المجلة العراقية للعلوم الاقتصادية / السنة احدى وعشرون / العدد 76/ لشهر اذار/ سنة 2023

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023

Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X

https://doi.org/10.31272/IJES2023.76.S25

Investigating the impact of economic growth and government expenditure on the inflation rate in Iraq using the smooth transition regression approach1

Dr:Abdoollah shayan **Reyaz mohhamad hoson**

zeinvand@gmail.com **ryaadrr3@gmail.com**

Keywords: economic growth; government expenditure; inflation rate; liquidity growth; smooth transition regression; Iraq.

Abstract

Inflation will have negative effects on the economy. Problems caused by inflation, on the one hand, reduce the purchasing power of consumers, and on the other hand, increase production costs. Therefore, it increases the final price of goods and services. The present study investigated the effect of Iraq's economic growth and government expenditure on the country's inflation rate from 2003 to 2020 using the Smooth Transition Regression (STR) approach. The STR model was constructed by using liquidity growth as the threshold variable with the transition threshold set to 4.96% and the transition speed set to 2.08%. Regression results showed that during the period of interest, Iraq's economic growth and government expenditure growth have had different effects on the country's inflation depending on whether liquidity growth has been low or high (low or high liquidity growth regime in the model). In the low liquidity growth regime, government expenditure growth has not been inflationary, but in the high liquidity growth regime, it has increased inflation by 0.06% (per percentage increase in government spending). In both regimes, economic growth has had a positive effect on inflation, increasing it by 0.15% in the low liquidity growth regime and by 0.23% in the high liquidity growth regime. Overall, the results show that Iraq's inflation from 2003 to 2020 has been most greatly influenced by liquidity growth.

1. Introduction: Inflation is a potentially devastating economic phenomenon and as such receives a lot of attention from economic analysts and central bank officials. Inflation can be described as a continuous rise in the average price of a select set of goods and services over a period of time. Given the tangible effects of inflation on people's life and livelihood as well as macroeconomic variables, this phenomenon has always been of interest to economic researchers and analysts. High inflation also has destructive social effects, as it tends to have a greater impact on the purchasing power of lower-income groups and may even add to the wealth of higher-income groups, thereby increasing the gap between different income classes. High inflation also has severe consequences for investments and economic development. It

[1] This article is extracted from the master's thesis of the economics department of Ilam University (Iran).

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

increases the cost of living and the cost of borrowing and hinders commercial and economic growth (World Bank, 2018). The dynamics of inflation can be explained by a wide range of conventional and unconventional factors (Kock & Grigorian, 2010: 2). Most economists believe that the emergence of significant inflationary pressure in Iraq has been due to monetary growth resulting from the government's manipulation (increase) of the money supply to cover its budget deficit. This is especially true for the period when the country was under a comprehensive embargo between 1990 and 2003. However, others believe that the distortions of the exchange rate have played a major role in Iraq's high inflation (Al-Jafari & Abdulkadhim, 2019). These disagreements about the causes of inflation in Iraq have necessitated a quantitative study of this phenomenon.

Inflation is a subject of keen interest to the majority of economic policymakers and decision-makers in both developed and developing countries, who strongly believe in adopting macroeconomic policies to influence the inflation rate so as to maintain the economy in a state of equilibrium and stability and prevent economic fluctuations. According to research conducted in this field, inflation is influenced by a wide range of factors including government expenditure, economic growth, liquidity, and possibly oil revenues. In a study by Azizi (2004), it was stated that Iran's inflation cannot be explained by the domestic price gap and is better explained by total and foreign price gaps. A study by Luis et al. (2005) reported that budget deficit and inflation are related to each other, and the lack of capital resources for investment forces governments to adopt a budget deficit policy, which increases productivity and inflation to some extent. According to Bonato (2007), inflation is significantly influenced by money stock, production, deposit rate, and exchange rate. Many believe that a country's inflation rate is strongly associated with its economic growth and it is not a coincidence that developed countries tend to have consistently low inflation rates (Jafari Samimi, Alizadeh and Azizi, 2017: 26). However, actually, there is not a broad agreement among researchers on this issue. Many researchers ignore the effect of economic growth on inflation. There is indeed evidence showing that economic growth results in lowered inflation (Masimba & Ho, 2021: 73). In any case, the ultimate goal of economic policies in any country is to achieve sustainable economic growth with price stability. According to Keynes's theory (1936), given the short-term inflexibility of wages, monetary policies can change the production level.

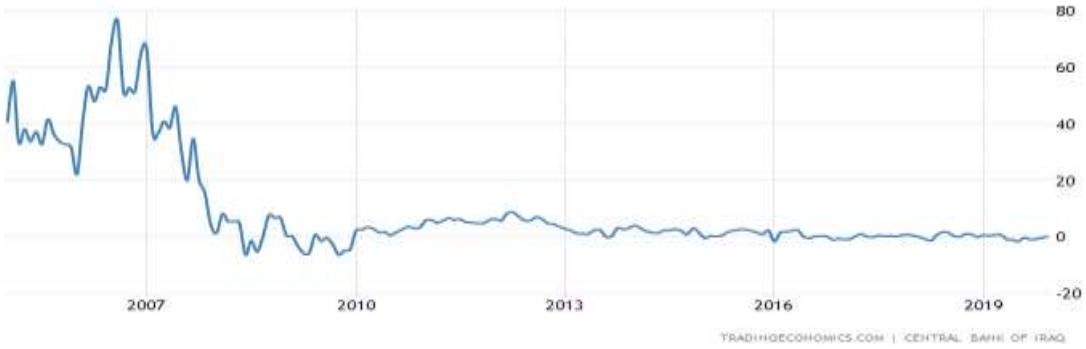
Another factor that could be associated with inflation and may affect its rate is government expenditure. Government expenditure is a major tool at the disposal of governments to apply financial policies. Positive or negative financial shocks (expansion/contraction) may have different effects on macroeconomic variables depending on economic conditions (boom/recession). In order to increase production

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

and employment during a recession, the government may need to adopt expansionary fiscal policies in the form of increasing expenditures, reducing taxes, or both, but in inflationary conditions, it may need to adopt the opposite policies (Haghighat and Muharram Jodi, 2016: 143). Government expenditure could be a strong financial tool for controlling economic affairs and managing economic cycles to achieve price stability, boost production growth, and reduce unemployment (Khamies, 2022: 1741). In the economic literature, there is no definite response to the question of how much a government's budget deficit affects the country's inflation rate, because the economic effects of a budget deficit depend on how it is created, how it is financed, and the macroeconomic conditions of the country in question (Solomon, 2004: 116-100). Public expenditure is widely believed to be a major factor affecting macroeconomic variables and one of the financial policy tools by which a government can play a role in a country's economic well-being by directing economic activities.

