also been a focus of empirical research in China. Studies have found that investments in human capital contribute to long-term economic growth by improving labor productivity, reducing healthcare costs, and fostering innovation and entrepreneurship. Empirical studies examined this proposed impact on reducing regional disparities in China. While government policies aimed at promoting economic development in less-developed regions through infrastructure investment and fiscal transfers have been effective to some extent, challenges remain in achieving balanced regional growth.

Overall, the literature on the concepts of the spending by the government and the growth of the Chinese economy reflects the country's unique development experience, characterized by a combination of state-led policies, market-oriented reforms, and rapid economic expansion. Theoretical frameworks provide conceptual insights into the role of

government in driving growth, while empirical studies offer empirical evidence on the effectiveness of the policies of the government on expenditure patterns in achieving economic objectives and addressing socio-economic challenges.

2.5 Summary

In summary, this review of related literature examined major aspects of theoretical and empirical literature. Acclaimed economists based the theoretical literature on past theories. However, the empirical literature was based on both past and current scholars on the subject of spending by the government and the growth of an economy. The literature on these concepts in China encompasses both theoretical frameworks and empirical studies, providing insights into the country's economic development trajectory.

The research study seeks to provide the following research questions with appropriate answers:

(i)   What is the relationship between the government spending components and the overall growth of the Chinese economy?

(ii)   What are the effects of the government spending components on the growth of the economy?

(iii)   What is the effect of the spending reforms by the government on the growth of the economy?

(iv)   What is the effect of the 14th Five-Year Plan (2021–2025) on the growth of the economy of China?

Chapter 3 concentrated mainly on the research methods and methodology, research design, theoretical Framework, the empirical model and Estimation techniques, definition and measurement of variables, instrument of data collection, time series

properties, and data analysis techniques. In the next chapter, the empirical models adopted were presented, the variables were vastly defined, and the data source, methods, and analysis style were explained.

CHAPTER 3

RESEARCH METHODS AND METHODOLOGY

3.1 Introduction

This chapter presented the realistic model agreed upon for this study. Some of the different variables utilized were well-defined, explained, and evaluated with the data tools. The appropriate data and sources of data collection and methodology adopted were properly articulated for a better understanding of this research work. Government spending plays a pivotal function in reshaping an economy's landscape of nations, influencing various aspects of economic growth, development, and stability. In the context of China, a rapidly growing and evolving economy, the spending by the government has impacted the growth of the economy greatly and this has garnered significant attention from policymakers, researchers, and economists. As China continues to undergo profound socioeconomic transformations, understanding these concepts' relationship is essential for formulating effective policies and strategies to promote sustainable development and prosperity. This research aims to investigate how impactful the spending made by the government of China is on the economic growth of the country, examining the dynamics, mechanisms, and implications of government expenditure on key macroeconomic indicators and growth outcomes. By exploring this relationship in depth, this study provides valuable insights for policymakers, practitioners, and scholars interested in understanding the drivers of China's economic growth and development. The following research questions were formulated to achieve the stated aims:

(v)   What is the relationship between the government spending components and the overall growth of the Chinese economy?

(vi)   What are the effects of the government spending components on the growth of the economy?

(vii) What is the effect of the spending reforms by the government on the growth of the economy?

(viii) What is the effect of the 14th Five-Year Plan (2021–2025) on the growth of the economy of China?

3.2 Research Strategy & Design

The study's design is geared towards investigating the consequences of government spending from 2008 to 2024 on China's economic growth. The study also investigated the success and failures of the recent five-year plan (2021-2025) for sustainable economic growth in China. The study adopted the quantitative data methodology and the data collected was evaluated to proffer solutions to the research questions formulated for this study. Data between 2008 and 2024 regarding categories of government spending was used to analyze the fundamental questions of this study. The categories considered are government consumption, public order maintenance, government investment, health care, physical infrastructure, public debt servicing, general management and services, military and defense, education and training, essential economic affairs, and general security. The data collected was estimated with the use of the VAR diagnostic tests model after the completion of the unit root tests.

3.3 Theoretical Framework

The model that captured almost all components of government spending was adopted for this study. In this study, the framework of Chen and Lee (2005) based their findings upon the 'endogenous model' that Ram (1986) submitted earlier. This was the first of its kind to be deployed. The newly modified form of Ram's (1986) model was selected because it was based on endogenous growth theory. Chen and Lee (2005) also argued that increased spending was not beneficial to the growth of a country. However, it depressed the expected growth through the crowding-out theory and increasing taxes (Aydin & Esen, 2019). The variables could easily be disaggregated into the different aspects or components of government spending based on the different sectors. Furthermore, the model showed evidently that spending by the government has an externality impact on the output of the private sector. The model showed the different sectors' output discrepancies in government spending. Therefore, the endogenous growth model formed the basis for various empirical models of spending and the growth rate of the economy. It was an acceptable principle that economic growth could be attained if labor and capital were supported by extra input by the government in the production function formula. The production function provided the relationship that existed between the spending of the government and the growth of the economy. The model was thus expressed as follows:

(D) denotes the Private segment output and **(G)** denotes the Public segment output. **K & L** are used to represent Capital and Labour which are expressed to the different sectors as:

- **Capital (Private Sector and Public Sector): $K = K_D + K_G$.**

- **Labour (Private Sector and Public Sector): L = L$_D$ + L$_G$**

To cater to the externalities created by the private sector, **(G)** was introduced into the private sector (D) production function:

$$D = D(K_D, L_D, G) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.1)$$

$$G = G(K_G, L_G) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.2)$$

Let us assume a situation of a fixed productivity difference between labor and capital in the two sectors:

$$\frac{G_L}{D_L} = \frac{G_K}{D_K} = (1 + \delta) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.3)$$

where $\delta > 0$ implies lower productivity in the public sector (the reverse would be the case if $\delta < 0$) and $\delta \neq 0$

Totally differentiating (3.1) and (3.2), given that national income $Y = D + G$, gives

$$dY = D_K dK_D + G_K dK_G + D_L dL_D + G_L dL_G + D_G dG \dots\dots\dots\dots\dots\dots\dots(3.4)$$

Where **D$_K$** was the marginal output of factor K in sector D (Private Sector) and **G$_K$** was the marginal output of factor K in sector G (Public Sector). Likewise, **D$_L$** was the marginal output of factor L in sector D (Private Sector) and **G$_L$** was the marginal product of factor

L in sector G (Public Sector). In addition, **D$_G$** was the marginal external impact of the private sector on the public sector. Applying (3.3):

$$G_L = (1+\delta)D_L \dotfill (3.5)$$

Mathematically, let us substitute (3.5) into (3.4) and re-arrange the equation:

$$dY = D_K dK_D + G_K dK_G + D_L dL_D + D_L dL_G + \delta D_L dL_G + D_G dG$$

$$dY = D_K dK_D + G_K dK_G + D_L(dL_D + dL_G) + \delta D_L dL_G + D_G dG \dotfill (3.6)$$

Using (3.5) then:

$$dG = G_K dK_G + (1+\delta)D_L dL_G$$

This implied:

$$\frac{dG}{(1+\delta)} - \frac{G_K}{(1+\delta)} dK_G = D_L dL_G \dotfill (3.7)$$

Substituting (3.7) into (3.6) and collecting terms:

$$dY = D_K dK_D + G_K dK_G + D_L(dL_D + dL_G) + \delta\left[\frac{dG}{(1+\delta)} - \frac{G_K}{(1+\delta)} dK_G\right] + D_G dG$$

$$dY = D_K dK_D + G_K dK_G + D_L dL_D + D_L dL_G + \delta\left[\frac{dG}{(1+\delta)} - \frac{G_K dK_G}{(1+\delta)}\right] + D_G dG$$

$$dY = D_K dK_D + D_L dL_D + G_K dK_G + \left[\frac{dG}{(1+\delta)} - \frac{G_K dK_G}{(1+\delta)}\right] + \delta\left[\frac{dG}{(1+\delta)} - \frac{G_K dK_G}{(1+\delta)}\right] + D_G dG$$

$$dY = D_K dK_D + D_L dL_D + G_K dK_G + (1+\delta)\left[\frac{dG}{(1+\delta)} - \frac{G_K dK_G}{(1+\delta)}\right] + D_G dG$$

$$dY = D_K dK_D + D_L dL_D + G_K dK_G + dG - G_K dK_G + D_G dG$$

$$dY = D_K dK_D + D_L dL_D + (1 + D_G)dG \dotfill (3.8)$$

Assuming there exists a seeming less direct correlation between the marginal product of labor in each of the identified sectors and the average product per unit of labor in the economy, i.e.

$$D_L = \left(\frac{Y}{L}\right)$$

Letting **dKD = I** which is termed as Gross Investment. Let us find the result when we substitute it into (3.8) and divide through by Y:

$$\frac{dY}{Y} = \frac{D_K I}{Y} + \frac{D_L dL_D}{Y} + \frac{(1+D_G)dG}{Y}$$

$$D_L = \frac{Y}{L}$$

$$\frac{dY}{Y} = D_K \frac{I}{Y} + \frac{\frac{Y}{L}dL_D}{Y} + \frac{(1+D_G)dG}{Y}$$

$$\frac{dY}{Y} = D_K \frac{I}{Y} + \frac{dL_D}{L} + \frac{(1+D_G)dG}{Y} \quad\text{...(3.9)}$$

However, assuming that $D_K = \alpha$, $(1 + D_G) = \lambda$ and including a coefficient for

$\dfrac{dL_D}{Y}$ variable, the equation (3.9) became:

$$\frac{dY}{Y} = \alpha \frac{I}{Y} + \beta \frac{dL_D}{L} + \lambda \frac{dG}{Y} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.10)$$

where equation (3.10) corresponded to Ram (1986) equation. Thus, equation (3.10) formed the basic model for regression estimation. The theoretical framework presented above predicts that economic growth ($\dfrac{dY}{Y}$) responds to the ratio of gross investment (I) to GDP, growth of labour force $\dfrac{dL_D}{Y}$ and the ratio of government consumption to GDP ($\dfrac{Cg}{Y}$). The mechanisms through

the means of measuring this effect. Primarily, infrastructural development investment could have a direct impact on China's economic growth through increased capital stock in the economy. Secondly, negative externality harms the third party and it's the government's job to make provision for marginal external costs. The impact of externality on government spending could affect the growth of an economy. This indirect negative effect on economic growth is a result of increased marginal product of factors of production that were supplied privately through spending on health, education, and recreational services. Thirdly, government spending on the consumption of commodities and related services increases total demand (AD). Finally, the productivity differences of the different segments of the economy thereby making some sectors to be more productive than other sectors in the same economy (Felice, 2016; Shkodra, et al., 2022).

3.4 The Empirical Model and Techniques of Estimation

The estimation of this proposed impact of growth emanating from the different components and composition of government spending by considering the different sectoral productivity differentials, the application equation (3.10) was appropriate because investment has been modified into government investment and infrastructural development of physical assets. Time-series data cannot be collected on dL_D/Y. Therefore, the focus of this study was on human capital development because it takes into consideration the change in quantity and quality of the labor force and because that singular reason dL_D/Y was preferred. Government spending on innovation, training programs, digitalization, education, recreation, and health contributes massively to human capital formation. The government is charged with the function of improving economic welfare through the optimum allocation of resources to improve the growth rate of the country. There are also protective functions contained in the establishment of an independent judiciary, freedom, and rights of the citizen, promoting the rule of law through public order and national security, and stimulating property rights laws which could be used to curtail the effect of negative externalities of production. All these would help to reduce crime rates, criminal acts, and social evils for a safer environment for people and property by Strengthening institutions and the capacity to support reforms. The government gets involved in the direct supply of goods and services, the 14th five-year plan and policy recommendation of growth and innovation, digitalization gain prominence, better living standards, and increased economic efficiency. The government runs on a deficit budget and to cover up this deficit, borrowing would be an option to finance the projects because of the growing government spending. This could hinder the speed of intended growth. To involve these influences in the study, there is additional

spending on social and economic services and debt servicing variables that were introduced into Ram's modified model (3.10) as visualized by Chen and Lee (2005).

$$\frac{dY}{Y} = \alpha 0 \frac{IS}{Y} + \alpha 1 \frac{PHI}{Y} + \alpha 2 \frac{ES}{Y} + \alpha 3 \frac{HS}{Y} + \alpha 4 \frac{PDS}{Y} + \alpha 5 + \frac{EAS}{Y} + \alpha 6 \frac{GAS}{Y} + \alpha 7 \frac{DS}{Y} + \alpha 8 \frac{NSP}{Y}$$

$$+ \; \alpha 9 \frac{STS}{Y} + \; \alpha 11 \frac{CS}{Y} \dots \dots \dots \dots \dots \dots \dots \dots \dots (3.11)$$

where: IS = Government investment; PHI = Physical Infrastructural Spending; ES = Spending on education; HS = Health Expenditure; PDS = Debt Servicing (Interest Payment on Debt); EAS = Spending on Economic Affairs; GAS = Spending on General Administration and Services; DS = Spending on defense; NSP = Spending on National Security and Public Order; CS = Government Consumption; and STS = Science and Technology. To estimate this spending reforms on growth, a dummy variable vector D_j was included in equation (3.11) above:

$$\frac{dY}{Y} = \alpha 0 \frac{IS}{Y} + \alpha 1 \frac{PHI}{Y} + \alpha 2 \frac{ES}{Y} + \alpha 3 \frac{HS}{Y} + \alpha 4 \frac{PDS}{Y} + \alpha 5 + \frac{EAS}{Y} + \alpha 6 \frac{GAS}{Y} + \alpha 7 \frac{DS}{Y} + \alpha 8 \frac{NSP}{Y}$$

$$+ \; \alpha 9 \frac{STS}{Y} + \; \alpha 11 \frac{CS}{Y} + \alpha 12 Dj \dots \dots \dots \dots \dots \dots \dots \dots (3.12)$$

Dj represents the dummy variables.

j = 1, 2, 3, 4, ... N - Spending reforms.

The reality of insufficient theories required to link enumerated variables, the growth rate of the GDP which was not properly clarified by the descriptive components written in equation (3.12). These stimulated the urgent use of the Vector Autoregression (VAR) method which is a model that is free of theory and its application allows for effective

estimation when it refers to the topic of the relationship between economic variables (Sims, 1980; Kosimbei, 2009; Tu & Yi, 2017). All the mentioned variables applied to VAR analysis were treated equally by the introduction of an equation that explained the progression of each variable based on the identified lags associated with the variable. The VAR method could be used to test for causality between different variables (Engle and Granger, 1987; Tu & Yi, 2017). The compressed form of a VAR is represented as

$$X_t = A_0 + A_1 X_{t-1} + A_2 X_{t-2} + \ldots\ldots\ldots + A_p X_{t-p} + e_t \ldots\ldots\ldots\ldots (3.13)$$

where A_0 is n x 1 vector of constant terms, A_1, A_2, ……….., A_p are n x n matrices of coefficients, X_t is n x 1 vector of the endogenous variables and e is a vector of serially uncorrelated error terms that have a mean of zero and a covariance of matrix ϕ.

From the deduced equation (3.12), the VAR estimate was used to test the impact of the spending by the government on the expected growth in an economy. Each variable was regressed for the VAR model on a fixed variable **Cij**, **p** represents the variable's lags, **q** represents the other variables' lags, and **t** represents the disturbance value. The length of lag (p) was selected using the Schwarz and Akaike Information criteria. There were preferences for a longer lag length because of the captured changes in the system. However, the increased data requirements and the degrees of freedom were reduced. This was the reason for the inverse relationship that caused the trade-off. The trade-off was between the amount of lags and the amount of parameters to estimate.

The valued VAR quantities were meaningless because they required a theoretical foundation (Westerlund et al., 2022; Cho et al., 2023; Enders, 1995). However, the estimated coefficients of VAR were utilized to make a forecast for variance decomposition. This projection error decomposition measured the importance of the error in the **jth** equation which is used for explaining unexpected arrangements in the **ith** variable (Westerlund et al., 2022; Cho et al., 2023).

3.5 MEASUREMENTS OF VARIABLES

GDP growth rate ($\frac{dY}{Y}$): Is the average annual growth rate of real GDP. It was measured by change in GDP at constant prices as share of GDP.

Government investment spending (IS): the spending on land acquisition and payment for assets both financial and non-financial that are used within a fiscal year. The measurement of government investment spending was taken as the aggregate capital spending including gross capital accumulation and capital transfers as ratios of GDP.

Physical Infrastructure Spending (PHI): Government spending on assets' overheads (Fixed costs). PHI was measured as developmental project spending on power stations, terminals, transportation, electricity, and communication as a ratio to GDP.

Education Spending (ES): This consists of recurrent and capital expenditures made by the national government for education from pre-school to tertiary levels. This is an essential part of human capital development that affects directly the quality of the working population. It represents the total spending on education and training as a ratio to GDP.

Health Spending (HS): refers to all expenditures made by the national government for primary health centers, hospitals, and public health and for general medical practitioners, dental situations, pharmaceuticals, Chinese traditional medicine, orthopedic, and paramedical practitioners. This includes spending for procuring medical equipment, machines, appliances, medication, medical equipment, and appliances for R & D. This is measured as the total health spending as a ratio to GDP.

Public Debt Servicing (PDS): This is the payment of interest on debt by the national government because of excessive borrowing (domestic and external). This is due to an increased budget deficit measured as the total debt servicing as a ratio to GDP.

Economic Affairs Spending (EAS): It consists of all expenditures associated with the laws, regulations, and business operations for economic development. The creation of jobs and addressing balanced growth by reducing rural-urban drift are all included in this spending measured as the total spending on economic services as a ratio to GDP.

General Administration and Services Spending (GAS): It is the government spending for the general administration of the country from the office of the President. This includes para-military, police, and provincial forces administration measured as the total spending on overall administration and services as a ratio to GDP.

Defense Spending (DS): This includes spending on military operations, civil defense corps, and general defense against external aggression on sea, air, land, and space measured as the total spending on defense as a ratio to GDP.

National Security and Public Order Maintenance Spending (NSP): This involves the management, supervision, and administration of the Supreme, Appeal, High, Magistrate,

and Traditional Courts measured as the total spending on public order and security as a ratio to GDP.

Science and Technological Spending (STS): This includes the share of digitalization in GDP. The economy's digitalization prowess continues with the part of the digital economy in GDP such as cloud computing, internet, big data, artificial intelligence, block-chain, and virtual and augmented reality. It was measured as the total spending on all the above-mentioned as a ratio of GDP. This includes domestic innovation capacity in high technology, technical progress, and innovation. It was measured as the total spending on the quaternary sector as a ratio to GDP.

Government consumption Spending (CS): This is the recurrent spending on the consumption of commodities and services at the different tiers of government. It includes buying office supplies, payment of rent, fuel and lighting, and travel services measured by the total recurrent spending on goods and services as a ratio to GDP.

Budget rationalization (D1): This is the reallocation of government spending from a less dynamic project to a more dynamic project of the national government. It was taken as a dummy variable with an assumed value of one from 2008 to the first quarter of 2024. It was measured by the effectiveness of the public finances by obtaining the optimal results from minimum resources, and zero otherwise.

Privatization (D2): This is the sale of government establishments to private firms and individuals taken as a dummy variable with an assumed value of two from 2008 to the first quarter of 2024. An increased market liberalization in China resulted in increased private sector participation, reinforcing economic effectiveness, and zero otherwise.

Governance (D3): The government of China is based on a unitary communist state system. The ruling party legislates policies through the people's assemblies taken as a dummy variable with an assumed value of three from 2008 to the first quarter of 2024. when China had an Open-door policy to foreign businesses and foreign investment, and zero otherwise.

Ambitious Environmental Targets (D4): This is an ambitious objective of energy and carbon intensity target. Therefore, the main reason is to improve the living standards of the people by reducing carbon concentration by 23% from the year 2020 neglecting the previous target of 18% taken as a dummy variable with an assumed value of four from 2008 to the first quarter of 2024. It was an incentive to the development of innovation in the area of energy efficiency and technologies with a private sector support system to reduce energy intensity, and zero otherwise.

3.6 Data Collection Instruments

3.6.1 Source of Data, Collection, Cleaning and Refinement

The study used secondary data for the period 2008-2024 inculcating the 14th five-year plan of China (2021-2025) to explore the influence of spending on the rate of growth of the GDP. Data for this study was collected from journals, articles, and analysis of economic documents. The data sources and template design precede the data collection exercise. Proper care and caution were ensured for the consistency of all the variables, and avoidance of data misappropriation (Baud et. al, 2013).

