The Seybold Report

ISSN 1533-9211

DOI 10.17605/OSF.IO/FJWUH

THE CAUSAL RELATIONSHIP BETWEEN THE BUDGET DEFICIT, INFLATION, AND MONEY SUPPLY IN JORDAN FROM 1992 TO 2021

FEDEL MAYUF AL-HABASHNEH

Associate Professor, Department of Financial and Business Economics, Mutah University, School of Business Al-Karak – Jordan. E-mail: Fhabashneh@mutah.edu.jo, Fedelhabashneh@yahoo.com

Abstract

This study aims to determine the causal relationship between Jordan's budget deficits, inflation rate, and money supply using annual data from 1992 to 2021. Using the unit root, cointegration, and Granger causality test, it was concluded that there is a long-term relationship between the budget deficit, inflation, and money supply. Also, the study found a one-direction relationship between the budget deficit and inflation, and there is no causal relationship between the money supply and inflation. Inflation is also associated with the increase in the money supply. The results show that inflation is primarily caused by increasing of money supply. The study recommends being cautious about the budget deficit, money supply, government spending, and interest rate because they can lead to high economy inflation, mainly, when using fiscal and monetary policies to stimulate the economy on the consideration that the budget deficit, government spending, and interest rate are statistically considered one of influential factors for inflation in the estimation process.

Keywords: Budget Deficit, Inflation, Monetary Supply, Causality, Jordan

INTRODUCTION

The Jordanian economy is considered one of the low-income economies in the developing countries, which witnessed a large financial deficit coinciding with high inflation rates and variable money supply for a long time. That is one of the basic facts and one of the most important indicators by which the state's financial performance is measured because of its impact on many economic variables, including the interest rate which has been increasing rapidly over the past years and up to the present time. But the question that arises is? Does the government budget deficit lead to higher inflation? More accurately, is the budget deficit is an important factor for inflation as it is one of the principles of macroeconomics?

Most of developed and developing countries with high inflation rates suffer from considerable government budget deficits. Which mainly indicates the relevance of the budget deficit to inflation rate, so that the relationship between the budget deficit, inflation, and money supply gained a prominent place in the literature on the monetary economy, especially in Jordan, because inflation has been going on over previous decades -not recent ones, in addition to the rise in prices even in normal circumstances. This is due to the rise in tax in its two parts, direct or indirect, the rise in interest rates, and the inflation imported from abroad, which led to the exacerbation of the general economic conditions due to the rise in prices, and the impact of inflation on livelihood, especially on those with low- incomes in Jordan.

As it in most periods of high inflation rate in developing countries, including Jordan, it is strongly believed that the main cause for inflation is the imbalance in the financial field which lasted for a long time, peaking in the mid-1980s to the present, because a budget deficit occurs

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

when the public expenditure exceeds the government revenues.

According to Ackay et al. (1996), the high budget deficit is one of the matters that caught the attention and concern of businessmen, policymakers, and monetary authorities on the clear relationship between government budget deficits, inflation, and money supply. So, to fill deficits and solve the problem, the government finances its deficit from two sources, which are local and external borrowing, or the Central Bank resorts to print and issue new money, which means increasing in the money supply, that accordingly leads directly to inflation. The latter is a monetary phenomenon that appears when the economic growth rate is less than the money supply growth rate, which proves that the budget deficit causes the emergence of inflation.

The government may resort to increasing borrowing due to the presence of a budget deficit, which is leading to growth in the demand for economic credits that prompted interest rates to go up. Increasing interest rates is a way that makes obtaining money more difficult, and that leads to the exclusion of private investment and disinvestment due to the high costs of borrowing. This leads to an increase in the burden of new and existing loans, so the private sector and individuals may decide to postpone borrowing until it declines, because the disinvestment in the Kingdom leads to a decrease in productivity, moreover, the decline in an increase rate of the economy is strongly leading to a decline in goods' procurement and services and may lead to a decrease in the number of goods available for a specific level of cash balances and thus the price level rises.

In addition to the above, the Keynesian theorists showed that the budget deficit may cause an expansion of money growth, inflation, high-interest rates, as well as the exclusion of private investments, so that the risk is mainly represented in increasing indebtedness and undue crowding out of the private sector investments that affect the macroeconomic conditions of the economy. Accordingly, the increase in interest will portend that the Jordanian economy enters into a stage of danger, because the increase in interest means an increase in the cost of debts, and thus an increase in its service percentage from the rate of budget expenditures.