Iraq's inflation has fluctuated greatly since the 2003 war. So that inflations above 50% have happened in this country. The highest amount of inflation occurred in 2006-2007 with a figure of 76%. Since 2010, the inflation trend in Iraq has been relatively stable and low rates have been recorded for this country (Graph -1)

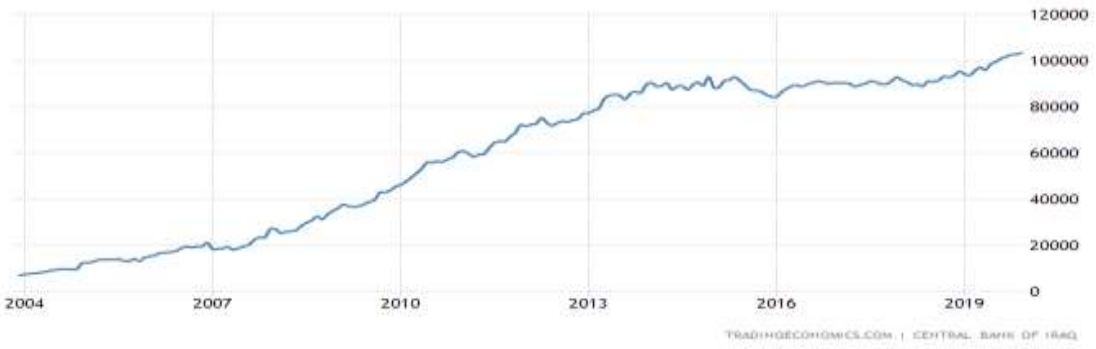
Graph (1)- Inflation in Iraq for the years 2003-2020



Graph (2) shows the liquidity of Iraq. According to this chart, the liquidity trend of Iraq has been on the rise. According to this graph, the upward trend for the years 2004-2015 has been with a high slope. The application of adjustment policies in this country has caused the upward slope of increasing liquidity in Iraq to slow down since 2016.

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

Graph (2)- liquidity of Iraq for the years 2003-2020



Considering the contradictory reports regarding the type of relationship between economic variables such as inflation rate, economic growth, and government expenditure, and the fact that Iraq suffers from a number of challenges in relation to macroeconomic variables, structural imbalances, and poor contribution of economic sectors to GDP as a representative of economic growth (Ghazi & Semo, 2020: 152), this study tried to explore the said relationship in this country. Iraq has experienced a range of political, social, and economic upheavals in the past few decades, which have led to consecutive financial crises in the country. According to a study on Iraq's economic growth trends, over the past decades, the Iraqi economy has experienced negative growth due to various reasons including war, an oil embargo, and a multitude of endogenous and exogenous shocks (Khamies, 2022: 1741). However, there have been many periods of positive economic growth in this country. The present study investigated the effect of macroeconomic variables (economic growth and government expenditure) on inflation in Iraq by using smooth transition regression on data pertaining to the period 2003-2020. Therefore, the research question was that "how economic growth and government expenditure are related to the inflation rate?"

2. Research background:

This section presents a summary of studies carried out in the field of interest.

Table 1- Summary of studies conducted on the subject

Summary of results	Title	Year of publication	Author(s)
The results showed that in the regime of high liquidity growth, government expenditure is not inflationary, but in the regime of low liquidity growth, it has a low inflationary effect in the short term and probably affects economic growth. This study was focused on the impact of government expenditure on the inflation rate in Iran, whereas the present study explores the effect of economic growth and government expenditure on inflation in Iraq.	The Impact of Government Spending on Inflation through the Inflationary Environment; Smooth Transition Regression Approach	2017	Mehrara, Barkhordari and Behzadi

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

The results showed that depending on the regime, inflation tends to increase with macro variables such as current expenditures, construction expenditures and economic growth. In the high regime, price level deviation from the long-term equilibrium was found to be a significant determinant of inflation acceleration, and inflation was found to be strongly reacting to this deviation. While this study was focused on Iran and indeed reported interesting results, the present study investigates the issue in the country of Iraq in a different period of time.	Study of the Relationship Between Inflation and Economic Growth and Government Spending Using the Soft Transition Regression (STR) Approach	2021	Esmaeili
The results showed that current government expenditure has a significant negative effect on economic growth. Economic growth was also found to be positively affected by population and negatively affected by the decline in oil revenues.	The impact of financial policies on the economic growth of Iraq	2016	Al-Jaburi
The results showed that for government expenditure growth, economic growth, and population growth, the data were static at the level, but for other variables including inflation rate, corruption level, and global oil prices, they became static after taking the first difference. While this study also provided a standard model consisting of independent variables (oil price, GDP growth rate, population growth rate, inflation rate, corruption level), the innovation of the present study is the investigation of the relationship between economic growth and government expenditure and the inflation rate in Iraq while taking into account the effect of endogenous shocks.	Analysis and Measurement of the Factors Affecting Public Expenditures in Iraq for the Period 2003-2017	2020	Khattabetal.
This study aimed to determine the impact of public expenditure on macroeconomic variables (economic growth, consumption, investment, unemployment, and inflation) to facilitate the creation of a clear economic and social vision in accordance with the principle of diversity of investments. Compared to this study, the innovation of the present study is the analysis of Iraqi economic growth and government expenditure while taking into account the effect of various shocks from 2003 to 2020, which could provide new interesting insights.	The Impact of Public Expenditure on Macroeconomic Variables in Iraq In The Period 2006-2017	2020	Ghazi and Semo
The results of this study showed that the budget deficit has had a weak positive effect on Iraq's economic growth in the short term, but the accumulated budget deficit has had a strong negative effect on the country's economic growth in the long term, While this study expanded our knowledge of the said impacts and contributed to the subject literature, the present study further examines the relationship of economic growth and government expenditure with inflation by smooth transition regression, which may provide new results.	Government Budget Deficit and Economic Growth: Evidence from Iraq 1980-2018	2021	Sabr et al.
This study reported that government expenditure in Iraq from 1991 to 2015 can be generally described as consumer spending in two different periods, 1991-2003 and 2004-2015, reflecting the economic direction of the Iraq state, with the latter period having stronger consumption trends. Considering the importance of inflation in Iraq and the impact of various political and economic shocks on the country's inflation rate, examining the factors that influence this rate in this study could have yielded interesting results.	Estimation of the Effect of the Government Expenditure Growth Rate on the Rate of Inflation in the Iraqi Economy for the Period (1991- 2015)	2022	Khamies
This study found a relationship between Iraq's	Effects of Trade Policies on	2016	Al-Taie et al

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

economic growth and trade in goods, taxes on foreign commerce, inflation, and industrialization.	Economic Growth: Empirical Evidence from the Economy of Iraq		

In addition to the studies outlined above, Al-Jafari and Abdulkadhim (2019), Irfan and Javed (2014); Abdulkazem Al-Taie and Taher Saeed (2019), Nguuyen (2019); Ahmed et al. (2020), and Mahara (2021) have also explored the role of economic variables in inflation in different countries. With a glance at the literature, one can see that a number of studies have examined the effect of economic growth and government expenditure on inflation by smooth transition regression from different perspectives and based on the theoretical models of different economic analysts. However, no study has used this approach specifically to explore the said effect in Iraq. While this field of research is of great importance for developing countries like Iraq, which are highly dependent on oil revenues, it has not received the attention it deserves. Therefore, this investigation was expected to provide interesting results, especially since the examination of the impact of government expenditure on the Iraqi economy can provide deeper insights into the country's most important economic problems, i.e. inflation, the general trend of government expenditure and the general direction of fiscal policy in this country.