The study allowed for more than one data source relevant to the entire time series. In that case, any identified differences in measurement were corrected immediately to avoid

data overlap. Data on the categories of spending by the government and GDP growth were extracted from the Chinese government's official websites. This includes Economics publications and journals, OpenEdition journals, Wiley online library, The Conversation, the IMF and World Bank Data, China Economic Net, China Daily, South China Morning Post, China Economic Monitor, World Development Report, National Bureau of Statistics China and the Statista Daily Data. All data collected were recorded and were cleaned up properly. Nominal values were changed to real values and were measured in constant (2024) Chinese Yuan (RMB). The year 2008 was taken as the base year but the year 2021 was the beginning year for the 14th five-year plan. During this time, most macroeconomic variables showed varying performance during the years 2008-2024. Therefore, despite being recent years, during these years the country experienced diverse changes (Kosimbei, 2009). The time-series data were converted to real values from the initial nominal value thereby adjusting the value to create allowance for the price level. This was done with the help of the GDP deflator. The real GDP values were estimated with the widely acclaimed formulas (Branson, 1989; Wawire, 2006). See the formulae below:

$$\text{Real GDP} = \text{Money GDP} \times \frac{\text{PI in base year}}{\text{PI in current year}} \quad \text{or} \quad \text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP deflator}}$$

The real values eliminate the effects of inflation and measurements are done in aggregate production and show what occurred to other activities apart from the price changes. The data collected on various variables were converted into calendar years because the growth rate of the economy was measured in calendar years not financial years. Some adjustments were made by converting time-series data to calendar years from fiscal

years using simple averages. The Consumer Price Index (CPI) was adopted because of its relevance to the spending column of the GDP values. However, CPI is related more to the cost-of-living index which measures the living standards(Wawire, 2006).

Nominal values did not show the actual changes that occurred in spending, hence, the need for the conversion of nominal spending to real spending. Real values were adjusted to create a way for the changes in the value of money and so inflationary prices and pressure were removed (Trotman, 1997).

3.7 Time -Series Data

3.7.1 Stationarity of Data

The initial stage in this study was the stationarity test of the data series. This measure was taken to guarantee that the time-series data have a continual mean score and variance for meaningful resulting regression outcomes (Tsay, 2001). However, the availability of the presence of stationarity of the series without checking would mean spurious regression results. Instead of so many other series tests available, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were chosen. The two main approaches for carrying out a stationarity data test are in series (Perron, 1989). The ADF method is based on white noise error and attempts to maintain the test validity based on these errors as contained in the regression example. This is done by guaranteeing that the errors are quite white-noise. However, the Phillips-Perron (PP) method amends the consecutive correlation to the standard statistics through a non-parametric correction (Stock, 1994). The PP test helps to adjust the statistical data by allowing proper consideration of the impact of auto-correlated errors on the results after making the estimation. Therefore, the Phillips-Perron (PP) test is necessary since it does

not require extra data by making an additional estimation (Phillips and Perron, 1988) and the degree of freedom of the data would not be exhausted (Westerlund et al., 2022). They both are used to estimate the unit root.

The fundamental equation is the same both for the ADF & the PP test model. The ADF method is used to test the (Valueless) null hypothesis / p / = 0 against the (substitute) alternative hypothesis / p / < 0 in the auto-regressive formula:

(i)   ADF without intercept and trend

$$\Delta y_t = \rho y_{t-1} + \sum_{i=1}^{k} \delta_i \Delta y_{t-1} + u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.14)$$

(ii)   ADF with an intercept but no trend

$$\Delta y_t = \alpha + \rho y_{t-1} + \sum_{i=1}^{k} \delta_i \Delta y_{t-1} + u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.15)$$

(iii)   ADF with both the intercept and trend

$$\Delta y_t = \alpha + \beta_t + \rho y_{t-1} + \sum_{i=1}^{k} \delta_i \Delta y_{t-1} + u_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.16)$$

3.7.2 Cointegration

The equilibrium correlation can be captured between the non-stationary data within an assumed stationary model, hence, the adoption of the cointegration approach (Adam, 1998; Johnston & Dinardo, 1997). The cointegration model also disregards the inconsistency in the regression analysis and the spuriousness of the data. All these would have occurred within the regressive analysis of the non-stationary data series.

The approach allows for the short-run and long-run data combination together in the same method. The information of non-stationary series could be captured without losing the validity of the statistical estimation equation (Stock and Watson, 1988). The Granger two-step approach and the Johansen cointegration test are the two main procedures for cointegration. Johansen's method was expressed by VAR of the order p and this is given as:

$$y_t = u + A_1 y_{t-1} + \ldots\ldots + A_p y_{t-p} + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.17)$$

where y_t is an n x 1 vector of innovations. This VAR can be re-written as

$$\Delta y_t = u + \Pi y_{t-1} + \sum_{i=1}^{\rho-1} \Gamma_i \Delta y_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.18)$$

where

$$\Pi = \sum A_i - I \text{ and}$$

$$\Gamma_i = -\sum_{j=i+1}^{p} A_j \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.19)$$

The Matrix coefficient **Π** condensed rank **r < n**, which results in **nr** matrix. Each of α and **β** rank with **r.** Therefore, Π = α**β'**; **β'y**$_t$ = static/stationary.

r is the number of the relationship of cointegration.

α = represents the element for adjustment parameter within the correction model of the vector.

β = Every column of β represents a cointegrating vector.

For every given **r**, the highest possibility estimated value (**β)** described the grouping of (**y$_{t-1}$**) which produced **r's** biggest established connections (**Δy$_t$** with **y$_{t-1}$**) after adjusting the lagged variances and determined parameters (Johansen, 1995). Johansen on his account, proposed two different probability ratios to test the consequence of the canonical relationships between them, and therefore the Π matrix was tested to verify its abridged ranking. The Eigenvalue test for trace test and maximum are shown in the equation below. See equations (3.20) and (3.21) below:

$$J_{trace} = -T \sum_{i=r+1}^{n} In(1-\lambda^{'}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.20)$$

$$J_{max} = -TIn(1-\lambda^{'}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.21)$$

Where:

T = the sample size

λ = íth biggest canonical correlation

The trace assessment was used to check for the present null hypothesis from the **r** cointegrating vectors alongside the alternate hypothesis from the **n** cointegrating vectors. Also, the maximum Eigenvalue test was used to test **r** cointegrating vectors and **r+1** representing the null hypothesis and the alternative hypothesis cointegrating vectors respectively. Engle and Granger (1996) introduced the residual cointegration test using the analogy shown in (3.21). This involves significance testing of the coefficiency in the analysis using the Ordinary Least Squares (OLS) regression. This was later elaborated by Tu & Yi (2017).

$$\Delta u = \rho u_t + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3.22)$$

where **ui** represents the residual value. The results suggest that when the residual values from the Ordinary Least Squares calculation are stationary from the non-stationary variables, therefore, the series are concluded to be cointegrated. However, If the residual values show a stationary trend, it means that on the variables at their first difference, the Error Correction Method (ECM) was used.

3.7.3 Granger Causality Test

This test was used to determine useful forecasting of a one-time series to another time series (Enders, 1995; Westerlund et al., 2022; Cho et al., 2023). The Vector Autoregression method was deployed to perform the chosen causality tests. However, the F-statistics was utilized to check the null hypothesis and the alternative hypothesis showing whether the coefficients on lagged values are zero or are not zero in the calculation of the other variable and that the coefficients on lagged values of a variable. Whenever the F-statistics was greater than the p-value, then the null hypothesis was rejected.

3.8 Data Analysis

This study focussed on four different objectives. Firstly, the investigation of connections between economic concepts- government spending and economic growth in China. The use of multivariate, Johansen's, and the Granger Causality cointegration analyses were adopted. The second objective was the examination of the impact of both concepts on each other. The Vector Autoregression model estimation was adopted which was suitable for the proposed objective, and this was in agreement with equation (3.13). This is followed by the successive utilization of the Variance Decomposition and Impulse Responses Analysis. The third objective was the analysis of the effects of government

spending reforms on the growth of an economy such as China and this was analyzed by the inclusion of the fiscal reforms variables as expounding variables in the estimation. The fourth objective was the assessment of the impact of the 14th Five-year plan (2021-2025) on the future growth of China. This was analyzed using the original blueprint of this project.

3.9 Summary

The concluding chapter provided an overview of the research methods and methodology proposed for the study for the examination of the impact of the spending made by the Chinese government on the growth of the Chinese economy. It outlines the research objectives, research questions, conceptual framework, data sources, research design, and analytical techniques utilized to address the research aims and objectives effectively. Additionally, this chapter discusses the rationale for the chosen research methods and methodology, highlighting their relevance, appropriateness, and suitability for investigating the research topic in the Chinese context. Overall, this research aims to expound on the intricacies of this relationship, offering valuable perceptions into the role of fiscal policy in driving expected growth, fostering sustainable growth, and addressing socio-economic challenges in the world's most populous nation. Through rigorous analysis and empirical investigation, this study endeavors to provide evidence-based recommendations and policy implications for enhancing the effectiveness of government expenditure policies and promoting inclusive and sustainable economic growth in China. Chapter 4 focused on the empirical findings from stationarity tests based on the unit roots test results, cointegration test results, VAR diagnostic tests, and Granger causality tests. The various components listed above were tested with the spending by the Chinese government on each of them to determine the GDP growth rate. Furthermore, the effect

of the government spending reforms on budget rationalization, privatization, governance, and ambitious environmental targets, and the recent effect of the 14th five-year plan were contained in the next chapter.

CHAPTER 4

EMPIRICAL FINDINGS: ANALYSIS, DISCUSSION, AND EVALUATION

4.1 Introduction

This chapter elaborates on the analysis, discussion, and evaluation of the study's findings. It started with a sharp focus on the relationship between the growth of the Chinese economy and the different components of government spending. These include such spending as government investment spending, spending on physical infrastructure and development, spending on the health care system, educational development spending, government consumption spending, general management, defense, national debt payments, economic affairs spending, national security, and public order spending, spending on science and technology. Secondly, the impact of the spending of the Chinese government on the different components and its effect on the economic growth of China was also estimated in this chapter. Thirdly, the impact of estimated budget allocation or rationalization (D1), privatization interventionist policy (D2), governance (D3), and ambitious environmental targets (D4) on economic growth. of China were analyzed and discussed in this chapter. Finally, the chapter explains the impact of the 14th five-year plan from 2021 to 2025. These were organized to provide absolute answers to the research question designed for this study. These are:

(i) What is the relationship between the government spending components and the overall growth of the Chinese economy?

(ii) What are the effects of the government spending components on the growth of the economy?

(iii)   What is the effect of the spending reforms by the government on the growth of the economy?

(iv)   What is the effect of the 14th Five-Year Plan (2021–2025) on the growth of the economy of China?

4.2 Spending of the Government and the Growth of the Economy

The primary purpose of this study was to investigate the relationship between the components of the spending of the national government and the increase in the growth rate of the Chinese economy. The study estimated and established the kind of relationships that exist between these two variables. The study investigated deeper to extract data that clarified the short-run or long-run relationships between the government's budgetary spending and the growth of the Chinese economy (**see Appendices 5 & 6**). These include spending on the investments made by the government, physical infrastructural investment spending, education spending, health care spending, public debt servicing, national security and public order maintenance, economic affairs spending, general administration, and service spending, government consumption spending, spending on defense, and science and technology spending and the growth of China's economy.

4.2.1 Calculation of Stationarity Tests

The stationarity test was conducted and tested based on the time series data (**see Appendices 7, 8 & 9**). This was done by the use of the Dicky Fuller and Phillips-Perron tests. The reason for choosing these methods was that the ADF method tries to maintain the rationality of the test records. It is important to also state that the ADF is a statistical significance test given that the result would reveal the statistical results of the null and alternative hypotheses of the study and inferences can be drawn from the time series

from the p-value to show. This would reveal whether the result is stationary or not. The PP unit root test, on the other hand, seeks to make adjustments for consecutive correlation to the standard statistics using a non-parametric correlation method (Stock, 1994).

This method provides modification for the measurements after the assessment results have given room for auto-correlated errors. The outcome of these tests for stationarity is presented in the table below.

Table 4.1: The Unit Roots Test

Measurement/Components			UNIT ROOT TEST			
			ADF Data		PP Data	
			T- statistic	Critical Value (5%)	T-statistic	Critical Value (5%)
GDP Growth Rate	Levels	Constant	-4.92**	-3.87	-5.83**	-3.87
		Constant & Trend	-4.94**	-4.43	-5.83**	-4.44
The Ratio of Investment Spending to GDP Growth Rate (IS)	Levels	Constant	-4.47**	-3.87	-5.49**	-3.87
		Cconstant & Trend	-4.66*	-4.43	-5.53**	-4.44
The Ratio of Physical Infrastructure Spending to GDP Growth Rate (PHI)	Levels	Constant	-4.76**	-3.87	-5.85**	-3.87
		Constant & Trend	-4.29	-4.43	-5.18**	-4.44
The Ratio of Education Spending to GDP Growth Rate (ES)	Levels	Constant	-4.57**	-3.87	-5.64**	-3.87
		Constant & Trend	-4.52*	-4.43	-5.63**	-4.44

The Ratio of Health Spending to GDP Growth Rate (HS)	Levels	Constant	-4.72**	-3.87	-5.67**	-3.87
		Constant & Trend	-4.68*	-4.43	-5.64**	-4.44
The Ratio of Public Debt Servicing Spending to GDP Growth Rate (PDS)	Levels	Constant	-4.26*	-3.87	-5.44**	-3.87
		Constant & Trend	-4.37	-4.43	-5.48**	-4.44
The Ratio of Economic Affairs Spending to GDP Growth Rate (EAS)	Levels	Constant	-4.39**	-3.87	-5.53**	-3.87
		Constant & Trend	-4.69*	-4.43	-5.69**	-4.44
The Ratio of General Administration & Service Spending to GDP Growth Rate (GAS)	Levels	Constant	-4.57**	-3.87	-5.61**	-3.87
		Constant & Trend	-4.71*	-4.43	-5.71**	-4.44
The Ratio of Defense Spending to GDP Growth Rate (DS)	Levels	Constant	-4.87**	-3.37	-4.44**	-3.87
		Constant & Trend	-4.81**	-4.01	-5.43**	-4.44
The Ratio of National Security and Public Order Maintenance Spending to GDP Growth Rate (NSP)	Levels	Constant	-4.34*	-3.87	-5.47**	-3.87
		Constant & Trend	-4.48*	-4.13	-5.59**	-4.44
The Ratio of Consumption Spending by the Government to GDP Growth Rate (CS)	Levels	Constant	-4.46**	-3.87	-5.64**	-3.87
		Constant & Trend	-4.44*	-4.03	-5.58**	-4.44
The Ratio of Science and Technology	Levels	Constant	-4.71**	-3.87	-5.68**	-3.87
		Constant & Trend	-4.68*	-4.43	-5.64**	-4.44

Spending to GDP Growth Rate (MD)						
(*) or (**) showed the Rejection of the hypothesis at a 5percent (1percent) significant level						

Source: Calculated from the collected data for the study

The findings shown in the above table represent the results of unit roots tests. These results consist of the data collected from the GDP growth rate of China and the ratios of government spending components to GDP (**see Appendix 11**). The variables of government spending are as initially mentioned. All these were stationary variables and they were integrated into the order I(0). The above results concluded that long-run positive relationships exist between all the aforementioned components of government-proposed spending and the growth rate of China's GDP (Engle and Granger, 1987). Therefore, most of the results shown on the unit roots tests (t-statistics- constant and trend) on the ADF were a bit close to each other, and the same results were also seen for the PP unit root test. The PP test result analysis showed that the results are more reliable, constant, and efficient in carrying out tests for stationarity when ADF is compared. In addition to these two tests for stationarity outcomes, the Johansen analysis test was also conducted to investigate and explore the cointegration relationship that exists between the growth of an economy and the spending by the government on its different components. The outcome of the JC test results are shown in the table below:

Table 4.2: The Johansen's Cointegration Analysis Test

Variables	Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Theorized Number of CE(s)
PDS	0.97	1507.43**	244.23	278.28	None
IS	0.96	1345.23**	244.23	278.28	At most 1
CS	0.92	1201.89**	202.34	246.18	At most 2
HS	0.91	1066.81**	200.13	210.67	At most 3
ED	0.88	988.29**	178.33	189.23	At most 4
GAS	0.84	692.88**	167.23	178.12	At most 5
EAS	0.82	524.45**	135.55	134.67	At most 6
GDP G rate	0.80	518.78**	98.11	105.27	At most 7
PHI	0.70	452.92**	96.23	101.43	At most 8
DS	0.63	382.53**	86.12	97.22	At most 9
STS	0.42	201.32**	68.55	76.05	At most 10
NSP	0.21	52.72**	14.24	23.17	At most 11
*(**) represents a rejection of the assumption at a 5% (1%) significant level					
L.R. test specifies 12 cointegrating equations at a 5% significant level					
Serial Descending Order: Public order and nationwide security, National Debt Servicing, Investment Spending, Government consumption Spending, Health, Education, General Administration and Services, Economic Affairs, GDP Growth Rate, Physical Infrastructure, Defense, Science and Technology, National Security, and Public Order.					

Source: Calculated from the data collected for the study

Following Johansen's cointegration procedure contained in the above table, it was obvious that the Likelihood Ratio (LR) showed the significance of the estimation of the Eigenvalues. The outcomes shown in Table 4.2 were clear evidence of the presence of a cointegration between the GDP growth rates and all the components of government

spending measured and they were serially represented in the above estimations. The Likelihood ratio showed thirteen (13) estimations of cointegration calculations at a 5% level of significance which represents a long-run connection and correlation of the measured variables which may not occur in short-run situations (Enders, 1995). The above cointegration evidence erased the possibility of spurious and fake relationships from the study. Further estimation models such as VAR diagnostic statistics could be conducted before concluding the VAR stability and the preferred lags at standard Sims type (Enders, 1995). However, the cointegration estimation failed to suggest the trend of the estimated long-run correlation between the tested components. Therefore, the evidence of the cointegration estimation suggested the need for the Granger-Causality tests from the growth rate of the GDP to the various components of government spending. It could also be tested from the government spending components to the growth of GDP or vice versa. To get a clearer picture of the analyzed correlation, it was imperative to estimate the Granger Causality test which explored the direction and levels of causation (Kalyoncu and Yucel, 2006). These tests were used to investigate the usefulness of a one-time series in making future forecasts for other variables (Enders, 1995). Nonetheless, before the Granger Causality tests were conducted, there was a greater need to determine the VAR model through the use of the VAR analytical checks.

4.2.2 VAR Diagnostic Statistical Tests

Vector Autoregressive Models (VAR) are used to test for a multivariate time series. The model structure is based on the fact that each variable of the components of government spending is considered as past lags' linear function of the same variable and that of the other study variables. For example, measuring seventeen years (2008-2024 projections) is represented by the variables of seventeen different time series, shown by $\square_{t,1}$, $\square_{t,2}$,

$\square_{t,3,\ldots\ldots}$ $\square_{t,17.}$ Analytical tests were severally completed to estimate the correctness of the estimated VAR. These tests guaranteed the validity of the estimation by ensuring the absence of spurious VAR estimation results. The results revealed the stability of the VAR systems at both lag 1 and 2. Nonetheless, there was a successive relationship at lag of order 2. The VAR system of lag of order 1 was ideal. The lag exclusion test was conducted and it showed that lag 1 is vital in the VAR estimation structure which backed the lag collection standards. The statistics used in all aspects of the VAR check include the roots of the polynomial expressions, Wald test, Lagrangian Multiplier statistics, and the Jarque-Bera statistics to check whether the residual multivariate is normal or not. Therefore, VAR outcomes are presented in Table 4.3 below.

Table 4.3: Enumerated VAR Diagnostic Test

VAR Variables	Outcomes/Statistic	Inference
Stability Condition	The polynomial root expressions are inside the unit phase. Maximum = 0.973	The VAR model was stable
Lag Exclusion Tests	The statistic was Wald test for 1 lag, 337 df, Chi-square = 432672, p-value = 0.0000	Important= Lag 1
Residual/Outstanding Serial Relationship/Correlation	The measurement was Lagrange Multiplier statistics	This showed consecutive connection at lag 2 order but lag 1 order was used
Residual Multivariate Normality	The statistic was the Jarque-Bera test statistic which was jointly carried out = 83.38 P-value = 0.000	The Residuals are considered multivariate possibly normal

Source: Calculated from the data collected

Following the above table, the estimated Jarque-Bera data and the equivalent p-values were used to test the validity of the null hypothesis that the residuals of the estimated figures were multivariate normal. The p-values of the different variables were estimated, which were jointly lower than the level of significance set at 0.01 for the study suggesting a rejection and dismissal of the the null hypothesis based on the normal distribution.