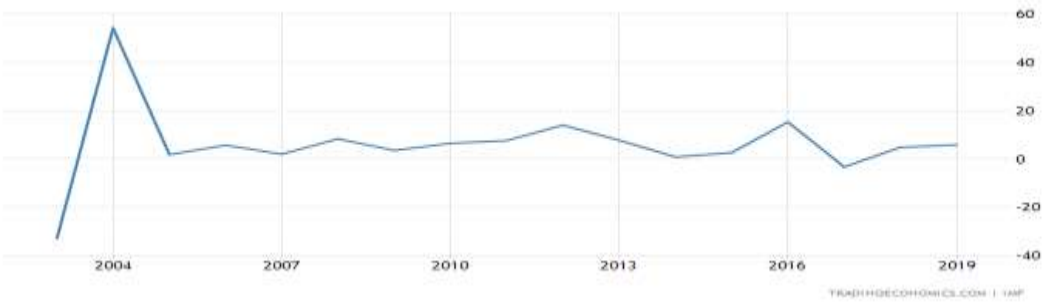
3. Subject literature

3.1. The concept of inflation and its impact on economic growth: Inflation is a phenomenon with potentially devastating impacts on the whole economy. Many economic analysts, including Golob (1994) and Friedman (1997), believe that the negative impacts of inflation are mostly by the sense of uncertainty it creates. This uncertainty disrupts the investment and savings decisions of the government, people, and companies and makes it difficult to judge the real value of future nominal payments. These deviations can have negative consequences for real economic activities (Rezazadeh, 2019: 38). In a study by Reid et al. (2012), they investigated and discussed the developments of inflation and how it evolves over time. Mundell (1963) provided some evidence supporting the positive effect of inflation on growth. Friedman (1969) however raised serious doubts about the positive effects of inflation on production growth, arguing that inflation inhibits production growth at all positive levels and should therefore be avoided altogether. The impact of inflation uncertainty on investment and economic growth is one of the most important topics in the field of economics. Theoretically, uncertainty can affect investment in several ways, such as causing risk aversion and adjustment costs (Caballero, 1991: 11). Some of these factors have inconsistent effects on investment. Studies on the effect of uncertainty on investment and consequently on economic growth mainly emphasize the risk-averse nature of investors

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

(Rezazadeh, 2019: 42). According to Friedman, increased inflation uncertainty increases the welfare costs of inflation. Since all kinds of economic decisions (e.g. buying or selling assets, bonds, making investments, etc.) depend on the person's prediction of future prices, inflation uncertainty, which is uncertainty about future prices, leads to sub-optimal allocation of resources and therefore lower investment and economic growth by disrupting inter-period decisions (through interest rates) and intra-period decisions (through relative prices) (Rasekhi and Khanalipour, 2012: 16).Iraq's economic growth is shown in graph (3). According to this graph, the lowest economic growth rate of Iraq was recorded in 2003 with a value of -56%. But in 2004, the highest rate of economic growth in Iraq was recorded with a rate of 54%. Since 2005, Iraq's economic growth has been relatively stable. However, in some years like 2017, Iraq's economic growth has been negative.

Graph (3).Economic growth in Iraq for the years 2003-2020



3.2. The concept of government expenditure and its impact on economic growth

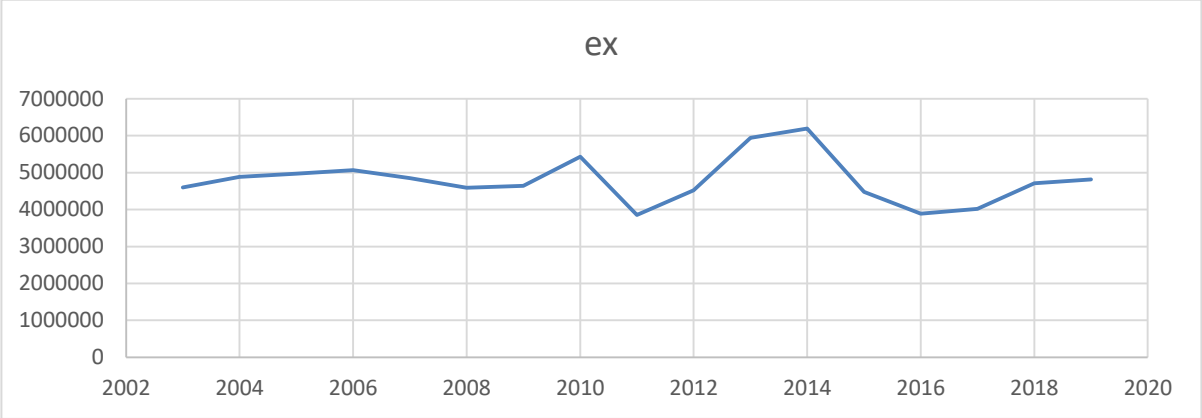
Government expenditure is one of the main components of GDP and includes spending on things like education (schools), healthcare (clinics and hospitals), defense, infrastructure (roads and bridges), etc. Government expenditure represents the engine of economic growth and can boost the production capacity of the local economy, especially if properly directed towards more efficient economic sectors (Al-fawwaz, 2015). In a study by Nworji and Oluwalaiye (2012) on the impact of government expenditure on the economic growth of Nigeria from 1980 to 2009, findings showed that the government expenditure in transportation, communication, and defense has a significant positive effect on economic growth, and the inflation rate has an insignificant positive effect on economic growth. The study of Karim et al. (2014) on the effect of government expenditure on economic growth in Nigeria reported that government capital expenditure has a significant negative effect on economic growth and current government expenditure has a significant positive

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

effect on economic growth in this country. Olayemi's (2017) analysis of the relationship between economic growth and government expenditure showed that government spending in human capital development has a significant impact on economic growth in the long term, and government spending for private sector consumption and investment also has a significant effect on economic growth in the long term but on a smaller scale. The existing body of literature provides a platform for studying the relationship between recurrent government expenditures and economic growth.

According to chart number (4), the amount of government consumption has been completely fluctuating. Its lowest value was recorded in 2011 and 2014 and the highest value was recorded in 2014.

Graph (4). government consumption in Iraq for the years 2003-2020



3.3. The concept of economic growth and its impact on inflation: Economic growth can be generally described as the increase in the total value of goods and services produced in a country annually (Nwaeze et al., 2014). Economic growth, in relative and absolute terms, can be thought of as an increase in gross domestic product, gross national product, and national income. Therefore, a country's economic growth indicates the increase in the size of its national economy, especially the GDP per capita of people living in that country. Extensive economic growth can occur as a result of more efficient use of inputs or an increase in the amount of inputs available for use (?) (Bjork, 1999). Mohr et al. (2008) describe economic growth as the increase in the value of all finished goods and services produced within the country's borders over a given period of time. According to Nuruddeen and Ibrahim (2014), economic growth can serve as a powerful tool to achieve higher living standards and higher consumption of goods and services. Considering the numerous benefits of economic growth, governments try to facilitate it with a wide range of tools and policies (Beheshti, 2014: 2). To achieve high economic growth, it is important to know what factors can influence economic growth. One important factor that is

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

associated with economic growth is inflation. Economists have proposed a variety of models for the relationship between economic growth and inflation, which have evolved over the years depending on the prevailing conditions of different economies in different situations (Sayemiri et al., 2020: 138). Therefore, further studies are still needed to determine the exact relationship between inflation and economic growth. A notable point regarding the relationship between economic growth and inflation is that there are major disagreements among economists of different schools on this subject (Satya et al., 1997). According to the neoclassical theory, adopting expansionary monetary policies will not be fruitful even in the short term if it is predicted by the economic decision-making agents. In other words, only unexpected monetary policies affect the real sector of the economy in the short term. Structuralists believe that there is a positive relationship between inflation and economic growth, at least up to a certain inflation rate, citing evidence from the economies of developing countries (like Iraq) including the rigidity and inelasticity of these economies (Esmaeili, 2021: 121-122). Easterly and Wetzel (1989) and Fischer (1992) believe that the fundamental determinants of economic growth are savings and investment. This view, which became popular in the 1990s, revolves around three outcomes: macroeconomic stability, the efficiency of the economy's institutional system in areas such as political and governance affairs, incentive systems, social infrastructure, and the price mechanism, and the regulatory environment for markets (Thaddeus et al., 2021). Many studies have included a large number of determinants in their models of economic growth, arguing that this will improve the robustness of the model in different settings (Bayraktar & Wang, 2006).

3.4. Interaction between inflation, government expenditure, and budget deficit

High inflation may reduce real tax revenues by encouraging the postponement of, which is a common phenomenon in developing countries, thereby increasing the likelihood of a larger deficit. A longer delay in tax payments and a less flexible tax system will increase the impact of inflation on real tax revenues and the expansion of the budget deficit. In economic literature, this process is known as the Tanzi effect. In 1993, Patinkin explained how external pressures, including political interests, can lead to the use of inflation to eliminate the difference between the government's nominal expenditures and its revenues. When the demand for spending is greater than the government's revenue, the government can borrow from the central bank to make the demanded spending. However, this will increase the inflation rate, reducing the government's real spending. The negative impact of inflation on real government spending is known as the Patinkin effect. Basically, the Tanzi effect exacerbates the budget deficit from the revenue side and the Patinkin effect does so from the expenditure side. In other words, due to the Tanzi effect, inflation leads to the buildup and exacerbation of the government budget deficit from the revenue

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

side. However, it also affects the government budget deficit from the expenditure side; an effect that will depend on the country's economic conditions and the rate of inflation (Esmaeili, 2021: 121). From a dynamic perspective, the relationship between current expenditures, budget deficit, money supply, and inflation can be interpreted as follows. As current expenditures increase, the state of the government's budget gets worse, leading to a greater deficit. Also, the increase in the government's debt to the central bank (as a major source of the monetary base) can result in an increased monetary base, which subsequently leads to an increase in the country's money supply. Given the positive relationship between liquidity and general prices levels, the increased money supply leads to an increase in general price levels, which means a decline in the real value of government expenditure in the next period and will force the government to increase the next period's nominal expenditure to compensate for the value loss. However, this will again increase the next period's budget deficit, causing the above process to repeat itself. Therefore, there is a cause-and-effect relationship between a country's growth of government expenditure (budget deficit) and its general price levels (Piontkivsky et al., 2001), meaning that general price levels tend to rise with the increase in government spending.

3.5. Interaction between inflation, economic growth, and government expenditure

A government can raise funds by borrowing, selling government bonds or other government securities, raising taxes, or printing money. Increasing government expenditure through any of these methods leads to economic growth in the short run, but in the long run, the rising price levels will increase nominal wages and other input prices, causing the real GDP to return to its original state before the change in expenditure (Musgrave & Musgrave, 1989). The relationship between inflation, economic growth and government expenditure has been widely discussed in the theoretical and empirical literature, where it has been analyzed according to Wagner's law, Keynesian theory, and Rostow-Musgrave model among others.

3.5.1. Wagner's law: Wagner's law, named after the German economist Adolph Wagner (1835-1917), argues that there is a causality relationship between economic growth and the increase in public expenditure, and thus public expenditure must be considered endogenous to national income growth. According to Henrekson (1993), Wagner's approach emphasizes certain reasons for the need to increase government expenditure. Firstly, industrialization and modernization lead to the substitution of public activities with private activities, which subsequently increases the need for public protection and supervision. Furthermore, the greater division of labor and urbanization associated with industrialization increases the cost of enforcing contracts and law and order to ensure the efficient functioning of the economy. The second reason is the expansion of educational and cultural services. The third reason

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

is the government's involvement in the management and financing of natural monopolies is to improve economic efficiency (Henreckson, 1993).

3.5.2. Keynesian theory: In the Keynesian theory, public expenditures are viewed as exogenous factors that can be used as a policy tool to boost economic growth. In other words, this theory argues that government expenditure can positively contribute to the economic growth of a country. An increase in government expenditure is likely to lead to increased employment, revenue generation, and investment through its impact on aggregate demand (Chude and Chude, 2013). Contrary to the Keynesian view, the neoclassical theory argues that a government's fiscal policy has no significant impact on the growth of national output. However, a counterargument is that the government's fiscal policy (intervention) can help mitigate failures that may originate from market inefficiencies. According to Keynesians, inflation occurs when production has zero elasticity in response to an increase in the money supply, or when production does not respond to changes in the money supply. Thus, under full employment, an increase in the money supply will naturally have inflationary effects. According to Gokal and Hanif (2004), in the Keynesian model, the relationship between economic growth and inflation is defined through the framework of aggregate demand and aggregate supply, which results in a more comprehensive model for linking economic growth to inflation, this theory holds that as economic growth increases, so does inflation.

Economic growth, government expenditure, unemployment, inflation, and current account balance are among the most important variables that represent the performance of an economy. The relationships between these variables are of great importance for the formulation and adoption of economic policies. For example, while economic growth tends to result in lowered unemployment, efforts to reduce inflation can also put negative pressure on unemployment. Therefore, during the formulation of policy proposals, it is important to consider the alignment or contradictions between the targeted objectives and the means to achieve them (Dayıoğlu & Aydın, 2020). Among these relationships, the relationship between government expenditure and economic growth is of great interest to developing countries. Some studies have reported a negative relationship between inflation rate and economic growth (Fischer, 1992: Barro, 1995; Bruno & Easterly, 1998; Ericsson, Irons & Tryon, 2001). According to these studies, when the inflation rate exceeds a certain threshold, it starts to have a strong negative impact on growth. The studies carried out by Landu (1983, 1985) reported a negative relationship between government expenditure and economic growth, suggesting that increasing

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

government expenditure is associated with decreased economic growth. In a study by Dhakal et al. (1994), where they investigated the determinants of inflation in the United States using a vector autoregression model, the key determinants of inflation were found to be money supply, wage rate, budget deficit, and energy prices. Therefore, to achieve the desired level of economic growth and inflation rate, it is crucial to manage resources and set priorities according to such factors. Since one of the most important of these factors is government expenditure, it can be utilized as an economic policy tool to achieve balance in financial policies and economic growth. To summarize, many studies in the field analyzed the impact of macroeconomic indicators on inflation in different countries to find evidence to support or rebuke inflation theories. However, most of these studies have concluded that inflation in most countries is influenced by macroeconomic variables such as money supply, exchange rate, interest rate, unemployment, imports, and GDP. The goal pursued in this research was to explore the impacts of economic growth and government expenditure on inflation in Iraq in order to reach practical conclusions with useful insights in this regard for planning and policymaking institutions.