However, there may not be numerous implications or threats posed by these results because the Jarque-Bera test analyses are based on individual series with p-values higher than 0.01 level of significance.

The refusal of the null hypothesis without causality analysis implied that a progressive adjustment has been carried out in the government spending components which led to a stable change in the growth rate of the GDP (**see Appendix 11**). However, failure to discard the null hypothesis without causality meant that the categories of government spending did not directly explain the GDP growth rate. The Granger-causality test results are contained in Table 4.4 below.

Table 4.4: Results of Granger-Causality Test

Null Hypotheses	F-Statistics	Lags	Probabilities	Conclusions
GDP growth does not Granger - Cause government spending on investment	3.89*	10	0.047	Bi-directional
Government spending on investment does not Granger - Cause GDP growth	24.81**	2	0.000	
GDP growth does not Granger - Cause government spending on physical infrastructure	7.57**	9	0.001	Bi-directional
Government spending on physical infrastructure does not Granger - Cause GDP growth	9.16**	3	0.000	
GDP growth does not Granger - Cause government spending on education	4.56	1	0.045	Uni-directional causality runs from physical infrastructure to GDP Growth.
Government spending on education does not Granger - Cause GDP growth	17.67**	2	0.004	
GDP growth does not Granger - Cause government spending on healthcare	7.34**	4	0.001	Bi-directional
Government spending on healthcare does not Granger - Cause GDP growth	5.89**	4	0.001	
GDP growth does not Granger - Cause government spending on public debt servicing	4.16**	10	0.005	Bi-directional
Government spending on public debt servicing does not Granger - Cause GDP growth	5.39**	5	0.001	

GDP growth does not Granger - Cause government spending on economic affairs	4.01*	5	0.027	Bi-directional
Government spending on economic affairs does not Granger - Cause GDP growth	7.06**	5	0.001	
GDP growth does not Granger - Cause government spending on general administration and services	3.93	10	0.056	Uni-directional causality runs from general administration and services to GDP Growth.
Government spending on general administration and services does not Granger - Cause GDP growth	4.18*	2	0.028	
GDP growth does not Granger - Cause government spending on defense	4.35*	5	0.035	Bi-directional
Government spending on defense does not Granger - Cause GDP growth	41.19*	10	0.018	
GDP growth does not Granger - Cause government spending on national security and public order maintenance	7.16**	6	0.001	Bi-directional
Government spending on national security and public order does not Granger - Cause GDP growth	13.61**	10	0.000	
GDP growth does not Granger - Cause government spending on consumption	9.97	14	0.357	Uni-directional causality runs from government consumption to GDP Growth.
Government spending on consumption does not Granger - Cause GDP growth	4.98**	14	0.000	
GDP growth does not Granger - Cause government spending on science and technology	4.17**	2	0.001	Bi-directional
Government spending on science and technology does not Granger - Cause GDP growth	5.40**	5	0.000	
(*) or (**) showed the Rejection of the hypothesis at a 5% (1%) significant level				

Source: Calculated from the data collected for the study

The above test results exposed bi-directional causality and uni-directional causality between government spending and the selected variables. The test revealed bi-directional causality between government spending on economic affairs, investment, physical infrastructure, healthcare, public debt servicing, defense, national security and public order maintenance, science and technology, and economic growth.

This result showed that the selected variables with bi-directional causality could be predicted on each other and they could be taken as dependent or as an independent variable, hence, they could be on either side of the equation.

The other government spending variables had a **uni-directional causality (3 components)** between government spending and education, general administration and services, and government consumption, and economic growth. The interpretation of the uni-directional causality showed that one variable influences another directly. Government spending because only one variable could explain the other influences these variables. The variables are classified as independent variables. The Granger causality tests exposed a piece of important information when investigating the correlation between two or more variables. From this study, the Granger Causality test results revealed the existing relationships between the government spending components selected for this study. The spending of the government on infrastructure, investment, consumption, affairs of the economy, defense, education, administration and services, science and technology, public order and security, healthcare, and national debt servicing forecasts the growth of the GDP.

The findings of this study confirmed the estimation of the VAR model and showed that there was the existence of **bi-directional causality (8 components)** between the spending of the government on physical infrastructure, investment, healthcare, public debt servicing, defense, national security, public order maintenance, science and technology, economic affairs, and economic growth.

Finally, there exists a reaction effect between spending by the government on the different components and the rate of growth of the GDP. This outcome of the existing

relationship supported Wagner's hypothesis. The hypothesis emphasized that any rise in GDP results in the growth of an economy which causes increased government spending. Keynesian schools also stated in their submission that when government spending increases, there is a direct increase in the rate of GDP through a multiplier effect of that spending. These findings draw a strong conclusion that the allocation of resources by the government must be done carefully because of its direct impact on the economy's growth.

4.3 The Effects of National Government Spending on Economic Growth

The 2nd stated objective examined the effects of spending components on the economy's growth (Increase/Growth of the GDP). This was done by the estimation of the rate of change of the raw data collected on each component. The results showed government spending on investment, physical infrastructural development, education and training, healthcare, public debt payment and servicing, economic and social affairs, general administration, defense, national security, public order maintenance, government household consumption spending, and science and technology.

4.3.1 The Impact of Investment Spending by the Government on the Growth Rate of the GDP.

China is among the nations that spend the greatest share of its GDP on investments. Between 2008 and 2024, 35% to 43% of its economic production was invested. This is roughly at par with Japan and South Korea. In later years, the investment spending ratio of later countries decreased, but China's investment spending ratio grew bigger, especially after the global pandemic and financial downturn, climaxing at a staggering 63 percent of GDP in 2015. However, the yields on those investments declined during the pandemic years due to the lower GDP growth rates (Ratigan, 2021).

This was evident in the growing debt burden of the country. The Chinese government improved investment spending immediately after the pandemic period due to increased growth rates of its GDP. Nugent, J.B.; Lu, J. (2021) emphasized direct investment by the Chinese government in the Belt and Road initiatives (Zeng, S.; Zhou, Y. 2021). Figure 4.1 below shows the relationships between investment spending and the growth of the GDP. The figure also shows the impact of the spending on investment on the growth of China's GDP between 2008 and 2024 projections. The Chinese government embarked on guidance for outbound investment (NDRC et al., 2017). The growth of the GDP reflects the growth of the economy (**see Appendix 10**).

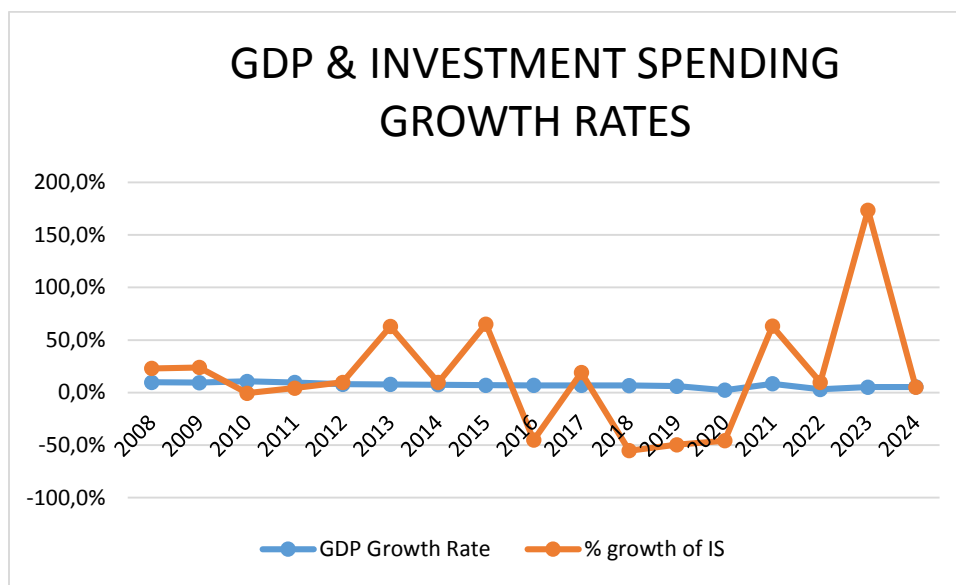**Figure 4.1:** The Impact of Investment Spending by the Government on the Rate of Growth of the GDP.

Source: Drawn from the Study's Collected Data.

Investment as a share of the GDP was 42.42% in 2008, 47.03% in 2011, and 42.11% in 2024. This showed the consistency of the rising trends of investment spending (Zeng, S.; Zhou, Y., 2021). China's total investment level in 2022 reached around 43.5% of the

gross domestic product (GDP). This value was projected to decrease gradually to 41.7 percent until 2028 (**See Appendix 13**). It becomes obvious that there was a sharp increase in government investment spending in the year 2023 from 10% to 174%, but the growth rate of the GDP moved slightly up by 3% to 5.2%.

4.3.2 The Impact of Physical Infrastructural Spending by the Government on the Rate of Growth of the GDP.

China's physical infrastructural investment has been a key driver of its economic growth since 2008. When the country faced a slowing but steady economy, the national government trusted that physical infrastructural spending and development could boost the economy's growth standards. However, despite a fast deceleration in investment spending in the past 10 years, the double priorities of increasing infrastructural spending and reducing government reliance on borrowing eventually reduce debt and debt-servicing. The central government of China holds tightly its interventions through fiscal and monetary policies, targeted financing was made to cater to sustainable physical infrastructural projects that helped the country to secure a sustainable future in such areas as transportation, housing, public sanitation, digitalization, and improved recreational parks and gardens (Oh, Yoon Ah., 2018). During the period 2008–2024, China's physical infrastructural investment and spending as a share of GDP outperformed by a large margin (Tian, G.; Li, J., 2019). The average GDP share of government total investment in infrastructure has tremendously improved as seen in the figure below. Subsequently, China's investment in physical infrastructure as a share of GDP increased from about 16% in 2008 to nearly 27% in 2024. Figure 4.2 shows the relationships between physical infrastructural spending and the growth of the GDP. The

figure below also shows the influence of the spending by the government on physical infrastructure on the growth of the country's GDP.

GDP & PHYSICAL INFRASTRUCTURAL SPENDING GROWTH RATES
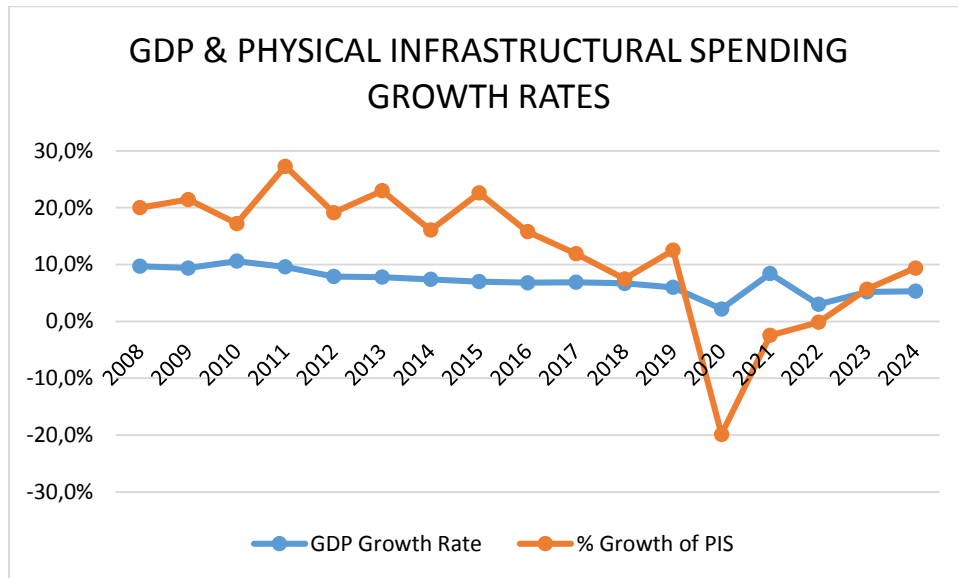
Figure 4.2: The Impact of Physical Infrastructural Spending by the Government on the Rate of Growth of the GDP.

Source: Drawn from the Study's Collected Data.

Physical Infrastructural Spending had a tremendous impact on China's GDP growth rate and its meteoric economic growth over the past two decades. From the development of thousands of miles of railway tracks for slow and high-speed trains to the building of record-breaking buildings and skyscrapers, an enthusiasm to provide jobs through improved facilities and for a better quality of life for the Chinese people led to a sustainable and rapid growth that has continued to this day (Strange, Austin. 2023a). Between 2008 and 2020, spending on infrastructure witnessed tremendous fluctuations and that affected the growth rate of the GDP as well. From Figure 4.2, it is

obvious that a sharp drop in physical infrastructural spending to -20% also brought about a decline in the GDP growth rate from 6% to 2.2%.

4.3.3 The Impact of Education Spending by the Government on the Rate of Growth of the GDP.

China's system of education is the biggest government-owned educational system in the entire world. The worth of Chinese education improved substantially over the last two decades due to improved and incessant investment in education and various reforms undertaken by the national government through large-scale investments in education (Cai and Heathcote, 2022).

In 2022, public spending on education amounted to 4% of total GDP. That value increased from the initial 3% in the mid-2000s to above 4% in 2010-2012, but these values did not change very much in recent years. This could be due to the recent pandemic that ravaged the entire world. In the year 2023 in China, total government spending on all aspects of education reached 4.12 trillion RMB. Education spending increased incessantly over recent years, but growth rates have been considerably slower in these periods. The Chinese government placed great priorities on the development and growth of the educational sector since the beginning of its educational reforms (MOE, 2022). However, the entire educational sector suffered setbacks in terms of its quality and quantity when compared with the laid down international standards. Government spending on education as a share of the GDP of China is a better way to compare the GDP growth level due to the spending on education. Figure 4.3 shows the relationships between the growth rate of the spending by the government on education and the impact on the GDP growth rate. The figure below also shows the influence of the spending on education on China's GDP.

Figure 4.3: The Impact of Education Spending by the Government on the Growth Rate of the GDP.

Source: Drawn from the Study's Collected Data.

In the years 2009 to 2010, the increase in the growth rate of education spending from 16% to 20% raised the GDP growth rate from 9.4% to 10.6% but the decline in education spending from 2012 to 2013 also brought a decline in the GDP growth rate from 7.9% to 4%. However, it was evident in Figure 4.3 above that the years 2020 to 2021 witnessed a fall in education spending from 4% to 3% respectively but the GDP growth rate witnessed an increase from 2.2% to 8.4%. This could be due to government spending in other areas that raised the GDP but not, particularly from education spending.

Since achieving the set target in 2012, the growth of spending on education, which had reached more than 25% per year in the years before, was reduced to levels equating to the GDP growth rate (Min et al., 2021).

4.3.4 The Impact of Health Spending by the Government on the Rate of Growth of the GDP.

China's healthcare sector is huge and it's among the fastest-growing and largest industries in the entire country. The surge in the demand for better and improved healthcare services is driving rapid growth across various healthcare sectors (Yip W, Fu H, Chen A. 2019). This has been a top priority for the governments. The government strives to enhance improved health outcomes in the country. Recently, the Chinese government has been faced with the challenges of an aging population, pollution, and unequal access to health systems in the different provinces (Zhai T, Goss J, Dmytraczenko T, et al., 2019). In the past 30 years, China's government spending on healthcare has risen steadily. There have been growing private investments in the healthcare system and sporadic government funding (Statistical Bulletin of China's Health Development, 2022). These led to the improvement and expansion of the health system, resulting in the provision of modernized healthcare facilities, such as beds, medical kits, ambulances, medical teams, and improved technologies. A range of medical insurance programs were also introduced by the government. This includes the Urban Residents Basic Health Insurance Schemes, the Urban Employees Basic Health Insurance, and the Rural Cooperative Health Scheme (Liu and Huang, 2020). The reasons for all these were to give access to an improved healthcare system and maintain a healthier working population which would in turn increase productivity in the country. In the year 2022, the total spending on healthcare in China was over 8.5 trillion RMB. That figure included collective government spending and private spending on health care. This amounted to about 7.1% of the GDP, up from 6.8% in the year 2021. Figure

4.4 shows the relationships between the growth of healthcare spending and the GDP growth rate. The figure below also shows the influence thereof.
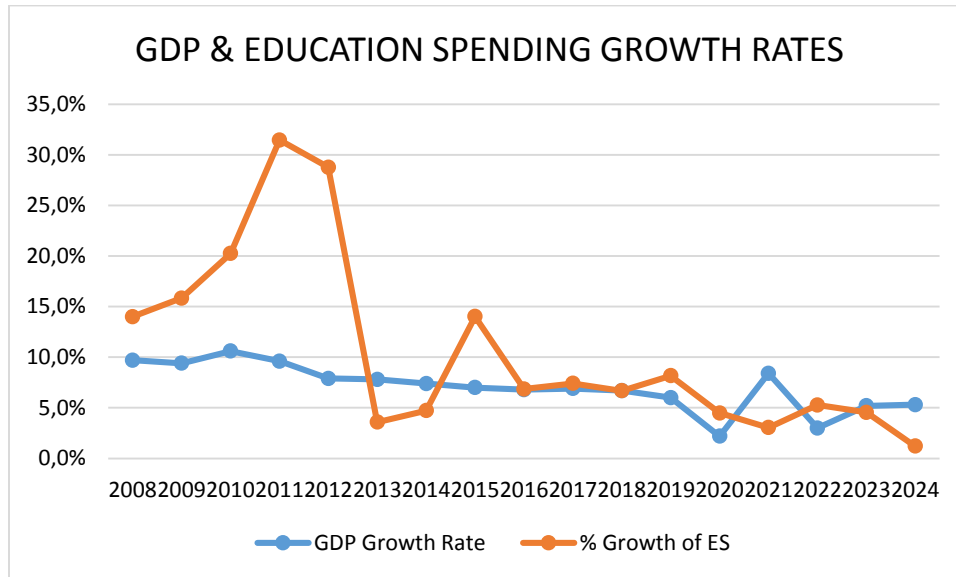

Figure 4.4: The Impact of Health Spending by the Government on the Rate of Growth of the GDP.
Source: Drawn from the Study's Collected Data.

In the years 2013 to 2014, the increase in the growth rate of healthcare spending from 14% to 23% resulted in a steady growth rate of the GDP from 7.8% to 7.4% but the 18% increase in healthcare spending from 2021 to 2022 brought about a decline in the GDP growth rate from 8.4% to 3%. This could be due to the COVID-19 pandemic that collapsed the entire health system (Edgell et al., 2021). However, it was evident in Figure 4.4 above that the years 2023 to 2024 witnessed a slight rise in healthcare spending from -1% to 2% respectively and the GDP growth rate also witnessed a slight increase from 5.2% to 5.3%. Xu J, Jian W, Zhu K, et al., (2019) emphasized in the submission the need for the Chinese government to finance public hospitals by facing the challenges that may emanate from such spending.

4.3.5 The Impact of Public Debt Spending by the Government on the Rate of Growth of the GDP.

The good motivation paycheck and sloppy monetary policy between the years 2008 and 2009, the world financial crisis were the reasons for China's huge and hidden debt problem (He, We, 2021). China's total nonfinancial sector debt was estimated to be 235.1% of the total GDP. The Government sector debt and the private sector debt were estimated to be 53.2% (30.3 trillion RMB) and 181.9 (103.5 trillion RMB) of the total GDP respectively. However, the debt crises may worsen banks' liquid assets and affect the economy's growth rate. To ameliorate the debt problem, the national and provincial governments embarked on strategic structural reforms and financial liberalization while the district governments embarked on an extensive interventionist policy of privatization of previously controlled State-Owned Enterprises assets (SOE) to raise finance to fund debt repayment (Sun Binbin and Tan Yiming, 2020). The total non-financial sector debt of China amounted to 133.8 trillion RMB by the year 2013 which represents 235.1% of GDP. Debt servicing increased in China between 2008 and 2024. In 2023, public spending on payments of interest on debt increased by 4.2% relative to the previous years (Wang Dehua, 2021). This could be due to the accumulated debt during the pandemic period. China's real GDP growth surpassed the projected government's growth goal of 5.2% in the year 2023. The debt-to-GDP ratio rose in the year 2023 to a high record despite the decline in the rate of borrowing (Jiang Chao and Zhu Zhengxing, 2022). This reflected the failing area of the economy's growth rate. The macroeconomic leverage ratio used to measure the total exceptional non-financial debt as a share of the nominal or money GDP jumped to approximately 288% in the year 2023. This was 13.5% points higher than the previous year. Figure 4.5 below shows the relationships between the increased rate of public debt spending and the rate of growth of the GDP. The figure

below also shows the influence of the spending on public debt through debt servicing on the growth of China's GDP.