4. Methodology

4.1. Method: This study classifies as applied research in terms of purpose. The data used in the study are seasonal data series pertaining to the period 2003-2020. This period was chosen inevitably because of data availability issues. Data were collected from the World Bank database and statistical reports published by Iraq's Central Bank, Iraq's Ministry of Finance, and the country's accounting organization. The study classifies as descriptive research in terms of method. The information related to the theoretical and empirical subject literature was collected using the library method by reviewing books and other sources in Persian and English. The data related to the variables were collected from the statistical reports of Iraq's Central Bank. The research model was estimated with the help of the software Eviews.

4.2. Model estimation and data analysis method

4.2.1. Smooth Transition Regression (STR): Non-linear regression methods are among the most popular methods for analyzing time series and panel data. The reason for this popularity is that real-world phenomenon tend to be non-linear and cannot be accurately modeled with linear relationships. A great number of studies in recent years have chosen to use threshold and smooth transition methods, which are believed to produce more accurate results than alternatives. Threshold models are a class of non-linear models (Anders, 2019: 3), where parameters are defined as a function of a "regime" rather than being constant. This regime is determined by the range of values of one of the variables in or outside the model. The Smooth Transition Regression (STR) model is a nonlinear regression model that can be viewed as an evolution of the switching regression model introduced by Quandt

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

(1958). The STR model is a special type of regime transition regression model first introduced by Bacon and Watts (1971), who designed this model by considering two regression lines and defining a mechanism for a smooth transition from one line to another. Chan and Tong (1986) were the first to propose and use the STR model in the context of time series. In recent years, such non-linear models have become increasingly popular, and many researchers have tried to develop and strengthen these models for different purposes (Teräsvirta, 1998).

4.2.2. Smooth transition regression with logistic transition function (LSTR)

A standard STR model with a logistic transfer function is defined as:

$\gamma_t = \phi z_t + (\theta z_t) G (S_t, \gamma, c) + \mu_t$ (1)

where ϕ is the vector of linear parameters, θ is the vector of nonlinear parameters, z_t is the vector of exogenous variables including their lags, and G is the logistic transition function, which defines the manner of the transition from one regime to another. G in its conventional function form is defined as follows: $G (s_t, y, c) = \{1 + \exp (- y \prod_{j=1} [s_t - c_j]\}^{-1} \quad \gamma > 0$ (2)

G is a continuous function bounded between zero and one, which consists of a slope parameter γ and a threshold parameter C. The slope parameter specifies the speed of transition between the extreme states and the threshold parameter determines the threshold at which the transition occurs. To characterize the STR model as instructed by Van Dyck (1999), we assume that the dependent variable γ is exclusively a function of its own lagged values. With this assumption, the transition function for two regimes will be as follows:

$\gamma_t = (\theta_0 + \theta_{1\gamma t-1} + \dots \theta_p \gamma_{t-p}) + (\phi_0 + \phi\gamma_{t-1} + \dots \phi_p \gamma_{t\,p}) G (s_t, \gamma, c) + \mu_t$ (3)

$G (s_t, y, c) = \frac{1}{1+exp\{-y(st-\}}$

In this model, which is called a two-regime STR model, the threshold parameter C represents the point of transition between the two extreme regimes $G (s_t, y, c)=0$ and $G (s_t, y, c)=1$ and is located at $G (s_t, y, c)=0.5$, and γ indicates the speed of transition between regimes (A higher γ value indicate a faster regime transition). When $s_t > c$ and $\gamma \rightarrow \infty$, then G = 1 and when st < c, then G = 0, which turns the above relationship into a threshold model. When $\gamma \rightarrow O$, the above relationship turns into a linear regression model. Jansen and Teräsvirta (1996) proposed the following logistic function for a three-regime model where two regime transitions take place:

$G (s_t, y, c) = \frac{1}{1+exp\{(st-c1)(st-c2)\}} \; c1 \leq c2 \; y > 0$ (4)

In this formulation, $\gamma \rightarrow O$ turns the model into a linear model. If $\gamma \rightarrow \infty$, for $s_t < c_1$ and $s_t < c_2$, then $G (s_t, y, c) = 1$ and if $c_1 < s_t < c_2$ then $G (s_t, y, c) = 0$. It should be noted

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

that G is symmetric about the point $\frac{c1+c2}{2}$ and varies from zero to one but never becomes zero.

4.2.3. Data analysis method *53205*:Before examining the relationship between the variables and estimating the model, the variables were tested to determine whether they are stationary. For this purpose, the variables were subjected to the seasonal unit root test followed by the co-integration test. In the unit root test, the null hypothesis is the existence of a unit root (non-stationarity) and the alternative hypothesis is the stationarity of the variable. It, therefore, follows that the rejection of the alternative hypothesis means that the series has a unit root and is not stationary. The unit root was determined using the Phillips-Perron and generalized Dickey-Fuller tests. The Phillips-Perron test can detect the presence of a structural break. Given the use of seasonal data, the test of Hylleberg et al. (1990) was used to check the unit root of the variables. The optimal lags of this test were determined using the Schwartz statistic. First introduced by Engel and Granger (1987), the co-integration test is a technique for solving the problem of spurious regressions in time series. After determining the optimal lag for research variables, to estimate the STR model, the test for detecting non-linear relationships in the data was executed in EViews 12. The list of research variables is provided in Table (1).

Table 1. Research variables

GDP	**GDP growth excluding oil revenues**
EXP	**Government expenditure growth**
LIQ	**Nominal liquidity growth**
OILR	**Oil revenue growth**
INF	**Inflation rate based on the consumer price index for goods and services**

Inflation has been used as a consumer price index. Also, the liquidity variable is used in this model, which is equal to the (total coins and bills in people's hands + their current deposits with banks). Government consumption expenditure has also been used as another research variable. Since the total expenditure of the government is equal to consumption expenditure (current) and construction expenditure, the consumption expenditure of the government has been used in this study. Another variable used in the model is oil revenues. Since a major part of Iraq's foreign exchange income is related to oil sales income, the lack of proper control of these incomes leads to the rise of liquidity and inflation, and as a result, the impact on economic growth.

5. Model estimation and data analysis: After performing the seasonal unit root test and then the co-integration test on the variables, the model estimation was performed. Considering the use of seasonal data in the study, the test of Hylleberg, Engle, Granger, and Yoo (1990) was used to examine the unit root of research variables. The optimal lags for this test were determined based on Schwartz statistic. The results of the unit root test are presented in Table (2).