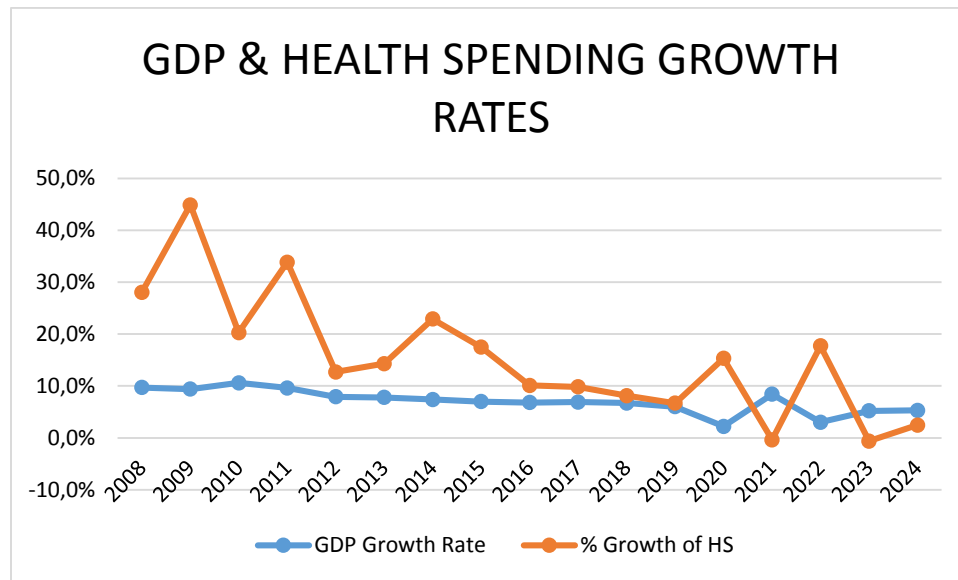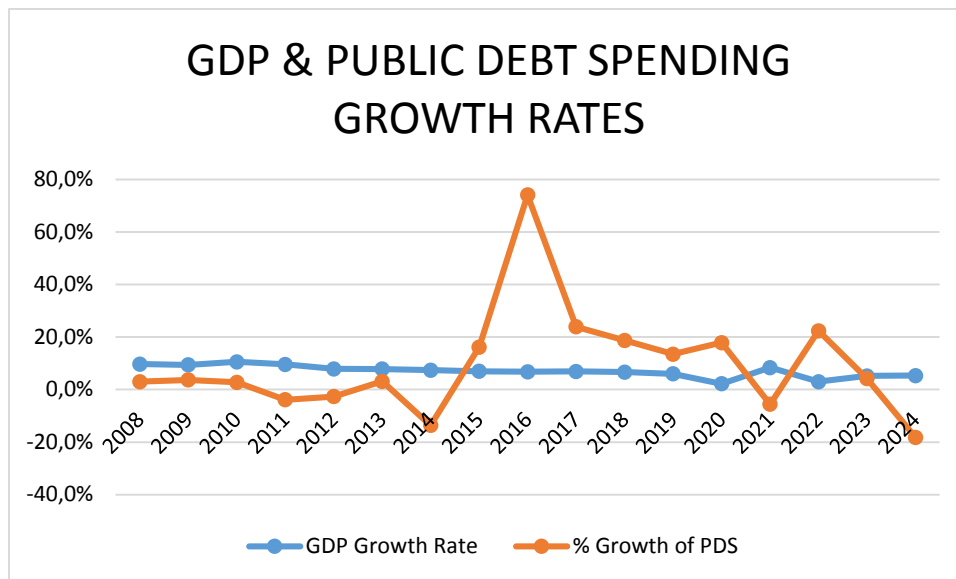**Figure 4.5:** The Impact of Government Public Debt Spending by the Government on the Rate of Growth of the GDP.

Source: Drawn from the Study's Collected Data.

Between the years 2008 to 2014, the growth rates of public debt spending fell below the rate of growth of the GDP. However, immediately after the year 2014, precisely from 2015 to 2020, the rate of growth of public debt spending rose above the increase in the GDP but left the GDP growth rate at slightly fluctuating levels. It was evident in Figure 4.5 that in the year 2022, public debt spending rose to 22% from the previous -6% in the year 2021. The country maintained a slight increase and decrease in its growth rate of GDP despite the obvious fluctuating growth rate of public debt spending.

4.3.6 The Impact of Economic Affairs Spending by the Government on Rate of Growth of the GDP.

China's government spending is associated with the laws, regulations, and business operations for economic development. The creation of jobs and addressing balanced growth by reducing rural-urban drift are all included in this spending measured as the aggregate spending on economic and monetary services as a ratio to GDP. Figure 4.6 below shows the relationships between the increase in economic affairs spending and the rate of growth of the GDP. The figure below also shows the influence of the spending on economic and monetary affairs on the growth of the Chinese GDP.
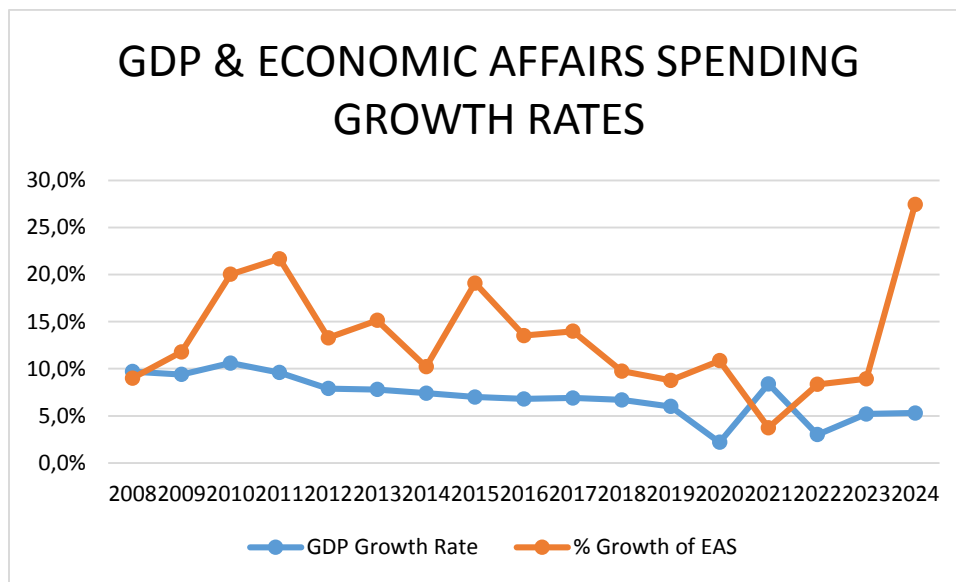
Figure 4.6: The Impact of Economic Affairs Spending by the Government on Rate of Growth of the GDP.

Source: Drawn from the Study's Collected Data.

Between the years 2008 to 2020, the growth rates of economic affairs spending rose above the rate of growth of the GDP. However, immediately after the year 2020, precisely the year 2021, the rate of growth of economic affairs fell below the growth standard of GDP, and from the years 2022 to 2024, the rate of growth of economic affairs spending

rose above the GDP growth rate again. It was evident in Figure 4.5 that in the years 2022 to 2023, economic affairs spending rose from 8% to 9% respectively from the previous 4% in the year 2021. The country maintained a slight increase in the growth rate of GDP despite the obvious fluctuations in the growth rate of economic affairs spending (Liu Wei, Su Jian, 2023).

4.3.7 The Impact of General Administration & Service Spending by the Government on the Rate of Growth of the GDP.

The government spending for the general administration of the country from the office of the President to spending on para-military, and provincial forces administration for correctional purposes is measured as the aggregate spending on overall administration and services as a proportion to GDP. Such spending includes expenses on state highway patrols, spending on administration, sheriffs, and other governmental departments in charge of maintenance and protection of the safety of the public. These are correctional spending for operations, maintenance, and building of prisons as well as the enforcement of the duties of the probation officers and parole boards. Mechkova, Lührmann, and Lindberg (2017) remarked on some of the problems embedded in understanding the workings of public or government administration most especially during the spread of democratic erosion. In the year 2021, the provincial and national governments spent about 931.5 billion RMB on police, about 600.3 billion RMB on correctional activities, and 358.8 billion RMB on courts which represent 4%, 2%, and 1% of the general expenditure. Provincial spending on correctional activities included province-operated prisons, while district spending concentrated on county prisons. Figure 4.7 below shows the relationships between the growth increase of general administration and service spending and the rate of growth of the GDP. The figure below

also shows the impact of the spending on general administration and services on China's Rate of GDP.
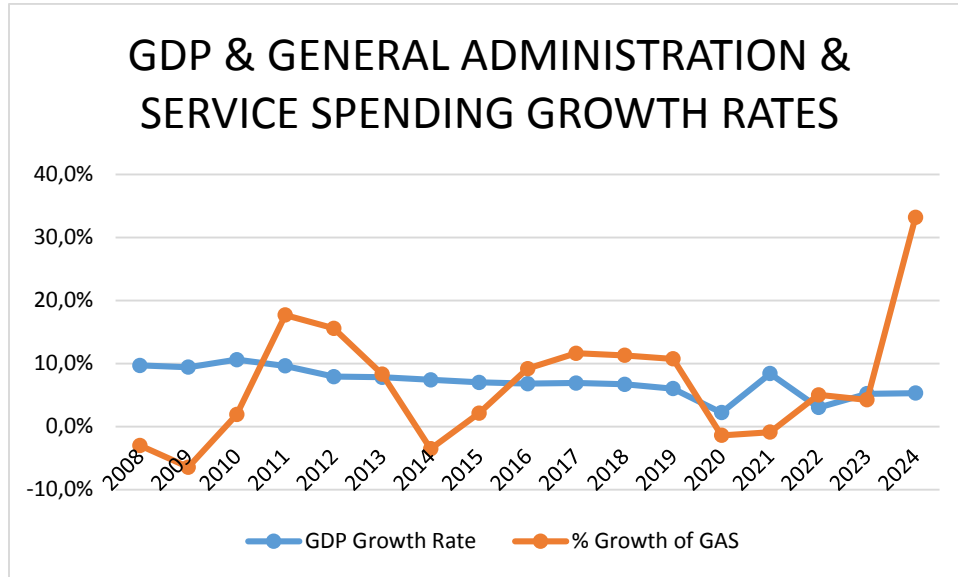
Figure 4.7: The Impact of Government General Administration & Service Spending by the Government on the Rate of Growth of the GDP.

Source: Drawn from the Study's Collected Data.

In the years 2011 and 2017, the growth rate of spending on general administration and service grew by 18% and 12% respectively. Despite the fall to 4% in the year 2023, the GDP growth rate rose from 5% to 5.2%. However, It was evident that between 2020 and 2021, the growth rate of general administration and service spending remained unchanged at -1%.

4.3.8 The Impact of Defense Spending by the Government on the Rate of Growth of the GDP.

China's defense proposed estimation budget has doubled since the year 2015 despite the slow rate of the country's economic growth (Bartels, 2020). However, the country's constant determination to stay protected against the West and its partners in Asia, over

its territorial claims, provincial and special administrative leadership regions, and a bigger voice in global affairs. The country's GDP growth rate was targeted at 5% despite the difficulties of achieving that rate. China spent more of its revenue on defense in 2015 than its endorsed 2024 defense budget estimation of 1.67 trillion RMB. China's official national budget for defense in 2022 was around 1.48 trillion RMB, representing a steady growth rate in the past decade (Cato Institute, 2023). That same year, the national defense accounted for about 5% of the total national government spending. The defense budget share of the GDP has been constant and consistent at about 1.3% since 2014. Figure 4.8 below shows the relationships between the growth increase of Defense spending and the rate of growth of the GDP. The figure below also shows the influence of the spending on defense on GDP growth.
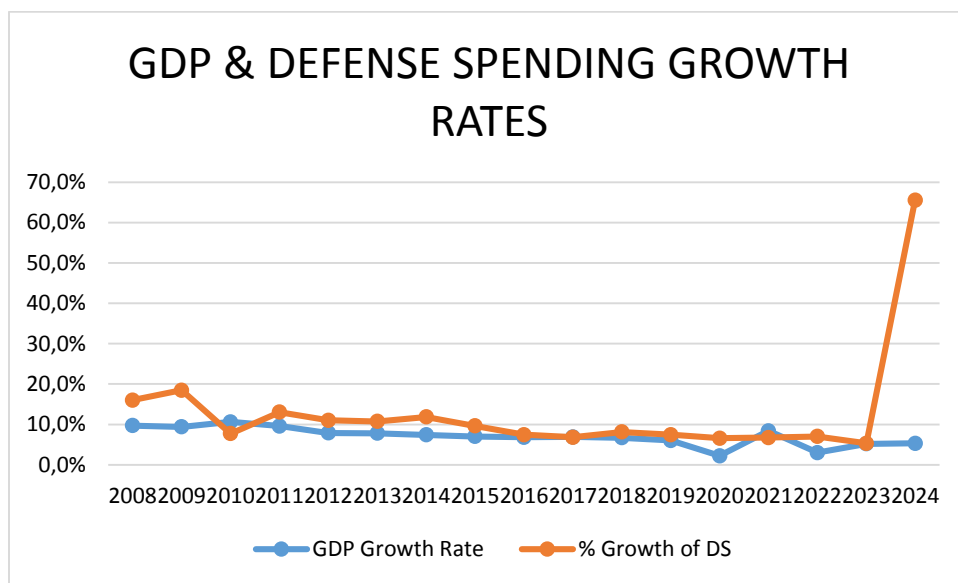
Figure 4.8: The Impact of Defense Spending by the Government on the Rate of Growth of the GDP.

Source: Drawn from the Study's Collected Data.

In the years 2010 to 2022, the growth rate of spending on defense grew more than the GDP rate. In addition, this confirmed the initial preceding statement that the government

spending on defense continues to increase despite the slow rate of growth of the GDP (Liff, A. P., and A. S. Erickson, 2013). However, the year 2021 witnessed a constant growth rate of spending on defense due to the heavy spending embarked upon by the government to curb the COVID-19 pandemic. It was also evident that the years 2020 and 2021 showed a consistent percentage growth rate of 7% for defense spending.

4.3.9 The Impact of Government National Security & Public Order Maintenance Spending on GDP Growth Rate.

China's spending on public safety, order, and security maintenance reached 1449 billion RMB in 2020. The amount estimated far more than doubled in a decade. However, China's spending on national defense is growing rapidly as mentioned in the analysis above but the expenditure on public order, safety, and national state security was 7% higher than its spending on national defense in the year 2020. This includes China's spending on internal security, police, and internal surveillance (Meng Weidong, 2016). China's 13.8% rise in the proposed budget estimation for police, armed civil militia, and state security was revealed at the beginning of the yearly congressional assembly. This brought the proposed planned spending on the maintenance of law and order to 624.4 billion RMB.

China spent almost 1.44 trillion RMB on public security and maintenance of order in 2022, a triple increase when compared to the spending in the previous decade. The public security spending includes police, state security, armed civil militia, domestic surveillance, and other agencies to deal with any intended public disturbances. Jiangsu, Guangdong, and Xinjiang provinces were the top three provinces where public security spending was huge. Figure 4.9 below shows the relationships between the growth rate of the spending on national security, civil society maintenance, and public order

maintenance spending and the rate of growth of the GDP. The figure below also shows the impact of the spending on national security and public order maintenance on the growth of the country's GDP.
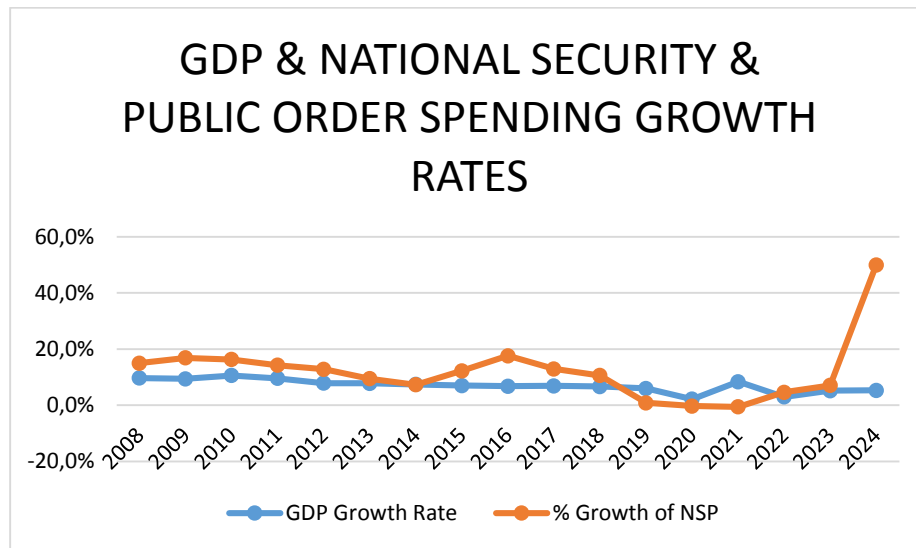
Figure 4.9: The Impact of Government National Security & Public Order Maintenance Spending on the Growth Rate of the GDP.

Source: Drawn from the Study's Collected Data.

Between the years 2008 to 2013, the growth rates of national security and public order maintenance spending rose above the growth of the GDP. However, in the year 2014, the GDP growth percentage and the national security and public order maintenance spending were the same. Nonetheless, from 2015 to 2018, the rate of growth of national security and public order maintenance spending went higher than the GDP growth rate again. The years 2019 to 2022 witnessed a dramatic fall in the percentage growth of national security and public order maintenance spending. Following Figure 4.9 the year 2023 showed a growth rate from 5% to 7% while the GDP rose from 3% to 5.2%

4.3.10 The Impact of Consumption Spending by the Government on the Rate of Growth of the GDP.

Consumption represents the household's final purchase of goods and services. This takes more than half of the Chinese government's GDP and its proportion continues to increase in year 2019. Consumer spending contributed 64.8% of GDP and this happened in the first three quarters of year 2019. This was the highest driver of growth for the Chinese economy (Song Z, 2022). The year 2022 was depressing generally for the entire world and specifically for the economy of China. The stringent zero-COVID policy measures and regulations slowed down significantly the growth of the economy. The actual yearly real GDP growth rate of 3% was considerably less than the proposed rate of 5.5%. This prompted the Chinese government to place a top priority on the economy in the year 2023. Over the last 20 years, household consumption in China has increased to an average rate of 9.3% annually, more than doubled the world average, due to the high-income growth of the Chinese population (Lin Li, Zhu Y, 2021). In December 2023, China's Public Consumption Spending was reported at 20,282.55 billion RMB. This showed an increase from the previous year of 19,822.32 billion RMB in December 2022.

Zhou C, Li M, Zhang G, et al. (2020) mentioned the effect of internal migrants on the house cities regarding their household consumption. Figure 4.10 below shows the relationships between the consumption spending growth rate and the rate of growth of the GDP. The figure below also shows the impact of consumption spending on China's GDP growth.
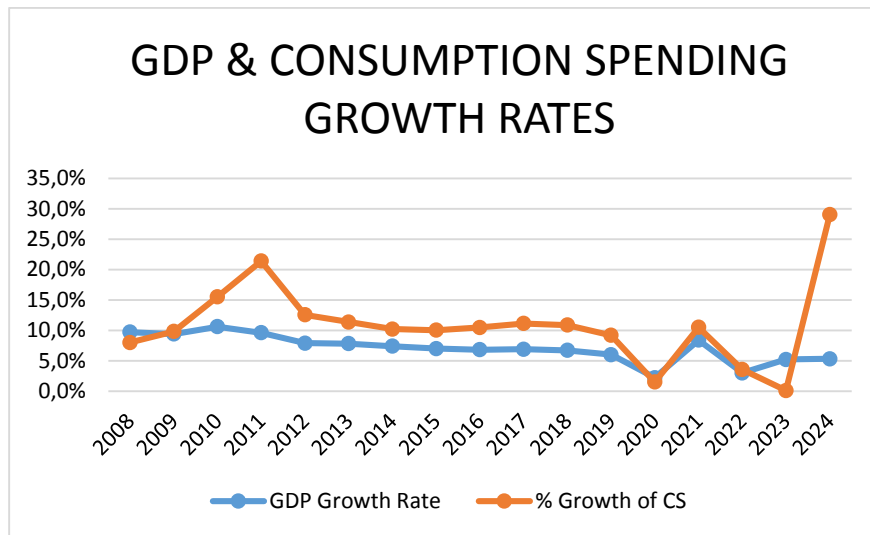
Figure 4.10: The Impact of Consumption Spending by the Government on the Growth Rate of the GDP.

Source: Constructed from the Study Collected Data.

Between the years 2009 to 2019, the growth rates of consumption spending rose above the GDP growth rate of the Chinese economy. It was the highest in the year 2011 when it rose to 21%. However, in the years 2020, 2022, and 2023, the rates of growth of consumption spending declined tremendously but went higher again in the year 2024 to 29%.

4.3.11 The Impact of Science & Technology Spending by the Government on the Rate of Growth of the GDP.

The Chinese government has bent on its drive to become a more self-sufficient worldwide technological powerhouse. The main focus has been on the expansion and enlargement of science and technology and the rivalry around the commanding pinnacles of science and technology is unprecedentedly fierce. China's innovation drive and how this could be affected by the slow rate of the country's growth and a tighter fiscal policy in China (Zeng, S.; Zhou, Y, 2021). Overall lower spending on S&T will not necessarily hinder China's capability to improve as a world leader in these strategic and important sectors.

It could slow down China's development of a highly innovative and well-rounded innovation environment. The kind of scientific and technological development that enables spillovers between different types of technologies. The one that fosters sustainability and innovation for the next generation. The Chinese government after the first quarter of 2024 announced a huge spending of 358.8 billion RMB in research and development. This represents a 10% increase over the past year. This also represents the largest percentage increase of any key funding area, including defense spending. Between 2010 and 2019, China's share of global research and development spending increased from 15% to 22%. Figure 4.11 below shows the relationships between the growth increase in spending on science and technology and the rate of growth of the GDP. The figure below also shows the visual influence of science and technology spending on the growth rate of the GDP of China.
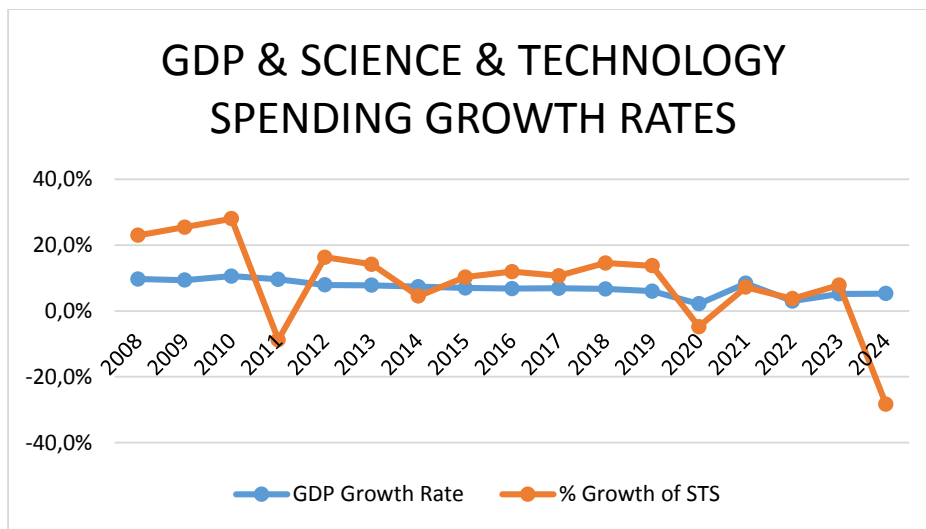
Figure 4.11: The Impact of Science & Technology Spending by the Government on the Rate of Growth of the GDP.

Spending on science and technology has increased over the years except in the years 2011, 2014, 2020, and the first quarter of 2024. There was a steady increase in government spending in the science and technology sector between 2017 and 2019 with a percentage increase of 11% to 14% respectively. However, despite the fluctuating pattern of spending on science and technology, the growth rate of the GDP has been very consistent with a slight decline and a slight increase. This analysis and evaluation of the growth rates of spending on science and technology would be incomplete without mentioning the impact on the rate of growth of the GDP. Between the years 2021 and 2023, the growth increase of science and technology spending by the government fell and rose with China's GDP. The percentage increase of spending on S & T was 7%, 4%, and 8% in the years 2021, 2022, and 2023 respectively. Similarly, China's GDP growth rate was 8.4%, 3%, and 5.2% in the years 2021,2022, and 2023 respectively.

4.4 The Effects of Government Spending Reforms on the Increase in the Real GDP of China

The third stated objective analyzed the effects of the spending reforms by the government on the increase in the real GDP of China's economy. The selected variables for this regarding the various reforms that have taken place in China are budget allocation and rationalization, privatization, governance, and ambitious environmental targets, which are also classified as dummy variables. The reform variables are discussed for their impact on the country's GDP growth rate.

4.4.1 Budget Rationalization (D1): China's budget rationalization strategy was implemented during the years under study to help increase the country's efficiency of public spending Wong, Christine, March 2021). This helped to reallocate resources

towards the important aspects of the economy and to fulfill the essential functions of the national government. The central role of the government includes the maintenance of public order through proposed laws, justice maintenance, and administration, the provision of training centers and educational facilities, and healthcare systems, the provision of physical projects, and environmental protection. Budget Rationalization facilitated the diversion of resources from non-productive spending to maintenance, growth, and development spending, which has helped to boost the growth of the Chinese economy. Furthermore, budget rationalization has helped the private sector identify its role in wealth creation. Finally, budget rationalization has helped to improve the optimality of the public sector. This can be seen in the efficient resource allocation and utilization in the public sector which helped in reducing arbitrarily or non-targeted government spending which is not fostering economic growth (Wong, Christine, September 2021). However, between 2008 and 2024, China's proposed expenditure grew higher than its expected revenue, leaving a consistent growth of deficit of the country. The increase reveals the increasing pressure on China as it struggles with increasing debt. The country of China was not the only country affected by this. The U.S. government witnessed a 10.7% interest payment on debt in the year 2023 while Japan is expected to spend 25% of its 2024 budget on debt servicing. Table 4.5 shows China's revenue, expenditure, and deficit of the Public Budget from 2008 to 2024.

Table 4.5: China's Growing General Public Budget (*Values: Trillions of RMB)*

S/N	Years	Revenue	Expenditure	Deficit
1	2024	24.5T	-28.6T	-4.1T
2	2023	23.4T	-28.2T	-4.8T
3	2022	22.8T	-26.2T	-3.4T
4	2021	21.4T	-24.9T	-3.5T
5	2020	20.9T	-24.7T	-3.8T
6	2019	21.3T	-24.0T	-2.7T
7	2018	19.8T	-22.2T	-2.4T
8	2017	18.3T	-20.7T	-2.4T
9	2016	16.7T	-18.9T	-2.2T
10	2015	16.1T	-17.7T	-1.6T
11	2014	14.1T	-15.5T	-1.4T
12	2013	13.1T	-14.3T	-1.2T
13	2012	12.0T	-12.8T	-0.8T
14	2011	10.5T	-11.4T	-0.9T
15	2010	8.3T	-9.3T	-1.0T
16	2009	6.9T	-7.9T	-1.0T
17	2008	6.2T	-6.3T	-0.1T

Source: https://chinapower.csis.org/making-sense-of-chinas-government-budget/

The above table provides a breakdown of China's fiscal income and expenditure within the general public budget. In 2023, China's **revenue** was RMB 23.4 Trillion and its **expenditure** was RMB 28.2 Trillion. This resulted in a **deficit** of RMB 4.9 Trillion (see Appendix 12). In the year 2024 projection, it was evident from the layout above that the general public budget proposed in the year 2024, generated a revenue of about RMB 24.5 Trillion. This amount represents about a 4.8% increase from the revenue generated in the year 2023. The 2024 expected spending is set at RMB 28.5 trillion, which represents a 1% increase. This analysis leaves the Chinese economy with a projected deficit of RMB 4.1 trillion, which represents a 16.8% decrease from 2023.

4.4.2 Privatization (D2)

The major economic reform in China at the turn of the century was the privatization of state-owned enterprises (SOEs). However, more recently, the country has been adopting systematic signs of withdrawing its economic liberalization policy and fostering state capitalism policy. With this, the public sector is expected to play a key role in production.

Therefore, privatizing state-owned enterprises (SOEs) transforms centrally planned economies into free market economies. Indeed, the privatization of China's SOEs has been a significant element of its economic transformation (Hsieh and Song, 2015; Huang, Li, Ma, and Xu, 2017). The government spending strategy on privatization in China has a positive effect on the economy. The positive outcome of increased competitiveness and fostered efficiency in the various markets is due to the privatization policy adopted by the government. Privatization also reduced the pressure on the national government's budgetary allocations by providing additional short-run revenue to the government. This was used to support the financing of the development of infrastructure in the country rather than embarking on borrowing, which places a deficit in the budget. Table 4.6 shows China's methods of privatization with and without explicit ownership change.

Table 4.6: China's Methods of Privatization

Methods of Privatization	Number of Firms	Percentage
Explicit Ownership Change		
Management Buy-Outs	738	53.87%
Selling to Outsiders	376	27.45%
W/O Explicit Ownership Change		
Joint Venture	25	1.82%
Listed	14	1.02%
Employee Holding	75	5.47%
Lease	60	4.38%
Others	82	5.99%
Total	1370	100%

China is gradually reforming and privatizing SOEs into modern private and competitive firms. A trend of integration and privatization of small-owned enterprises has combined the number of state-owned enterprises (SOEs). The Chinese government embarked on full or partial privatization. The adoption of partial privatization was to allow external shareholders to help manage the SOEs.

Management Buy-Out (MBO) policy was the most popular adopted method in China's privatization project, accounting for more than half (53.87%) of all the privatization programs. However, Selling to outsiders was the second most important method, which accounted for 27.45% of privatization programs (**See Table 4.6)**.

4.4.3 Governance (D3)

Adopted policy and proper governance affect the rate of growth of the economy. This could bring a positive consequence or negative consequence on the economy depending on the effectiveness of the adopted policies and proactive governance. The government policies are linked with politics, corruption, and public funds mismanagement. The mismanagement of public funds and corrupt government officials could affect economic growth negatively. The reactiveness of the Chinese government cannot be over-emphasized. The Chinese Government has assumed extensive reforms of its civil service system over the past decade. These have incorporated proper recruitment and selection processes, education and training, work appraisals, rewards and penalties, compensation for great achievements, disciplinary measures, and other vital areas. However, China's civil service reforms and capacity improvements may not be the only measure for good governance but other areas such as educational reforms and digital

economy reforms may also be given much consideration. Its large population produces the rapid development of higher education in China. This large population was eligible for civil service employment through improved capacity. Governance in China has improved to the level of electronic governance (E-government). This includes the use of information and communication technologies to achieve better governance in the country (Wang and Yue, 2017). In China, the internet and the technology behind it is sporadic and this has aided the governments in adequately monitoring the growing population and the entire country all at once. The state of e-government in China reflects the provisional nature of modern Chinese society toward a "socialist market economy". The country's societal information is developing with persevering digital divides. There is an uneven distribution of internet access to the entire Chinese population. Access to information and communication technologies (ICT) is uneven due to the unbalanced growth of the provinces in the country (Zhu et al., 2019). However, internet provision and accessibility have grown rapidly over the years in urban areas, but it remains low in rural areas (Cheng and Zhang, 2019). Figure 4.12 shows China's digital economy from 2008 to 2022.
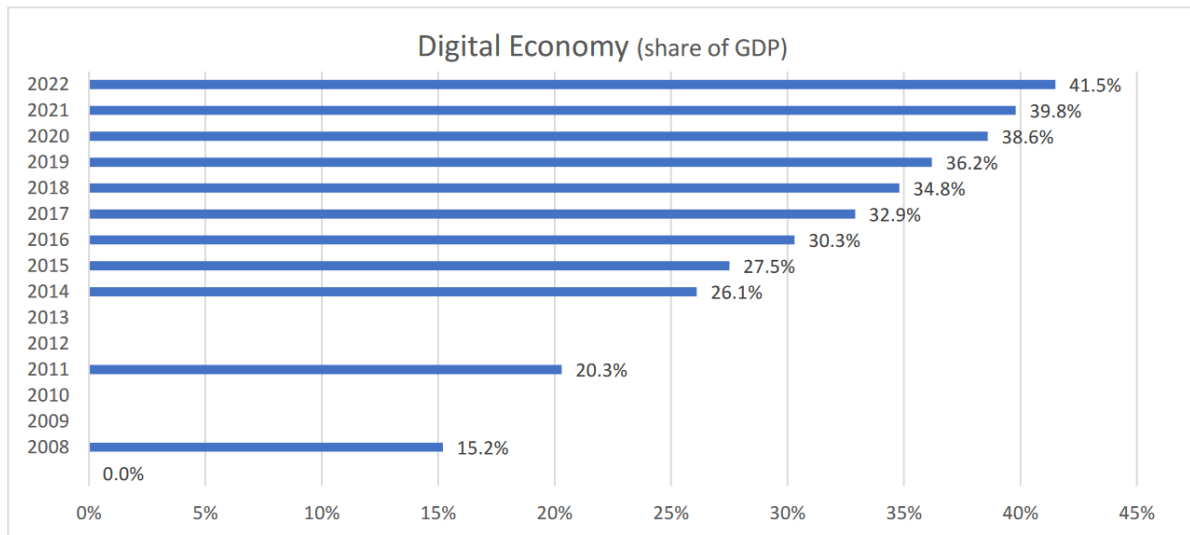
Figure 4.12: China's Digital Economy 2008-2024

Source: https://www.undp.org/sites/g/files/zskgke326/files/2024-03/china_in_numbers_2023-final.pdf

The Chinese digital economy has been expanding robustly in the year 2022 with about 50.2 trillion RMB, registering up 10.2% yearly. This was much higher than China's nominal GDP of 5.3% that year. The proportion of the digital economy to GDP rose to 41.5% in the year 2022.

The IT service industry has assisted the governance of China positively by encompassing a variety of assistance such as management, operations, production, purchase of equipment, and other assistance provided in the IT environment. Hence, Information Technology services are one fast-developing section in the predominant technology industry. In the year 2023, IT services spending is proposed to amount to around 9.79 trillion RMB worldwide. (Zhang, 2021; Zou and Pan, 2023).

4.4.4 Ambitious Environmental Targets (D4)

China's significant reforms were targeted toward a clean environment. A clean environment fosters good living standards and increased life expectancy. The two compulsory and mentioned targets of the Chinese government in the areas of environmental policy are the CO2 intensities and GDP energy per unit, with a decrease to 18% and 13.5% respectively.

Therefore, in terms of renewable energy, the set policy target was that the proportion of non-fossil fuel for primary energy consumption was expected to climb by 20% by 2025 (He, 2020). The proposed target was to increase it to 25% by the year 2030. This was highly discussed at the Climate Ambition Summit by the Chinese government in the year 2020 (**see Appendix 15**). Moreover, the concern is about China's emissions. China has emerged as the world's largest investor in new coal power plants. This has been ongoing for the past ten years. These major investments in curbing environmental problems are currently barring some developing nations enriched with coal-based power energy structures for so many years to come. However, the policy emphasized the need to keep existing coal plants which would accommodate more renewable energy generation onto the existing grid instead of outright phasing out of coal. The plan was that by the year 2025, the number of coal units that would be retrofitted would be about 200 gigawatts and the ratio of flexible power sources in all generations would reach 24% all generations, largely made up of coal power (NEA 2020c; Myllyvirta et al. 2020a, b, c). Table 4.7 below illustrates China's introduction of major climate-related targets.

Table 4.7: China's Major Climate-related target from 2006-2025

	Coal	Non-fossil fuels	Energy	CO2 emissions
11FYP: 2006-2010		New target on the share of renewable energy in primary energy use	New target on energy intensity	New indicator on avoided CO2 emissions from energy conservation
12FYP: 2011-2015	New indicative target on the share of coal in primary energy use	New binding target on the share of non-fossil fuels in primary energy use	New "dual-energy caps": a binding target on energy intensity and an indicative target on total primary energy use	New binding target on CO2 intensity
13FYP: 2016-2020	Coal share indicator becomes a binding target New indicative target on total coal use			
14FYP: 2021-2025				Introduced the principle of an "absolute cap" on CO2 emissions, without giving the exact value

China's CO2 emissions were set to decline and become a continuous pattern in the year 2024 and beyond. The Carbon Brief analysis of the latest trend confirmed the initial statement in the third quarter of 2023. The Chinese government also previously initiated the operation of a national Emission Trading Scheme (ETS) in July 2021. The ETS initiative was introduced in the year 2011 but the piloting of seven local ETS enumerated areas in 2013. It was an initiative that looked like the "Cap-and-Trade System". However, China's ETS program did not focus on setting a fixed cap on CO2 emissions. Instead, each of the enumerated sites received free permission for CO2 emissions based on the firm's output and emission intensity targets. These benchmarks are measured in terms of coverage, sizes of units, and emissions per unit of output which varies across different

segments. Therefore, two years after the official launch of the ETS, precisely on 16 July 2023, the aggregate turnover of China's ETS reached 11.03bn CNY and the aggregate volume of carbon emission permits traded reached 239.9m tons.

4.5 The Effects of the 14th Five-year Plan (2021-2025) on China's GDP Growth Rate

The fourth stated objective assessed the impact of the recent 14th plan on the future growth of China. The plan was implemented for the National Social and Economic Development of China. The plan was sanctioned in March 2021 with high-quality and green development as its highlights. This plan was built on the achievements of the previous plan- the 13th five-year plan (2016-2020). Its major aim was to reduce or eradicate carbon intensities to peg carbon dioxide emissions (CO_2) before the year 2030 and promote aggressive policies on the carbon neutrality goal by 2060. Furthermore, the 14th plan emphasized innovation as the bane of modern development with the growth paradigm of increasing the living standards of the people. The plan provided equality of access to public goods and services, improved the public healthcare system, increased household consumption, and increased the geographical mobility of labor through cross-regional development plans.

The 14th Plan has about 20 quantifiable targets. 8 of the 20 targets are placed under five headings. They include economic development, growth and innovation, better living standards, green development (Environment and Climate Change), and food and energy security.

4.5.1 ECONOMIC DEVELOPMENT

The 14th plan placed more emphasis on increased economic efficiency. The government believed that economic efficiency was important to the success of the economy. Economic efficiency could be achieved when firms thrive to achieve productive and allocative efficiency which leads to the optimum allocation of resources. The removal of barriers fosters competition and reduces the concentration of market power. Therefore, this would result in a fall in firms' production costs (productive efficiency) and prices. The consumer's affordability for the products is increased through reduced prices. The firms' product quality improves and the level of services provided improves as well, boosting consumption. Secondly, the need to accelerate the development of rural areas was also a concern of the government. The provision of job opportunities in rural areas reduces the rural-urban drift. The workers are encouraged to partake in agro-services and green jobs. The government also planned to develop small and medium-scale enterprises by providing loans with no or little interest rates to entrepreneurs. This would further strengthen the management of ecosystems to preserve biodiversity and keep the income of those in the natural resources sector.

4.5.2 GROWTH AND INNOVATION

The 14th plan of China emphasized strongly on annual GDP growth targets for the first time. The idea was to set the GDP growth target every year and not for the straight 5 years. The flexibility was allowed by the government for the adjustment of growth targets by the policymakers based on the macroeconomic conditions. The country's target is to become a moderately developed country in the year 2035. This target requires an average annual growth of the GDP of 4.7% in the next 10 years. The Strategy aimed to keep the proportion of manufacturing in GDP stable after a decade of decline. China's digital

economy will continue with a set increase of digital economy to GDP proportion of 10% of GDP by 2025. This was from the previous 2020 target of 7.8%. The Internet, Cloud Computing, Big data, AI Chat GPT, Blockchain, and augmented reality will be supported. Innovation is at the core of the modernization program. A yearly rise in research and development (R&D) expenditure by at least 7% is at the center of the government initiative to promote scientific and technological proficiency. This whole idea was to promote the country's self-sufficiency without much reliance on foreign countries for help, most especially in high-technology manufactured goods. The government's program focuses heavily on neuroscience, biotech, nanotechnology, artificial intelligence, aerospace, and quantum computing, where the country projects to be a world leader soon.