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

Table 2. Results of the unit root test

F1234	F	F2,P 1	P2	P1	
4.88	5.75	-1.88	-98.7	-88.1	INF
7.28	4.47	-1.29	-5.86	-1.75	EXP
-3.23	-6.41	-1.03	-1.22	-1.59	OILR
6.41	5.7	-1.22	-1.41	-1.36	LIQ

Source: research findings

Next, the research variables were deseasonalized using the seasonal co-integration test. Comparing the statistics of the seasonal unit root test with the critical t and F values showed that all the statistics are significant at the 5% probability level. The results showed that the seasonal values of some variables were non-stationary at the level. These variables became stationary by the use of first-order seasonal difference. Considering the non-stationarity of some research variables, the second step was to check whether there is a long-term relationship between the variables. The results of the seasonal co-integration test are presented in Table (3). These results rejected the null hypothesis regarding the existence of a unit root in seasonal differences and confirmed the existence of a co-integration relationship between the variables.

Table 3. Results of the seasonal co-integration test

Calculated statistic at the 5% level	Critical tφ	Regressors	Regressand
7.21	-4.49	Z1 (Xt)	Z1 (Yt)

Source: research findings

5.1. Model estimation: To estimate the STR model, we first run the test that detects non-linear relationships between the variables. The model estimation results are reported in Table (4).

Table 4. Specifications of the STR models

Model	Probability value of the F2 statistic	Probability value of the F3 statistic	Probability value of the F4 statistic	Probability value of the F statistic	Transition variable
LSTR1	0.0023	0.0264	0.0199	0.0078	INFt-1
LSTR1	0.0022	0.0462	0.0649	0.0050	INFt-2
LSTR2	0.055	0.023	0.0359	0.00021	LIQt
LSTR1	0.001	0.008	0.0321	0.0125	EXPt
LSTR1	0.015	0.05	0.0185	0.0060	GDPt
Linear	0.0026	0.016	-	-	OILRt
LSTR1	0.0004	0.024	0.0098	0.0015	LIQt-1*
LSTR1	0.118	0.038	0.003	0.0075	EXPt-1
Linear	0.0042	0.0027	-	-	GDPt-1
LSTR1	0.014	0.019	0.008	0.012	OILRt-1
LSTR1	0.126	0.026	0.0053	0.0017	EXPt-2
LSTR1 (if hypothesis H02 is rejected)		Two-regime nonlinearity with one threshold		H02: β1 = 0 | β2 = β3 = 0	
LSTR2 (if hypothesis H03 is rejected)		Three-regime nonlinearity with two thresholds		H03: β2 = 0 | β3 = 0	
LSTR1 (if hypothesis H04 is rejected)		Two-regime nonlinearity with one threshold		H04: β3 = 0	
Linear (if the linearity hypothesis is not rejected)		Linearity (without threshold)		The non-linear relationship is ignored	

Source: research findings

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

According to the probability value of the F statistic, the test's null hypothesis (linearity of the model) was rejected and the existence of a non-linear relationship was confirmed for all variables except the first lag of GDP growth, oil revenue growth, and budget deficit growth. At this stage, although any variable could be selected as the transition variable, it was better to use those variables for which the null hypothesis of the F test was more strongly rejected. Thus, it was concluded that the most suitable transition variable would be LIQt-1, i.e. the first lag of liquidity growth, and the STR model with the logistic transition function was constructed accordingly. The model parameters were then estimated using the Newton-Raphson algorithm. The values estimated for the transition speed and threshold were γ=2.08 and c=4.96%, respectively. The equation obtained for the research variables is presented below.

$G\ (LIQ_{t-1}, 2.08, 4.96) = \{1 + EXP\ [-2.08 \prod (Log\ (LIQ)_{t-1}) - (4.96)]\}^{-1}, \gamma > 0$

The results of the model estimation are reported in Table (5).

Table 5-4: Results of model estimation

θ coefficient	ϕ coefficient	Research variables
0.231***	0.254**	CONST
0.010*	0.192*	INFt-1
-0.123**	-0.162**	INFt-2
-0.481*	0.342**	LIQt
-0.082**	-0.214**	EXPt
0.001*	0.105**	GDPt
-	0.089*	OILRt
0.213*	0.112**	LIQt-1
0.453**	-0.074**	EXPt-1
0.091**	0.048**	GDPt-1
0.063**	0.023*	OILRt-1
0.053**	0.086**	EXPt-2

Source: research findings

*** Significance at the 99% level, **Significance at the 95% level, *Significance at the 90% level

Using the first lag of liquidity growth as the transition variable, the two-regime model was constructed by defining two regimes of high liquidity growth (G=0) and low liquidity growth (G=1) with the threshold for regime transition set at 4.96%. The regime formulations were defined as shown in Table (6).

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

Table 6. Regime formulations

First regime: liquidity growth below 5%			
INFt = 0.25 + 0.19 - 0.16 (INF)t-2 +0.34 (LIQ)t – 0.21 (EXP)t +0.10 (GDPt) + 0.09 (OIL)t + 0.11 (LIQ)t-1 - 0.07 (EXP)t-1 + 0.05 (GDP)t-1 + 0.02 (OILR)t-1			
Second regime: liquidity growth above 5%			
INFt = 0.48 + 0.2 (INF)t-1 - 0.28 (INF)t-2 -0.14 (LIQ)t – 0.29 (EXP)t +0.10 (GDPt) + 0.09 (OILR)t + 0.32 (LIQ)t-1 + 0.38 (EXP)t-1 + 0.13 (GDP)t-1 + 0.08 (OILR)t-1 - 0.03 (EXP)t-2			
R2adjusted=73%	**ALC -5.21**	**HQ -4.23**	**SC -3.22**

Source: research findings

Since the variables were selected according to the growth rate and their measurement was sensitive to this parameter, the short-term effect coefficients were interpreted accordingly. The differences between the coefficients of the variables in the two regimes indicated that the effects of liquidity growth, GDP growth, and government expenditure growth on inflation differ depending on the regime. The sum of the coefficients of the government expenditure growth and its lags in the first regime (low liquidity growth) was -0.36, meaning that under the low liquidity growth regime, for each percent increase in the Iraqi government expenditure during the study period, the country's inflation decreased by 0.36%. This shows the positive effect of government expenditure on the inflation rate in the low liquidity regime. In other words, during periods of low liquidity growth, government expenditure in Iraq has not had an unfavorable impact on the country's inflation rate. In the second regime (high liquidity growth), the sum of the coefficients of the government expenditure growth and its lags was 0.06. This means that under the high liquidity growth regime, the growth of the government expenditure has been inflationary, causing a 0.06% increase in inflation per percent increase in government expenditure. In both regimes, economic growth showed a positive effect on inflation. This effect was equal to 0.15 in the first regime (low liquidity growth) and 0.23 in the second regime (high liquidity growth). This suggests that economic growth has led to increased inflation in the short term, which can probably be attributed to shocks and demand-side pressures. Oil revenues were also found to have a positive effect on inflation. The sum of the coefficients of this parameter and its lags was 0.45 in the first regime (low liquidity growth) and 0.18 in the second regime (high liquidity growth). In both regimes,

تاريخ استلام البحث/2023/1/2 تاريخ قبول النشر/2023/1/9
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

liquidity growth was identified as the most important short-term inflationary factor. However, it has stronger inflationary impacts in the second regime. In the low liquidity growth regime, increasing liquidity has had lower inflationary effects in the short term, probably with a greater effect on economic growth. In the high liquidity growth regime, most of the increase in money stock has led to increased inflation rather than more production. Whenever the Iraqi economy has been in the second regime, government expenditure growth, liquidity growth and GDP growth have all had a positive effect on the country's inflation. This result can be attributed to the periods of booming oil revenues and periods of high budget deficits during the examined time window. With the increase in oil revenues, government expenditure has increased because the government as the owner of oil revenues has had more liquidity at its disposal for spending in economic activities. Finally, the results showed that the estimated nonlinear model suits the data to a satisfactory level.

6. Discussion and conclusion: The main goal of this study was to investigate the non-linear effect of government expenditure, liquidity growth and economic growth on inflation in Iraq based on the seasonal time series data for the period of 2003-2020 using the smooth transition regression method. The analysis results showed that, during this period, economic growth and government expenditure growth have had different effects on the country's inflation depending on whether liquidity growth has been low or high. As macroeconomic variables, government expenditure growth and economic growth can have an impact on the exacerbation of inflationary conditions. During this period, in the high liquidity growth regime, price level deviation from the long-term equilibrium has been a significant determinant of inflation acceleration in Iraq, and inflation has been strongly reacting to this deviation. In both regimes, GDP growth and its lags have either had anti-inflationary effects or no positive effect on the country's inflation rate. Therefore, it can be concluded that liquidity growth has been the most important determinant of the regime of the relationship between the inflation rate and macroeconomic variables of the Iraqi economy. From this, it follows that Iraqi economists and economic policymakers can mitigate the impact of variables such as current and construction expenditures on the inflation rate by controlling liquidity growth so that it remains in the low liquidity growth regime, thus boosting the country's economic growth. The results of model estimation showed that in the low liquidity growth regime, the growth of government expenditure is not inflationary and can even reduce inflation. In this regime, government expenditure is funded through taxes or the non-inflationary increase of oil revenues. In the high liquidity growth regime, a greater part of the increase in money stock produces inflation rather than boosting production. In this regime, increasing the money

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

stock will be inflationary, and only a smaller part of it will contribute to real production growth in the short term. In both regimes, liquidity growth has played a key role in the emergence of short-term inflation. In the low liquidity growth regime, where the government expenditure is less dependent on borrowing from the central bank and monetizing the budget deficit, the government expenditure growth will be compensated through tax revenues or oil (currency) revenues, both of which can have anti-inflammatory effects. Thus, in the low liquidity growth regime, where government expenditure is not financed by resorting to the central bank, it is recommended to utilize financial policies more effectively to stimulate economic growth and control inflation at the same time. In this regime, it is also recommended to avoid anti-inflationary effects by increasing oil (foreign currency) and tax revenues. In the high liquidity growth regime, where increased money stock tends to mostly cause inflation and to a much lesser extent contribute to real production growth in the short term, it is recommended to adhere to policies that reduce money stock. Given the low inflationary impact of monetary policies in the low liquidity growth regime, it is recommended to consider using inflation control policies during these periods. Finally, government expenditure packages in Iraq should be designed in a way that would fit the needs of the country's economy as discussed above. In addition, a range of communication structures needs to be put in place to trigger appropriate economic responses to such positive and negative shocks based on a sound analysis of the situation with different economic factors taken into account.

References

- Abdulkadhim Altaee, H. & Taher Saeed, S. (2019). "On the drivers of inflation in Iraq." *International Journal of Monetary Economics and Finance*, 12 (3), 180-195.
- Ahmed, Y. A., Rostam, B. N., & Mohammed, B. A. (2020). The effect of the financial crisis on macroeconomic variables in Iraq, Iran, and Turkey. *Economic Journal of Emerging Markets*, 12 (1): 54–66.
- Al-Fawwaz, T. (2015). The impact of government expenditures on economic growth in Jordan (1980-2013). *International business research*, 9 (1), 99-105.
- Al-Jafari, M., & Abdulkadhim, H. (2019). Determinants of Inflation Sources in Iraq: An Application of Autoregressive Distributed Lag (ARDL) Model. *The Journal of Social Sciences Research*, 5 (2): 380-388.
- Anders, and (2011). Econometrics of time series with applied approach. The second volume, translated by Mehdi Sadeghi and Saeed Shawalpour, Tehran: Imam Sadegh University Press.

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

- Azizi, F. (2005). Prediction of inflation gap based on P model in the case of Iran. Economic Essays, 1 (2): 36-9. Truth, C; Muharram Jodi, N. (2015). The effect of government expenditure shock on GDP growth in Iran, ARDL approach. Economic Modeling Quarterly, 10(36): 141-166.
- Rashki, S; Khanalipour, A. (2011). Inflation, growth, uncertainty of inflation and growth in Iran; An application of the multivariate GARCH model. Journal of Macroeconomics, 7 (3): 13-38.
- Rezazadeh, A. (2018). The relationship between inflation, inflation uncertainty and economic growth in Iran: a non-linear approach. Review of Iran's Economic Issues, 6 (2): 66-37.
- Sayeh Miri, A; Ahmadi, K; Omid, M. (2019). The effect of inflation on economic growth: a meta-analysis approach. Journal of Development and Capital, 5(2): 151-137.
- Mehrara, M.; Bhakti, S; Behzadi, M. (2016). The effect of government spending on inflation in passing through an inflationary environment with the STR approach. Economic Research Journal, 16 (60): 105-75.
- Bacon, D. W. & Watts, D. G. (1971). "Estimating the Transition between Two Intersecting Straight Lines". Biometrika, 58, 525-534.
- Barro, R. J., 1995. Inflation and economic growth, Bank of England Quarterly Bulletin, p. 166.
- Bayraktar, N. and Wang, Y. (2006). "*Banking sector openness and economic growth*", Policy Research Working Paper, No. 4019, WorldBank, Washington, DC.
- Beheshti, K. (2013). The impact of inflation, inflation uncertainty and government spending on economic growth in Iran. Master's thesis, Tabriz University, Economics. Jafari Samimi, A; Alizadeh, M.; Azizi, Kh. (2008). Long-term relationship between budget deficit and macroeconomic performance in Iran: a theoretical and empirical analysis. Economic Research, 6 (4): 25-46.
- Bjork, G.J. (1999) The Way It Worked and Why It Won't: Structural Change and the Slowdown of U.S. Economic Growth. Praeger Publishers, Westport, CT.
- Bruno, M. & Easterly, W. (1998), "Inflation crises and long- run growth". *Journal of Monetary Economics*, 41 (98): 3-26.
- Caballero, R.J. (1991). On the sign of the Investment-Uncertainty Relationship. *The American Economic Review*, 81(1): 279-288.
- Chan, K. S. & Tong, H. (1986). "On Estimating Thresholds in Autoregressive Models". *Journal of Time Series Analysis*, 7(3), 179-190.