4.5.3 BETTER LIVING STANDARDS.

The 14th design outlined strategies to increase the standards of living of the Chinese population with access to improved public services. This could be achieved through increased incomes, increased employment opportunities, improved education, training, healthcare systems, and enhanced social security schemes. The newly introduced targets are the efforts to cap unemployment rates to 5.5%, increase the number of certified medical professionals to 3.2 per 1000 population, and provide conducive spaces and environments for children below 3 and half years to 4.5 per 1000 population.

4.5.4 GREEN DEVELOPMENT: ENVIRONMENT AND CLIMATE CHANGE

The 14th plan predominantly featured "Green Development". This was well pronounced in five different areas out of the eight mandatory targets set in this aspect. Therefore, during the years 2021 to 2025, the intensity of carbon and energy is targeted to fall by

18% for carbon intensity per unit of GDP and 13.5% for energy intensity per unit of GDP. Other mandatory goals include achieving days with good air quality in major cities to 87.5% (from 87% in the year 2020); improving the share of surface water up to 85% (from 83.4% in the year 2020); and covering the forest up to 24.1% (from 23.2% in the year 2019). However, as a non-mandatory parameter, the share of nonfossil fuels in primary energy consumption was pegged at 20.1% from the initial plan of 15%. The plan fosters low-carbon emissions and the macroeconomy with new methods of transportation- promotion, and development of electric vehicles (EVs), waste management policies, and energy production programs.

4.5.5 FOOD AND ENERGY SECURITY

Food security is a top priority for China. China is the world's major producer and consumer of food. Therefore, any changes to agricultural trade policies and domestic food production would significantly impact the world trade flows. Feeding the vast population of China is a priority issue for the government. China as a country has witnessed historical ramifications of food shortages, absolute famines, and food crises. However, the task of feeding the huge population of Chinese is vast. China's target was to feed nearly 20% of the world's population but home to nearly 10% of the world's arable land and the country is faced with the challenges of a stable food supply. The challenges and uncertainties faced by the Chinese population and government include changing consumption habits, supply chain bottlenecks, inefficient agricultural practices, international trade dynamics, internal environmental degradation with a bad history of food safety scandals, corruption of officials, and data misinterpretation. This could be tagged as unforeseen threats which have effects on businesses and households (Bernanke, et al., 2020).

In the year 2020, China's government published "six assurances" to initiate the prioritization of economic policy post-COVID-19. The six guarantees include basic livelihood, energy and food security, employment, market entities, stability of supply chains, and operations of grassroots organizations and structures.

The focus was not on food security alone but also energy security (Zhou Q, Shi W., 2019). A decline of about 3% in energy consumption per unit of the GDP was also proposed in the 14th five-year plan. Clean heating would account for about 70% of all heating across the country (**see Appendix 16**).

4.6 Summary

The concluding chapter provided the analysis, discussion, and evaluation of empirical research findings. This chapter investigates the relationships between government spending and the growth of the Chinese economy. Chapter 4 focused on the empirical findings from stationarity tests based on the unit roots test results, cointegration test results, VAR diagnostic tests, and Granger causality tests. The effect of the various government spending components was analyzed, discussed, and evaluated using line graphs to show the relationships and impact of the variables on each other. The outcomes were tested and examined based on the impact of the spending by the Chinese government on the GDP growth rate. Past and present literature were used to back up the research findings. Furthermore, the effect of the government spending reforms on budget rationalization, privatization, governance, and ambitious environmental targets was also analyzed, discussed, and evaluated with related excerpts from past and present scholars. Finally, the recent effect of the present plan on the growth of the Chinese economy was also assessed and evaluated based on the plan prepared and adopted by the Chinese government. Chapter 5 of this study focused on the summary and

conclusion of the study and some identified recommendations for future research studies. This next chapter expatiated on the policy implication and some government failures when policy interventions of the government failed to meet the intended aims thereby causing long-term damaging consequences on the economy.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter 5 summarizes the study's conclusive statements based on the findings, the policy implications from the study's findings and analysis, and the various proposed recommendations for future research on this same topic or related topics. All these were presented in this chapter. This thesis' main purpose was to investigate how the spending of the national government of China has affected economic growth during the periods selected for this research with a significant increase in the national government spending throughout the entire world. The relationship that exists between these two variables is concisely summarized. The period 2008 to 2024 has been the crucial years in the expansion and growth of the Chinese economy. The substantial growth also introduced relevant reforms in the entire system, which have contributed to the globally acclaimed growth of China's economy. The earlier research has not been able to draw on the significance of China's government spending and its effect on the Chinese people and economy as a whole. The effect of government spending was also clearly visible in the five major macroeconomic aims- income redistribution, low unemployment, price stability, economic growth, and balance of payments equilibrium. However, scholars are still undecided about the acceptable and desirable extent of government spending that could bring about the desired results on the economy but the government of China has taken drastic actions to prove to the entire world that government spending cannot be excessive no matter how much is spent. Other variables were taken into consideration for the stability of the economy.

In other words, as the government diverts its nation's resources away from the private sector, job creation, investment opportunities, and high productivity fall which eventually slows down the economy.

5.2 Summary

The swift growth in government spending in China has raised debate and argument among economists and policymakers on the implications of such expected growth which was witnessed in the entire economy, and within the private sector as well. Studies have shown that the allocation of monetary resources through the adoption of various economic policies has reflected in the priorities of the government priorities and has rapidly promoted growth in the Chinese economy in both the past and present. Over the period of seventeen years (2008-2024), government spending in China grew faster than the country's GDP growth rate. An analysis of such a situation entails investigating the influence of government spending on the growth level. The purposeful objectives were to:

(v) To investigate the correlation between the growth rate of China and its components of spending.

(vi) To examine the effects of China's components spending on its growth level.

(vii) To analyze the effects of China's spending reforms on the growth level.

(viii) To assess the impact of the 14th Five-year plan (2021-2025) on the future growth of China.

The Vector Auto Regression (VAR) estimation analysis was adopted and 2008 to 2024 time series data were used to explore and investigate the practical influence of spending on the growth of the Chinese economy. The data used for this study were taken from

government publications and periodic journals of the Finance Ministry of China to evaluate the spending components of the Chinese government. These components included government spending investment, infrastructure, training & education, recreational facilities & health care, public debt payment, economic undertakings, overall government administration, and services, protection & external defense, national security and public order maintenance, government consumption, and science and technology. Data was also collected from China's government gazettes such as economic and political surveys, econometrical and statistical abstracts, Communist Party Sessional Papers, and also from International Financial Statistical Publications. The research, unlike other previous research, has adopted the time series analysis and not cross-sectional analysis. Furthermore, the literature review included almost all the scholars on the issue of government expenditure and economic growth in its theoretical literature analysis. This study emphasized cointegration and Granger Causality estimations in its analysis and evaluation to estimate and investigate the relationship between government spending components and the growth of the GDP through the VAR model. Most other studies just relied on the use of the ordinary least squares methods as described in the empirical studies mentioned in the literature review in showing such relationships without further investigations for cointegration and causality checks. The effect of China's government spending reforms on the growth in China was also examined. The reform strategies included in this study were budget rationalization, privatization, governance, and ambitious environmental targets.

The first and second objectives of the study investigate and examine the relationship between the variables mentioned above. The Unit root test, VAR diagnostic statistical test, Johansen cointegration, and the Granger causality tests were used for all the

variables. Line graphs were also used to clearly show the visual relationships that existed between all the components of government spending and the growth of the economy of China. The results showed the periodic relationship that existed between GDP growth and spending on all its components. The bidirectional causality between the variables was identified using the Granger causality test. Moreso, the findings of the study in this aspect confirmed the submission of the Keynesian theory, which suggests that increased government spending results in the growth of an economy. The gathered data also support Wagner's hypothesis submitted in 1959 that clearly stated that increased government participation in the economy and its corresponding increase in spending is the main and undeniable reason for economic growth. This achievement in the economy happened because of the spending made on every aspect of the economy through the provision of funds to key aspects of the economy. The test results showed bi-directional causality and uni-directional causality between government spending and the selected components. The test revealed bi-directional causality between government spending on economic affairs, investment, physical infrastructure, healthcare, public debt servicing, defense, national security and public order maintenance, science and technology, and economic growth. This showed that the variables with bi-directional causality could be predicted on each other and they could be taken as dependent or as an independent variable. The other government spending variables had a uni-directional causality between government spending on education, general administration and services, and government consumption and economic growth. The interpretation of the uni-directional causality showed that one variable influences another directly. The Granger causality tests exposed a piece of important information when investigating the correlation between two or more variables. From this study, the Granger Causality test results

revealed the existing relationships between the government spending components selected for this study. The spending of the government on infrastructure, investment, consumption, affairs of the economy, defense, education, administration and services, science and technology, public order and security, healthcare, and national debt servicing forecasts the growth of the GDP. The findings of this study confirmed the estimation of the VAR model and showed that there was the presence of bi-directional causality (8 components) in the spending of the government on physical infrastructure, investment, healthcare, public debt servicing, defense, national security, public order maintenance, science and technology, economic affairs, and economic growth. It was seen that increased government spending sparks increased demand for goods and services and government services by the people, which leads to the growth of incomes and well-being of the people. The findings supported Rams' submissions in 1986 which specified that the large size of government spending and scope was a powerful engine for achieving growth of the economy. The reasons for this include the government's role in promoting private sector investments and increased productive investment with an optimal pathway for the growth of an economy.

The third objective analyzed the effects of the spending reforms by the government on the growth of China's economy. Four government-spending reforms were conspicuous and were included in the analysis based on the data gathered for the study. They were supposed to be included in the VAR model as dummies (D1-D4) for estimation purposes but the idea was later changed to analyzing the effect on the economy as they affect growth. The study showed that the effects of budget rationalization, privatization, governance, and ambitious environmental targets on the economic growth of China were positive. Budget rationalization helped reallocate resources towards the essential

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aspects of the economy, which promoted the rapid growth of the economy. The privatization of State-Owned Enterprises (SOEs) transformed the economy from a centrally planned to a market economy. The privatization of China's SOEs has a significant impact on its economic transformation. The results were positive outcomes of increased competitiveness and fostered efficiency in the various markets. However, governance initially harmed the economy but later it materialized into a positive impact on the growth of the economy. China's e-government policy helped the governance of its huge population and increasing land mass. Finally, a clean environmental target fostered good living standards and increased life expectancy. The Chinese government targeted the policy on decreased CO_2 Intensities and GDP Energy per unit.

The fourth objective assessed the impact of the 14th Five-year plan (2021-2025) on the future growth of China. The plan was placed under five headings. These were critically evaluated based on the policy document published by the government of China. The plans included in this study were economic development, growth and innovation, better living standards, green development, and food and energy security.

5.3 Conclusion

The conclusion for this study was drawn based on the empirical findings and results gathered from this research. The study concludes that the components of government spending expenditure matter for the economic growth of any country as in the case of China. Obviously, in the long-run situation of an economy, spending on economic affairs, investment, physical infrastructure, healthcare, public debt servicing, defense, national security and public order maintenance, science, and technology have positive effects on the growth of the country. However, in the short run, government spending

on education, overall administration and services, and government consumption have positive effects on China's growth level. It was previously presumed before the study was conducted that government spending on debt servicing would harm the growth of an economy but this was not the case with China. The government's debt servicing spending has a long-term positive effect on the growth of China's GDP and does not harm economic growth. The government structure and stated goals also play an important part in the determination of expected actual and potential growth of an economy through government spending reforms, which control directly how an economy's resources can be diverted to different usage through budget rationalization, governance, partial and full privatization projects and the safety of the environment. The government decides how resources are allocated optimally to increase the country's real GDP and to shift the country's production possibility curve outwards. The results of this study revealed that government-spending reform on privatization and good governance should be given absolute priority if a government is interested in achieving, promoting, and sustaining long-run potential growth levels. Budget rationalization and ambitious environmental targets appeared as appropriate strategies for increasing the growth of the economy through the rationing of government funds and the creation of a conducive environment that is free of harm necessary for sustained economic growth in the short run. The 14th five-year plan from 2021-2025 has been achieved to about 80% following the action plan set on each target. The country is presently witnessing tremendous growth, creativity, and innovation with a focus on food production and better standards of living for all in a safe environment.

Therefore, the findings of this study emphasized the fact that the components of government spending, the government spending reforms, and the 14th five-year plan of

China are vital in determining the pace of the growth of the Chinese economy. Hence, the main reasons why the government of China keeps engaging huge spending on the different components, adopting different reforms at different times, and implementing five-year plans to assess the successes of each successive plan.

In summary, the conclusions of this study were the disaggregation of government spending into different components and reforms. It was concluded that government spending and policies on restructuring and reforms had an absolute effect on the Chinese economy. Secondly, the study showed a bi-directional cause effect on government spending and the potential growth level of the economy. Finally, the study established that an increase or a decrease in government spending is likely to have a positive or a negative effect on economic growth. However, government spending has a gradual effect on the growth of an economy but the growth is consistent.

5.4 Policy Implications

There are numerous policy implications drawn from the research data and analysis of the findings on the components of government spending and government-spending reforms with relevance to the literature reviewed.

5.4.1 Policy Implications of the Components of Government Spending

Several policy implications were drawn from the components of government spending. These policy implications are discussed below:

*The national government as leaders ought to raise its investment spending in key beneficial areas to the private sector and avoid the spending patterns that crowd out the private sector investments. The expected behavior of the government is to escalate its spending on items that foster private and public production patterns that would enhance the growth of any country. Such productive investment spending includes the spending

on equipment, plants, and machinery that promote positive externalities that raise growth and private investments. The increase in private and public investment would raise the economy's growth by **3%** yearly.

*The government should allocate adequate resources to the development of physical infrastructures to stimulate and strengthen economic growth as envisioned in 2030. The study's findings emphasized that making additional spending on the development of physical infrastructures such as railways, ports, terminals, communication and transportation networks, water supply, and electricity generation contributes significantly to the growth of an economy by improving labor and capital efficiency and productivity in the private and public sectors. In addition, high government spending on energy generation, communications, and transportation systems creates a supporting environment for businesses to thrive by increasing production capacity and competitiveness through reduced average cost of production. The increased spending on the development of physical infrastructures will affect the growth of the economy by **4%** per year.

*The government should increase its spending on education and the development of human capital. This study showed that education and training positively influence economic growth. The findings suggested the provision of training programs, education facilities, and the employment of teaching personnel, free and accessible education for all citizens, reduced burden of education, and opening up educational opportunities to marginalized citizens. These would have a direct positive effect on the growth of an economy because when the skills and training of the citizens increase, then the productive capacity of the people would also increase. Positive campaigns, adverts, public awareness, and adequate educational facilities create positive externalities of

production and consumption that would help increase the steady growth rate of the economy. An increase in spending on education is expected to influence the growth rate of the economy by **6%**.

*Another policy implication is that the government should allocate adequate funds for the development and building of the healthcare system. The study showed that an improved healthcare system contributes positively to the growth of an economy. This is possible through targeted investment in hospital equipment, healthcare facilities, laboratory machines, and the provision of qualitative medical and pharmaceutical supplies. The government should consider the development of medical professionals through frequent training programs relevant to the field of medicine. Doctors and nurses should be made relevant for the growing economy. Increased government spending allocation to the health sector increases the growth of the economy because a healthy citizen brings about a healthy nation. However, health is wealth. This increase in government spending in the healthcare sector would affect the growth of the economy by **2%.

***The government should modify its spending allocation to debt servicing. Debt servicing involves paying back the accumulated interest on debt. This study found that public debt servicing affects the growth of an economy. However, public debt servicing reduces the resource allocation to many other productive areas of the economy but the case of China is different because the debt was used to develop the economy and this has generated many resources for the country. Furthermore, excessive public debt payments crowd out private financial activities and resource allocation, which adversely affects economic growth. However, a reduction in public debt servicing is achieved through concessional reduced borrowing, reduced corruption, and reduced mismanagement of

funds. The study showed that the government's debt repayment should have a lower interest rate and a long-term repayment period. This would reduce the burden of debt servicing on the economy. The reduction in spending on public debt payments by the government would influence an economy's growth by **2%** annually.

*The spending allocation to the economic affairs of the country should be increased. Increased spending on economic affairs was found to positively affect the growth of the economy. The economy that ensures adequate productive capacity should receive more attention in resource allocation than those that are non-productive in nature. This called for budget rationalization reform in this area. The study showed that spending on economic activities provides a direct booster to productive capacities through its spending in areas of trade, mineral extraction, agriculture, forestry, fishing, tourism, maintenance and operations, manufacturing, and construction. Government spending on economic affairs would increase economic growth by **4%** annually.

*The government should raise its spending share to the country's overall administration and services in the country by increasing its economic efficiency and service distribution. The study found that overall spending on administration and services also affects positively the growth of the economy. This would affect the private sector positively and give priority where necessary. This suggests the government's sustainable economic policies for growth and development would prevent crowding out of private investments and economic growth levels. The government sector efficiency leads to enhanced efficiency in the factor markets, commodity and service markets, foreign exchange markets, and money and financial asset markets. This would help to organize resources and make allocations for private investment. The spending on general administration and services would affect economic growth by **3%** annually.

*The next implication combines defense and national security. Increased government spending allocation to defense, national security, and public order. It was found in this study that spending on defense, national security, and public order maintenance has a positive influence on the growth of an economy. The increase in spending allocations to these components leads to a positive change in the growth of the economy. These allocations help to improve the security and civil liberty within the economy thereby increasing the economic activities in related areas. This also helps to increase market competitiveness in the economy due to the increased security and business protection through enforced public order policies and legal systems. The spending on defense, national security, and public order maintenance would affect the growth of the economy by **1%** per year.

*The government should make an effort to reduce its consumption spending. This has a short-run effect on the growth of the economy because of its uni-directional nature. Government consumption of goods and services could have a devastating effect on the economy in the long run. The private sector investments are crowded out by increased government consumption, which reduces the disposable income of the citizens and results in a fall in household consumption in the economy. The policy implication of reduced government consumption would increase the economy's growth by **1%** per year.

*The final implication drawn on the components is the spending on science and technology. The government's spending on science and technology promotes scientific exploration, technological innovation, and digital advancement, which plays a vital role in the growth of the economy. The increased spending on digital economic infrastructural construction promotes the growth and transformation of enterprises, which in turn increases the growth of the country's GDP. The study found out the impact

path of fiscal spending in science and technology leading to the digitalization of the economy. China is taken as a major key example in this regard. The research uses China's 2008-2024 fiscal investments in science and technology and the digital economy development index to conclude this implication. The study found that government spending on science and technology promotes the growth of enterprises, technological innovation, and digital infrastructural economy, thus encouraging the innovative expansion of the digital economy (China Statistical Yearbook, 2021; Zhang, 2023). The spending on science and technology would affect the growth of the economy by **2%** per year.

5.4.2 Policy Implications of the Government Spending Reforms

Several policy implications were drawn from government spending reforms. These policy implications are discussed below:

*The government should review its spending structure through budget rationalization. This would achieve the expected efficiency in the economy and active public sector activities. This would affect the growth of the economy by at least **2%** yearly. The study showed that continuous budget rationalization had a positive effect on the growth of the economy. Every policymaker needs to focus not only on government spending levels but also on the components of government spending and its reforms. However, the arrangement of government spending should be assessed by its effect on the growth of the economy. A clear set of definite measures for determining the allocations of resources should be accompanied by government transparency and accountability to avoid random allocation. This entails long-term agendas of budget rationalization concentrating on eradication of wasteful and unproductive spending thereby improving equity through balanced growth policies and maximizing the goal of the growth of the

economy by ensuring that government-spending distributions are allocated with reduced costs.

*The government spending reform on privatization should be addressed by adopting a policy on privatization that encourages private sector participation and improves efficiency and productivity in the economy. The government should adopt a policy on privatization spending downsizing and outsourcing to cut its spending and in turn, reduce the national debt. The government should collaborate with the private sector in building a strong platform for business growth, and investment through Public-Private Partnership (PPP) and the privatization of state-owned enterprises. This study found that the government's privatization policy contributes positively to the growth of an economy. The growth envisaged could be accomplished through joint efforts of the private and public sectors.