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

- Chude, N., & Chude, D. (2013). The impact of government expenditure on economic growth in Nigeria. *International journal of business and management review*, 1 (4), 64-71.
- Dayıoğlu, T., & Aydın, Y. (2020). Relationship between Economic Growth, Unemployment, Inflation and Current Account Balance: Theory and Case of Turkey. Theory and Practice, 5 (32): 56-72.
- Dhakal, D., Kandil, M., Sharma, S. & Trescott, P. B. (1994). Determination of the inflation rates in the United States: AVAR investigation. The Quarterly Review of Economic and Finance, 34 (1): 95-112.
- Easterly, W.R., and Wetzel, D.L.(1989). "Policy determinants of growth: survey of theory and evidence", Policy, Planning and Research Working Papers Series No. 343, World Bank, Washington DC., pp. 1-41.
- Ericsson, N. R., Irons, J. S., Tryon, R. W. (2001). Output and inflation in the long run, *Journal of Applied Econometrics*, 16 (1): 230-241.
- Fischer, S. (1992), "Macroeconomic stability and growth". *Cuadernos de Economia*, 29 (87): 171-186.
- Friedman, M. (1977). Nobel Lecture: Inflation and Unemployment. *The Journal of Political Economy*, 85 (97): 451-472.
- Ghazi, K. T. & Semo, F. R. (2020). "The Impact of Public Expenditure on Macroeconomic Variables in Iraq: In The Period 2006-2017". *Koya University Journal of Humanities and Social Sciences*, 2 (2), 152-165.
- Gokal, V., & Hanif, S. (2004). Relationship between inflation and economic growth. Reserve Bank of Fiji. Working paper 2004/04.
- Golob, J. (1994). Does Inflation Uncertainty Increase with Inflation. *Economic Review*, 79(3): 27-38.
- Henrekson, M. (1993). Wagner's law- a spurious relationship. *public finance*, 48 (2), 406-415.
- Irfan, M., & Javed, A. (2014). Inflation, Economic Growth and Government Expenditure of Pakistan: 1980-2010. *Procedia Economics and Finance*, 5 (13): 58-67.
- Ismaili, B. (2021). Examining the effect of economic growth and government spending on the inflation rate using the soft transition regression approach. Economic Growth and Development Research, 12 (45): 115-130.
- Kareem, R.O., Bakare, H.A., Ademoyewa, G., Bashir, N.O., Ologunla, S.E. and Arije, R. (2014) The Impact of Public Sector Spending on Economic Growth of Nigeria. *Journal of Economics and Sustainable Development*, 5 (14): 216-224.
- Keynes, J.M. (1936) General Theory of Employment, Interest and Money. Palgrave Macmilliam Publishers, London.

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

- Khamies, B. (2022). Estimation of the Effect of the Government Expenditure Growth Rate on the Rate of Inflation in the Iraqi Economy for the Period (1991-2015), International Journal of Innovation, Creativity and Change, 13 (7): 1741-1759. www.ijicc.net
- khattab, S., Ahmed, A., & Mohammed, M. (2019). Analysis and Measurement the Affecting Factors in Public Expenditures in Iraq for the Period 2003-2017. *TANMIYAT AL-RAFIDAIN*, 38 (122): 121-138.
- Kock, U., & Grigorian, D. (2010). Inflation and Conflict in Iraq: The Economics of Shortages Revisited. *IMF Working Papers*, 19 (5): 1-24.
- Mahara, T.S. (2021). An empirical investigation between money supply, inflation, capital expenditure and economic growth in Nepal. *Quest Journal of Management and Social Sciences*, 3 (1), 23-39.
- Masimba, Shelton & Ho, Sin-Yu. (2021). Inflation, inflation uncertainty and the economic growth nexus: An impact study of South Africa. *MethodsX*, 8 (21): 72-89.
- Mohr, P., & Fourie L. (2008). Economics for South African students. Van Schaik publishers, Pretoria.
- Mundell, R. A. (1963). Inflation and real interest. *Journal of Political Economy*, 71: 280-283.
- Musgrave, R., & Musgrave, P. (1989). *Public Finance in theory and practice*. New York: McGraw-Hill book company.
- Nguuyen, T. (2019). IMPACT OF GOVERNMENT SPENDING ON INFLATION IN ASIAN EMERGING ECONOMIES: EVIDENCE FROM INDIA, CHINA, AND INDONESIA. *The Singapore Economic Review*, 64 (5): 1171-1200.
- Nuruddeen, T., & Ibrahim, S. (2014). An empirical study on the relationship between poverty, inequality and economic growth in Nigeria. Journal of economics and sustainable development Vol 5 (26), 1-14.
- Nwaeze, C., Njoku, R. & Nwaeze, O.P. (2014) Impact of Government Expenditure on Nigeria's Economic Growth (1992-2011). *The Macrotheme Review*, 3, 79-87.
- Nworji, I.D. & Oluwalaiye, O.B. (2012). Government Spending on Road Infrastructure and Its Impact on the Growth of Nigerian Economy. *International Journal of Management and Business Studies*, 2 (12): 24-30.
- Olayemi, I.A. (2017). Is Nigerian Growth Public Spending-Spurred. *Asian Journal of Economic Modeling*, 5 (17): 354-363.
- Piontkivsky, R., Bakun, A., Kryshko, M. & Sytnyk, T. (2001). "The Impact of The Budget Deficit on Inflation in Ukraine". International Association for the

تاريخ استلام البحث/2/1/2023 تاريخ قبول النشر/9/1/2023
Iraq Journal For Economic Sciences / ISSN:1812-8742 / ISSN ONLIN:2791-092X
https://doi.org/10.31272/IJES2023.76.S25

Promotion of Cooperation with Scientists from the New Independent States of the Former Soviet Union (INTAS) Research Report.

- Reid, J., Burns, N., & Stakhiv, S. (2012). *LT Asset Return Study: A journey into the Unknown*. Deutsche Bank, Global Markets Research. 3 September.
- Sabr, S., Ahmed, Y., & Khan, T. (2021). Government Budget Deficit and Economic Growth: Evidence from Iraq 1980-2018. *Arab Journal of Administration*, 41 (1): 389-404.
- Satya, Paul., Colm., Kearey & Kabir, Chowdhury. (1997). "Inflation and Economic Growth: A Multi-Country Empirical Analysis". Applied Economics, 29, 1387-1401.
- Thaddeus, K.J., Ngong, C.A., Nebong, N.M., Akume, A.D., Eleazar, J.U. and Onwumere, J.U.J. (2021), "Selected macroeconomic determinants and economic growth in Cameroon (1970–2018) "dead or alive" an ARDL approach". *Journal of Business and Socio-economic Development*, 5 (21): 56-72.
- World Bank. (2018). The World Factbook 2018. Central Intelligence Agency: Washington, DC. https://www.cia.gov/library/publications/the-world-factbook/index.html.