This study found that government spending reforms on privatization would affect economic growth positively and would increase economic growth by **1%** per year.

**The government spending reform on governance is very important because it is one of the government's functions is to provide better services to the citizens. To achieve this aim, the quality of public services and good governance needs to be improved by the government. Hence, most countries have embarked on public sector reform in governance in the last two decades. Better management should follow the significant increase in government spending by the government. The high number of corruption cases at the public sector level worsens this reform. Therefore, one of the main successes in the administration of the public sector is the efficiency of government spending which increases the societal welfare and the quality of public service in the society. Efficiency occurs when government spending results in the anticipated outcomes. The main

objective of the government through its spending is to provide high-quality services to the citizens (Wardhani et al., 2017). This study's finding also showed that an increase in government spending reforms on governance increases the growth of an economy and shows a positive effect on economic growth by **3%** per year.

*Government spending reforms on ambitious environmental targets require the adequate tackling of environmental and climate issues which would bring about a positive transformation across the country. This action requires good leadership, which is not held back by economic or political obstacles. To meet this sustainable target, the government requires an ambitious long-term commitment. Countries grow sustainably when environmental degradation and climate change are properly managed. Therefore, apart from the danger posed to the lived environment such as extreme weather events, intense drought, and depletion of natural resources, failure to arrest the situation, poses an extreme threat to health and social issues and pushes many people into extreme poverty trap. The Chinese government has made drastic efforts in various reforms adopted concerning the safety of the environment. This study found that government spending reforms on ambitious environmental targets would affect economic growth positively and would increase economic growth by **2%** per year.

5.4.3 Policy Implications of the 14th Five-Year Plan (2021-2024)

The 14th plan highlights a distinctive prospect to transfer toward a high-quality level of development by tackling environmental and social challenges that have occurred in the country after decades of consistent and rapid growth. The transition highlighted in the 14th plan needs greater strategies to extend social inclusion in the Chinese aging society and to reinforce the sustainability programs on environmental issues of the development model. Therefore, the innovative ideas of the core development agenda pose expected

challenges for policymakers because of the development of high technology in the country. To address these challenges, the Chinese government has put in place an action plan for the "dual circulation" development pattern; and formulated strategies in achieving the goals of the 14th plan.

The document also discusses the five policy target areas that are related to trade and business development - economic development, growth and innovation through market reforms and research, better living standards, green growth and development through strategic environmental and climatic change, and food and energy security. The key implications of the 14th National Plan are:

- Yearly GDP growth rate to be kept to a realistic range with set annual targets that are based on specific criteria.
- Yearly growth in total labor productivity is set to be higher than the growth rate of GDP.
- Expected Permanent Urban population to be at least 65% of the entire huge population by the year 2025.
- Investment in Research and Development to increase by 7% yearly.
- Yearly GDP per capita growth rate to move in the same pattern as the country's GDP growth rate.
- Urban Unemployment Rate to be pegged below 5.5%

5.5 Areas for Further Research

There is a need for further research to examine the effect of disaggregated military and education government spending to determine their influence on economic growth, especially in conflict and war-ridden countries with huge spending on military

equipment. Further research can also be made to examine the lapses in corruption and embezzlement of public funds by leaders with regards to budgetary manipulations; unrecorded spending; frequent traveling expenses and manipulations and wrong computation of monetary in the case of underdeveloped and less developed nations. Economics scholars and policymakers can further reexamine the need to promote efficiency in the public administration of funds and the allocation of resources with an emphasis on privatization and commercialization. Recently, there has been a growing realization about the work required to gear adjustment policies more efficiently towards expected growth. In setting targets for total government spending and disregarding its components, the quality of spending may worsen in comparison to the growth objectives. However, in less developed countries, there is a huge potential conflict between government policy adjustment and expected growth rates.

Finally, the effect of climate change, demographic burden, and political challenges on economic growth can further be investigated to determine whether welfare terms positively or negatively affect the growth of an economy and the optimal spending portfolios. However, the focus documented herein was to investigate and explore the effects of spending components on the growth of the Chinese economy, spending reforms, and the 14th five-year plan for the growth of China. The issue of government policy objectives that prompted spending and the decision that guarantees such allocation of spending among the various components need to be investigated as well.

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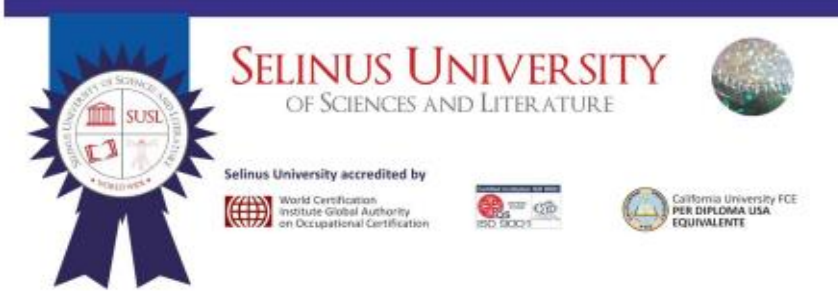
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APPENDICES:

Appendix 1: Provisional Certificate of Credit for APEL Program at Selinus University.

SELINUS UNIVERSITY
OF SCIENCES AND LITERATURE

Selinus University accredited by

World Certification Institute Global Authority on Occupational Certification

California University FCE PER DIPLOMA USA EQUIVALENTE

APEL PROGRAM
ACCREDITATION OF PRIOR EXPERIENTIAL LEARNING

PROVISIONAL CERTIFICATE OF CREDITS
THIS IS TO CERTIFY THAT THE STUDENT

Provisional Certificate n° 01074/24
Release date, 12 February 2024

Name and Surname: **BUSOLA ENIOLA ADEBAYO**
Following the assessment of her previous studies and professional experience noted in her CV, has obtained the following academic credits:

- Professional experience credits: 11
- Education credits: 8
- Training credits: 3
- General skill credits: 3

- **Total credits earned: 25**
- **Credits missing for Master: 15**

Cost of Master: € 2.250,00

The credits listed above are valid for entry to the following academic programs:

FACULTY of BUSINESS & MEDIA
- **Master of Science in Finance & Economics**

The amount of credits will be subtracted from the total cost of the study program.

Chief Academic Officer

Provisional Certificate of SUSL Credits

Appendix 2: Enrolment Certificate from Selinus University

Certificate

OF ENROLMENT AT
SELINUS UNIVERSITY

N° UNISE2979IT

DATE 20ᵀᴴ FEBRUARY 2024

STUDENT INFORMATION:
Name: **BUSOLA ENIOLA**
Surname: **ADEBAYO**
Date of birth: **06/03/1980**   City of birth: **LAGOS**
Country: **NIGERIA**

CURRENT ADDRESS:
City: **BEIJING**   Postal code: **100028**
Street: **TAIYANGGONG NORTH STREET CHAOYANG DISTRICT BEIJING**
Country: **CHINA**   Citizenship: **NIGERIAN**

STUDY INFORMATION:
Program: **MASTER OF SCIENCE**
Faculty of **BUSINESS & MEDIA**
Major: **FINANCE AND ECONOMICS**
Study program: ☐ Bachelor ☒ Master ☐ PhD (Doctor of Philosophy)
            ☒ by APEL ☐ by Research ☐ by Publication

TUITION INFORMATION
Last payment date: **01 AUGUST 2024**
Payment option: **6 INSTALMENTS**
Payment modality: **Bank remittance or PayPal**

SELINUS UNIVERSITY
Secretariat

SELINUS UNIVERSITY

RESEARCH TOPIC: "THE IMPACT OF GOVERNMENT SPENDING (2008-2024) AND THE 14TH FIVE-YEAR PLAN (2021-2025) ON THE ECONOMIC GROWTH OF THE PEOPLE'S REPUBLIC OF CHINA"

Research Aims	Research Objectives	Project Research Questions (PRQs)
To investigate and analyze the impact and correlation between various components of government spending and the overall economic growth of China.	To investigate the relationship between the components of government spending and economic growth in China.	What is the relationship between the components of government spending and economic growth in China?
To examine and understand how different categories or components of government spending influence and contribute to the overall economic growth of the country.	To examine the effects of the components of government spending on the economic growth of China.	What are the effects of the components of government spending on economic growth?
To investigate and analyze the impact and consequences of government spending reforms on the overall economic growth of the country.	To analyze the effects of government spending reforms on the economic growth of China.	What is the effect of government spending reforms on economic growth?
To comprehensively assess and analyze the impact and outcomes of the specific policies, initiatives, and strategies outlined in the 14th five-year plan on both the economic growth and social development aspects of China.	To assess the impact of the 14th Five-year plan (2021-2025) on the future growth of China.	What is the effect of the 14th Five-Year Plan (2021–2025) on the economic growth and social development of the People's Republic of China (PRC)?

China's Actual Government Deficit

■ Official Deficit ■ Consolidated General Public Budget Deficit ■ Other Budget Deficits ■ Total Deficit
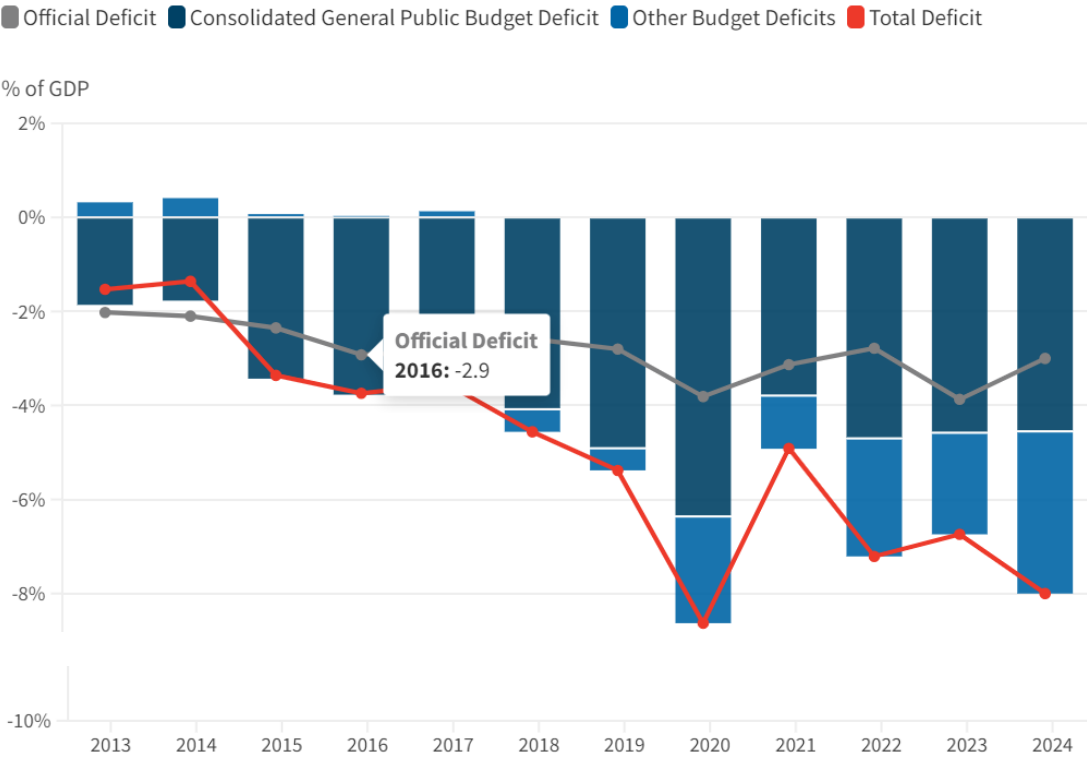
Note: 2024 figures are preliminary. The consolidated general public budget deficit excludes transfers from other budget areas. The official deficit includes transfers.
Source: CSIS China Power Project; Chinese Ministry of Finance

Appendix 5: China GDP Historical Data 2008-2024

Year	GDP	Per Capita	Growth
2024	18532.63	13136.48	5.3%
2023	17662.04	12513.87	5.2%
2022	$17,963.17B	$12,720	2.99%
2021	$17,820.46B	$12,618	8.45%
2020	$14,687.74B	$10,409	2.24%
2019	$14,279.97B	$10,144	5.95%
2018	$13,894.91B	$9,905	6.75%
2017	$12,310.49B	$8,817	6.95%
2016	$11,233.31B	$8,094	6.85%
2015	$11,061.57B	$8,016	7.04%
2014	$10,475.62B	$7,636	7.43%
2013	$9,570.47B	$7,020	7.77%
2012	$8,532.19B	$6,301	7.86%
2011	$7,551.55B	$5,614	9.55%
2010	$6,087.19B	$4,550	10.64%
2009	$5,101.69B	$3,832	9.40%
2008	$4,594.34B	$3,468	9.65%

Source:https://www.macrotrends.net/global-metrics/countries/CHN/china/gdp-gross-domestic-product

Appendix 6: China's GDP 2008-2024
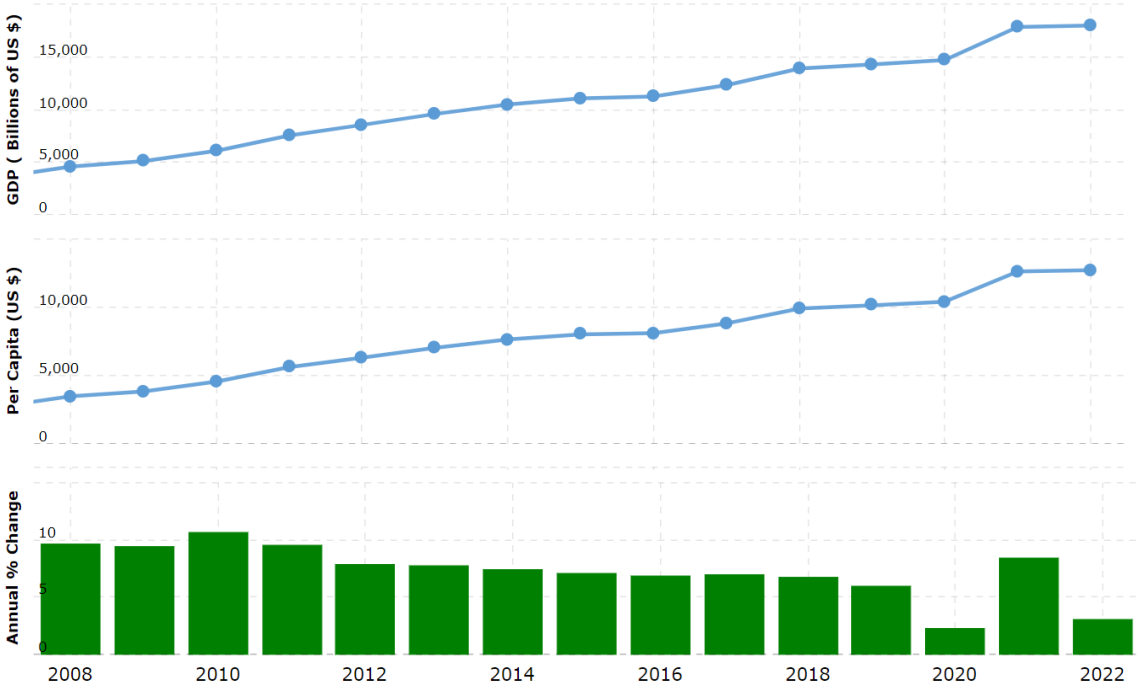
Appendix 7: Growth rate of Real GDP in China from 2013 to 2023 with forecasts until 2029
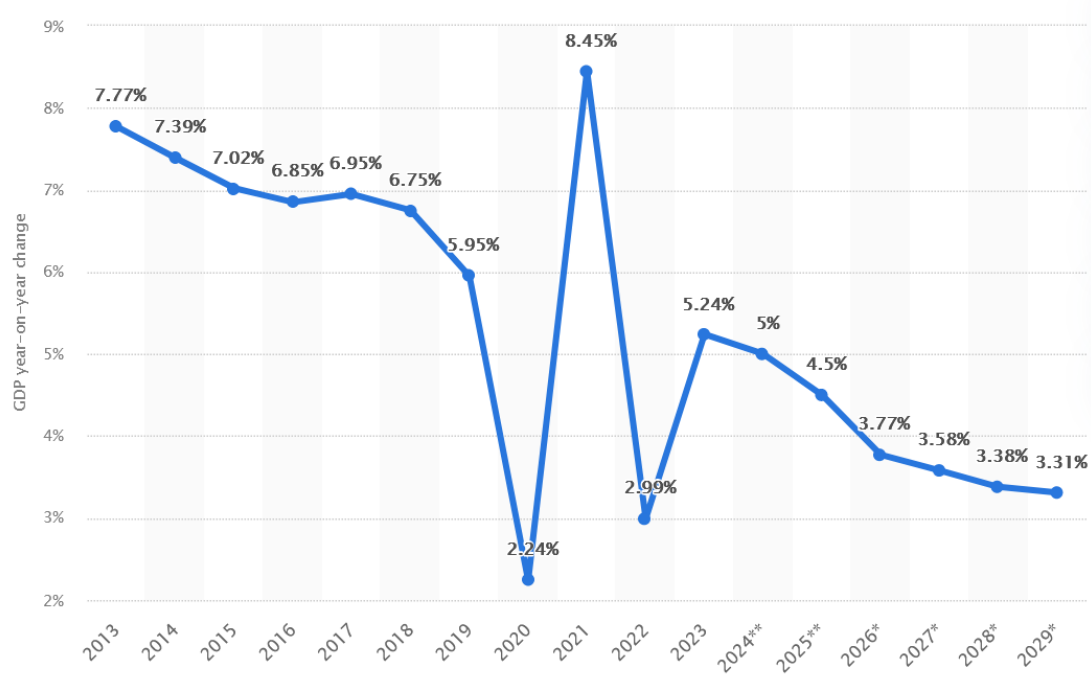
Appendix 8: Raw Data of China's GDP and Government Spending on the different components from 2008 to 2024 projections

	A Components & Years	B GDP	C Investment Spending (Financial Transactions)	D Physical Infrastructural Spending (Urban and Rural Community Affairs)	E Education	F Health	G Public Debt (Interests)	H Economic Affairs (Social Security & Employment)	I General Administration & Service	J Defense	K National Security & Public Order Maintenance	L Govt Consumption	M Science & Technology
2	2008	319244.60	15858.00	4206.14	9010.21	2757.04	2778.44	6804.29	9795.92	4178.76	4059.76	158900.00	2611.00
3	2009	348517.70	19651.00	5107.66	10437.54	3994.19	2880.34	7606.68	9164.21	4951.10	4744.09	174500.00	3276.80
4	2010	412119.30	19539.34	5987.38	12550.02	4804.18	2960.45	9130.62	9337.16	5333.37	5517.70	201600.00	4196.70
5	2011	487940.20	20363.00	7620.55	16497.33	6429.51	2845.70	11109.40	10987.78	6027.91	6304.27	244700.00	3828.02
6	2012	538580.00	22344.00	9079.12	21242.10	7245.11	2770.34	12585.52	12700.46	6691.92	7111.60	275400.00	4452.63
7	2013	592963.20	36401.84	11165.57	22001.76	8279.90	2856.56	14490.54	13755.13	7410.62	7786.78	306700.00	5084.30
8	2014	643563.10	39895.00	12959.50	23041.70	10176.80	2467.46	15968.90	13267.50	8289.50	8357.23	338000.00	5314.50
9	2015	688858.20	65901.18	15886.36	26271.88	11953.18	2866.90	19018.69	13547.79	9087.84	9379.96	371900.00	5862.57
10	2016	746395.10	36040.99	18394.60	28072.80	13158.80	4991.00	21591.50	14790.50	9765.80	11031.98	410800.00	6564.00
11	2017	832035.90	42914.00	20585.00	30153.18	14450.63	6185.00	24611.68	16510.36	10432.37	12461.27	456500.00	7266.98
12	2018	919281.10	19147.19	22124.13	32169.47	15623.55	7345.00	27012.09	18374.69	11280.46	13781.48	506100.00	8326.65
13	2019	986515.20	9648.87	24895.24	34796.94	16665.34	8338.00	29379.08	20344.66	12122.10	13901.93	552600.00	9470.79
14	2020	1013567.00	5222.71	19945.91	36359.93	19216.19	9829.00	32568.51	20061.10	12918.77	13862.90	560800.00	9018.34
15	2021	1149237.00	8525.00	19453.99	37468.85	19142.68	9280.00	33788.26	19880.24	13787.23	13781.15	619700.00	9669.77
16	2022	1204724.00	9350.11	19425.22	39447.59	22536.72	11358.00	36609.15	20879.40	14752.22	14420.19	641600.00	10032.02
17	2023	1260582.10	25577.23	20530.00	41242.11	22393.00	11829.00	39883.00	21763.40	15536.78	15439.21	642300.00	10823.00
18	2024	296299.00	6725.35	5614.00	10436.23	5735.00	2420.00	12708.00	7245.45	6430.23	5789.23	207166.00	1938.00

Appendix 9: Refined Data of China's GDP and Government Spending on the Different components from 2008 to 2024 projections

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Components & Years	GDP	Investment Spending (Financial Transactions)	Physical Infrastructural Spending (Urban and Rural Community Affairs)	Education	Health	Public Debt (Interests)	Economic Affairs (Social Security & Employment)	General Administration & Service	Defense	National Security & Public Order Maintenance	Govt Consumption	Science & Technology
2	2008	319245	15858	4206	9010	2757	2778	6804	9796	4179	4060	158900	2611
3	2009	348518	19651	5108	10438	3994	2880	7607	9164	4951	4744	174500	3277
4	2010	412119	19539	5987	12550	4804	2960	9131	9337	5333	5518	201600	4197
5	2011	487940	20363	7621	16497	6430	2846	11109	10988	6028	6304	244700	3828
6	2012	538580	22344	9079	21242	7245	2770	12586	12700	6692	7112	275400	4453
7	2013	592963	36402	11166	22002	8280	2857	14491	13755	7411	7787	306700	5084
8	2014	643563	39895	12960	23042	10177	2467	15969	13268	8290	8357	338000	5315
9	2015	688858	65901	15886	26272	11953	2867	19019	13548	9088	9380	371900	5863
10	2016	746395	36041	18395	28073	13159	4991	21592	14791	9766	11032	410800	6564
11	2017	832036	42914	20585	30153	14451	6185	24612	16510	10432	12461	456500	7267
12	2018	919281	19147	22124	32169	15624	7345	27012	18375	11280	13781	506100	8327
13	2019	986515	9649	24895	34797	16665	8338	29379	20345	12122	13902	552600	9471
14	2020	1013567	5223	19946	36360	19216	9829	32569	20061	12919	13863	560800	9018
15	2021	1149237	8525	19454	37469	19143	9280	33788	19880	13787	13781	619700	9670
16	2022	1204724	9350	19425	39448	22537	11358	36609	20879	14752	14420	641600	10032
17	2023	1260582	25577	20530	41242	22393	11829	39883	21763	15537	15439	642300	10823
18	2024	296299	6725	5614	10436	5735	2420	12708	7245	6430	5789	207166	1938

Appendix 10: Real GDP and the Ratio of Components of Real Government Expenditure to the Real GDP

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Components & Years	GDP Growth Rate	GDP	Investment Spending (Financial Transactions)	IS/real GDP	Physical Infrastructural Spending (Urban and Rural Community Affairs)	PHI/real GDP	Education	ES/real GDP	Health	HS/real GDP	Public Debt (Interests)	PDS/real GDP	Economic Affairs (Social Security & Employment)	EAS/real GDP
2	2008	9.7%	319244.60	15858.00	0.0497	4206.14	0.0132	9010.21	0.0282	2757.04	0.0086	2778.44	0.0087	6804.29	0.0213
3	2009	9.4%	348517.70	19651.00	0.0564	5107.66	0.0147	10437.54	0.0299	3994.19	0.0115	2880.34	0.0083	7606.68	0.0218
4	2010	10.6%	412119.30	19539.34	0.0474	5987.38	0.0145	12550.02	0.0305	4804.18	0.0117	2960.45	0.0072	9130.62	0.0222
5	2011	9.6%	487940.20	20363.00	0.0417	7620.55	0.0156	16497.33	0.0338	6429.51	0.0132	2845.70	0.0058	11109.40	0.0228
6	2012	7.9%	538580.00	22344.00	0.0415	9079.12	0.0169	21242.10	0.0394	7245.11	0.0135	2770.34	0.0051	12585.52	0.0234
7	2013	7.8%	592963.20	36401.84	0.0614	11165.57	0.0188	22001.76	0.0371	8279.90	0.0140	2856.56	0.0048	14490.54	0.0244
8	2014	7.4%	643563.10	39895.00	0.0620	12959.50	0.0201	23041.70	0.0358	10176.80	0.0158	2467.46	0.0038	15968.90	0.0248
9	2015	7%	688858.20	65901.18	0.0957	15886.36	0.0231	26271.88	0.0381	11953.18	0.0174	2866.90	0.0042	19018.69	0.0276
10	2016	6.8%	746395.10	36040.99	0.0483	18394.60	0.0246	28072.80	0.0376	13158.80	0.0176	4991.00	0.0067	21591.50	0.0289
11	2017	6.9%	832035.90	42914.00	0.0516	20585.00	0.0247	30153.18	0.0362	14450.63	0.0174	6185.00	0.0074	24611.68	0.0296
12	2018	6.7%	919281.10	19147.19	0.0208	22124.13	0.0241	32169.47	0.0350	15623.55	0.0170	7345.00	0.0080	27012.09	0.0294
13	2019	6%	986515.20	9648.87	0.0098	24895.24	0.0252	34796.94	0.0353	16665.34	0.0169	8338.00	0.0085	29379.08	0.0298
14	2020	2.2%	1013567.00	5222.71	0.0052	19945.91	0.0197	36359.93	0.0359	19216.19	0.0190	9829.00	0.0097	32568.51	0.0321
15	2021	8.4%	1149237.00	8525.00	0.0074	19453.99	0.0169	37468.85	0.0326	19142.68	0.0167	9280.00	0.0081	33788.26	0.0294
16	2022	3%	1204724.00	9350.11	0.0078	19425.22	0.0161	39447.59	0.0327	22536.72	0.0187	11358.00	0.0094	36609.15	0.0304
17	2023	5.2%	1260582.10	25577.23	0.0203	20530.00	0.0163	41242.11	0.0327	22393.00	0.0178	11829.00	0.0094	39883.00	0.0316
18	2024	5.3%	296299.00	6725.35	0.0227	5614.00	0.0189	10436.23	0.0352	5735.00	0.0194	2420.00	0.0082	12708.00	0.0429

	A	B	C	P	Q	R	S	T	U	V	W	X	Y
1	Components & Years	GDP Growth Rate	GDP	General Administration & Service	GAS/real GDP	Defense	DS/real GDP	National Security & Public Order Maintenance	NSP/real GDP	Govt Consumption	CS/real GDP	Science & Technology	STS/real GDP
2	2008	9.7%	319244.60	9795.92	0.0307	4178.76	0.0131	4059.76	0.0127	158900.00	0.4977	2611.00	0.0082
3	2009	9.4%	348517.70	9164.21	0.0263	4951.10	0.0142	4744.09	0.0136	174500.00	0.5007	3276.80	0.0094
4	2010	10.6%	412119.30	9337.16	0.0227	5333.37	0.0129	5517.70	0.0134	201600.00	0.4892	4196.70	0.0102
5	2011	9.6%	487940.20	10987.78	0.0225	6027.91	0.0124	6304.27	0.0129	244700.00	0.5015	3828.02	0.0078
6	2012	7.9%	538580.00	12700.46	0.0236	6691.92	0.0124	7111.60	0.0132	275400.00	0.5113	4452.63	0.0083
7	2013	7.8%	592963.20	13755.13	0.0232	7410.62	0.0125	7786.78	0.0131	306700.00	0.5172	5084.30	0.0086
8	2014	7.4%	643563.10	13267.50	0.0206	8289.50	0.0129	8357.23	0.0130	338000.00	0.5252	5314.50	0.0083
9	2015	7%	688858.20	13547.79	0.0197	9087.84	0.0132	9379.96	0.0136	371900.00	0.5399	5862.57	0.0085
10	2016	6.8%	746395.10	14790.50	0.0198	9765.80	0.0131	11031.98	0.0148	410800.00	0.5504	6564.00	0.0088
11	2017	6.9%	832035.90	16510.36	0.0198	10432.37	0.0125	12461.27	0.0150	456500.00	0.5487	7266.98	0.0087
12	2018	6.7%	919281.10	18374.69	0.0200	11280.46	0.0123	13781.48	0.0150	506100.00	0.5505	8326.65	0.0091
13	2019	6%	986515.20	20344.66	0.0206	12122.10	0.0123	13901.93	0.0141	552600.00	0.5602	9470.79	0.0096
14	2020	2.2%	1013567.00	20061.10	0.0198	12918.77	0.0127	13862.90	0.0137	560800.00	0.5533	9018.34	0.0089
15	2021	8.4%	1149237.00	19880.24	0.0173	13787.23	0.0120	13781.15	0.0120	619700.00	0.5392	9669.77	0.0084
16	2022	3%	1204724.00	20879.40	0.0173	14752.22	0.0122	14420.19	0.0120	641600.00	0.5326	10032.02	0.0083
17	2023	5.2%	1260582.10	21763.40	0.0173	15536.78	0.0123	15439.21	0.0122	642300.00	0.5095	10823.00	0.0086
18	2024	5.3%	296299.00	7245.45	0.0245	6430.23	0.0217	5789.23	0.0195	207166.00	0.6992	1938.00	0.0065

Appendix 11: Growth in Percentage of Real GDP and the Components of Government Spending

Components & Years	GDP Growth Rate	Investment Spending (Financial Transactions)	% growth of IS	Physical Infrastructural Spending (Urban and Rural Community Affairs)	% Growth of PIS	Education	% Growth of ES	Health	% Growth of HS	Public Debt (Interests)	% Growth of PDS	Economic Affairs (Social Security & Employment)	% Growth of EAS
2008	9.7%	15858.00	23%	4206.14	20%	9010.21	14%	2757.04	28%	2778.44	3%	6804.29	9%
2009	9.4%	19651.00	24%	5107.66	21%	10437.54	16%	3994.19	45%	2880.34	4%	7606.68	12%
2010	10.6%	19539.34	-1%	5987.38	17%	12550.02	20%	4804.18	20%	2960.45	3%	9130.62	20%
2011	9.6%	20363.00	4%	7620.55	27%	16497.33	31%	6429.51	34%	2845.70	-4%	11109.40	22%
2012	7.9%	22344.00	10%	9079.12	19%	21242.10	29%	7245.11	13%	2770.34	-3%	12585.52	13%
2013	7.8%	36401.84	63%	11165.57	23%	22001.76	4%	8279.90	14%	2856.56	3%	14490.54	15%
2014	7.4%	39895.00	10%	12959.50	16%	23041.70	5%	10176.80	23%	2467.46	-14%	15968.90	10%
2015	7%	65901.18	65%	15886.36	23%	26271.88	14%	11953.18	17%	2866.90	16%	19018.69	19%
2016	6.8%	36040.99	-45%	18394.60	16%	28072.80	7%	13158.80	10%	4991.00	74%	21591.50	14%
2017	6.9%	42914.00	19%	20585.00	12%	30153.18	7%	14450.63	10%	6185.00	24%	24611.68	14%
2018	6.7%	19147.19	-55%	22124.13	7%	32169.47	7%	15623.55	8%	7345.00	19%	27012.09	10%
2019	6%	9648.87	-50%	24895.24	13%	34796.94	8%	16665.34	7%	8338.00	14%	29379.08	9%
2020	2.2%	5222.71	-46%	19945.91	-20%	36359.93	4%	19216.19	15%	9829.00	18%	32568.51	11%
2021	8.4%	8525.00	63%	19453.99	-2%	37468.85	3%	19142.68	0%	9280.00	-6%	33788.26	4%
2022	3%	9350.11	10%	19425.22	0%	39447.59	5%	22536.72	18%	11358.00	22%	36609.15	8%
2023	5.2%	25577.23	174%	20530.00	6%	41242.11	5%	22393.00	-1%	11829.00	4%	39883.00	9%
2024	5.3%	26901.40	5%	22456.00	9%	41744.92	1%	22940.00	2%	9680.00	-18%	50832.00	27%

Components & Years	GDP Growth Rate	General Administration & Service	% Growth of GAS	Defense	% Growth of DS	National Security & Public Order Maintenance	% Growth of NSP	Govt Consumption	% Growth of CS	Science & Technology	% Growth of STS
2008	9.7%	9795.92	-3%	4178.76	16%	4059.76	15%	158900.00	8%	2611.00	23%
2009	9.4%	9164.21	-6%	4951.10	18%	4744.09	17%	174500.00	10%	3276.80	25%
2010	10.6%	9337.16	2%	5333.37	8%	5517.70	16%	201600.00	16%	4196.70	28%
2011	9.6%	10987.78	18%	6027.91	13%	6304.27	14%	244700.00	21%	3828.02	-9%
2012	7.9%	12700.46	16%	6691.92	11%	7111.60	13%	275400.00	13%	4452.63	16%
2013	7.8%	13755.13	8%	7410.62	11%	7786.78	9%	306700.00	11%	5084.30	14%
2014	7.4%	13267.50	-4%	8289.50	12%	8357.23	7%	338000.00	10%	5314.50	5%
2015	7%	13547.79	2%	9087.84	10%	9379.96	12%	371900.00	10%	5862.57	10%
2016	6.8%	14790.50	9%	9765.80	7%	11031.98	18%	410800.00	10%	6564.00	12%
2017	6.9%	16510.36	12%	10432.37	7%	12461.27	13%	456500.00	11%	7266.98	11%
2018	6.7%	18374.69	11%	11280.46	8%	13781.48	11%	506100.00	11%	8326.65	15%
2019	6%	20344.66	11%	12122.10	7%	13901.93	1%	552600.00	9%	9470.79	14%
2020	2.2%	20061.10	-1%	12918.77	7%	13862.90	0%	560800.00	1%	9018.34	-5%
2021	8.4%	19880.24	-1%	13787.23	7%	13781.15	-1%	619700.00	11%	9669.77	7%
2022	3%	20879.40	5%	14752.32	7%	14420.19	5%	641600.00	4%	10032.02	4%
2023	5.2%	21763.40	4%	15536.78	5%	15439.21	7%	642300.00	0%	10823.00	8%
2024	5.3%	28981.80	33%	25720.92	66%	23156.92	50%	828664.00	29%	7752.00	-28%

Appendix 12: China's Growing General Public Budget

China's Growing General Public Budget
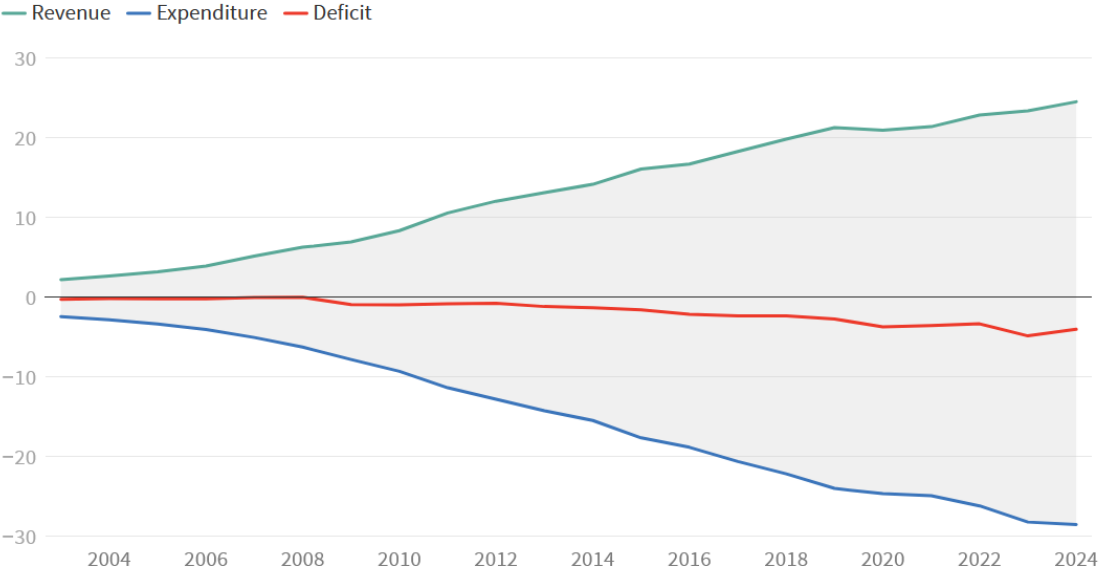
Trillions of RMB

—— Revenue —— Expenditure —— Deficit

Note: Figures for 2022 and earlier reflect actual spending based on final account data. Figures after 2022 are preliminary.
Source: CSIS China Power Project; Chinese Ministry of Finance

https://chinapower.csis.org/making-sense-of-chinas-government-budget/

Appendix 13: Total investment as a share of the gross domestic product (GDP) in China from 1980 to 2023 with forecasts until 2028
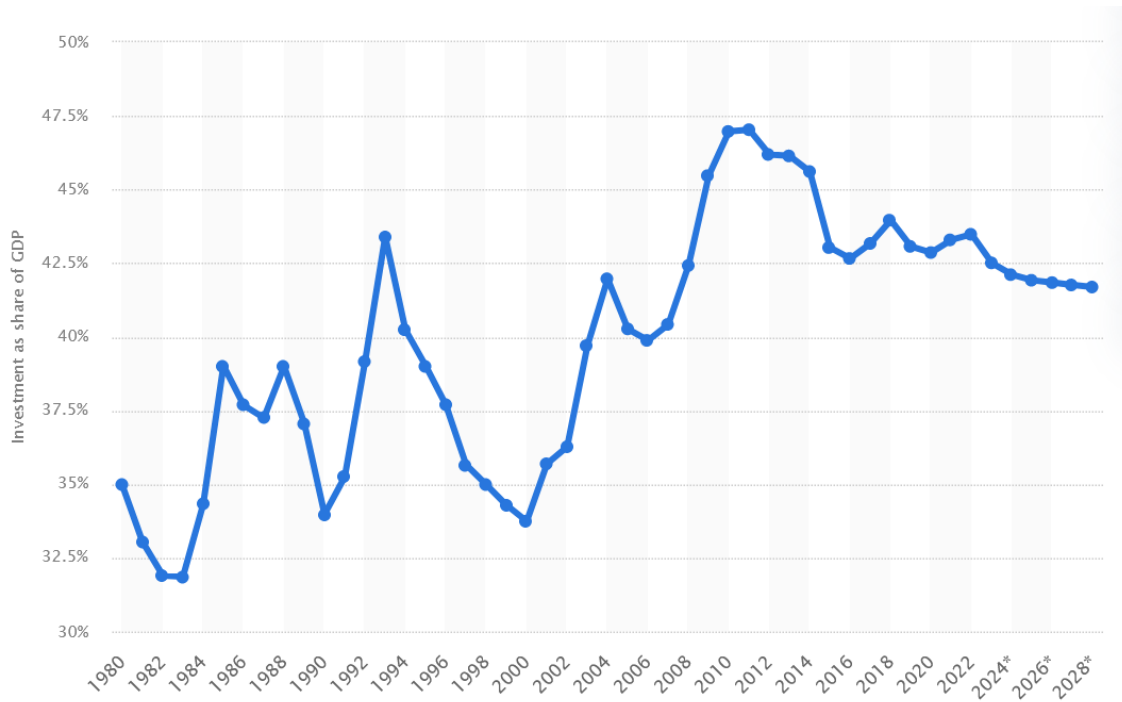
Appendix 14: China's Big Climate Goals

China's big climate goals

中外对话
China Dialogue

By 2025
Lower carbon intensity

By 2030
Peak carbon

By 2060
Carbon neutrality

Appendix 15: 14th Five-Year Plan on Food and Energy Security

14th Five-Year Plan
2021 Targets

BEIJING REVIEW

GDP growth of more than 6%

Over 11 mln new urban jobs

A surveyed urban unemployment rate of around 5.5%

Consumer price index increase of around 3%

Grain output of over 650 mln tons

A 10.6-percent increase in Central Government expenditures on basic research

An over 30-percent increase in inclusive loans to micro and small businesses by large commercial banks

A drop of about 3% in energy consumption per unit of GDP

Clean heating will account for 70% of all heating across north China

(Source: Report on the Work of Government and Reform; designed by Pamela Tobey)