Budget deficits can also lead to higher inflation even without central banks having to convert the debt into money. This occurs when private sectors convert the deficit into money. When high-rates of interests encourage financial sectors to improve new interest-bearing assets like cash-flow and risk-free liquidity by financing deficits by selling bonds that are less inflationary than deficits funded with money. Therefore, government debt which has not been converted to money by central banks is converted by private sectors.

Accordingly, most of the studies focused on analyzing the budget deficit and the inflation and money supply relationships inside and outside the country. It has been found that the budget deficit affects inflation, interest rates and private investments out of aggregate demand and supply and financing sources and channels. The government budget deficit affects and inflation the money supply. Regarding to its high inflation rates which represent the main obstacle to achieving economic development in most countries, especially Jordan.

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

IMPORTANCE OF STUDYING

The importance of this study includes analyzing the significance causal connection between inflation and the budget deficit in Jordan, because it occupies a large space in the economic history, in the context of economic, social, and political changes, and one of the most important economic dilemmas with a direct impact on inflation. The study proceeds from the premise that budget, inflation, and money supply in Jordan for the period (1992-2021), and to limit its impact, problems must be identified and addressed with appropriate fiscal and monetary policies.

AIM OF THE STUDY

The study aims to confirm the causal relationship between the budget deficit, inflation, and the long-term money supply in Jordan. This study utilizes annual data for the time from 1992-2021, by analyzing the financing sources of deficits, foreign or domestic, that have impact on inflation in Jordan, taking into consideration the role of the money supply and the sources of financing that have the greatest impact on inflation, which leads to converting the deficit into cash by determining the causal trend between the variables, and showing the effects and suggestions in the implementation of economic plans.

Here are some of the most important objectives set by the study.

1. Analyzing the sources of deficit financing, with a focus on its domestic and foreign inputs, and their impact on inflation in Jordan.
2. Analyzing the causal connection and its size of the budget deficit and inflation, and money supply in Jordan.
3. Concluding the most important and necessary suggestions and their impacts on monetary and fiscal policy in Jordan.

Study Hypotheses

The occurrence of a causal relationship between budget deficit, inflation, and money supply in the short term in Jordan during the period 1992 to 2021,

A direct positive relationship in the long term between the budget deficit and the rate of inflation.

Theoretical framework

Various economic studies and theories have proven that there is a link between the budget deficit mechanism and the rate of inflation. And that the budget deficit is one of the greatest dilemmas facing the economies of developed and developing countries until it has been linked to them and become too difficult to avoid, identify and treat because it affects inflation through various sources of money supply and sources of deficit financing.

Within the framework of the theoretical literature, the monetary and Keynesian theory showed that the budget deficit is leading to inflation which accordingly make inflation leading to an

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

increase in the budget deficit. This effect appears with an increase in financing sources, which, ceteris paribus, will lead to an increase in the money supply, resulting in a corresponding increase in the inflation rate in the long run (Gupta 2013).

Also, from the Keynesian point of view, the government budget deficit is inflationary because it stimulates aggregate demand. This method depends on the sources of financing the deficit, through the theory of aggregate supply and demand. The monetary point of view also indicates that the government budget deficit is inflationary because it leads to increasing monetary growth that threatens monetary and financial stability in developed and developing countries.

In the same context, the study of Ahking and Miller (1985) confirmed that chronic budget deficit resulted in the occurrence of inflation through financing sources. That the central bank could finance the budget deficit through fundraising or financing the private sector. Thus, private sector financing leads to higher interest rates, that in turn leads to the alienation of private investment, in addition to a decrease in the real output growth rate, and an increase in prices for goods and services. Moreover, some researchers have confirmed that the issuance of domestic loans and money is associated with a direct correlation with inflation, Demopoulos et al. al, (1987). Cardoso, (1992). Sowa, (1994). Agha and Khan, (2006).

Through Friedman's study (1970:24), one of the founders of monetary theory, who is considered one of the classical economists, he concluded that "inflation is driven by the growth of money. It is a continuous monetary phenomenon everywhere", and that the budget deficit is a source of inflation to the extent that it is converted into money only according to the monetary framework of the quantitative theory". Moreover, the high budget deficit has played an important and direct role in the inflation process.

At the same time, the results of previous intensive and extensive studies that extended over constant periods used by Woodford (1994, 1995, 1996) and Sims (1994, 1997) showed the emergence of a new theory of price fixing, which is known as the financial theory of the price level (FTPL). This theory confirms that money creation may not be the only source through which the budget deficit causes inflation and that current and future debts and taxes are the main determinant of the price level or inflation, unlike the monetary theory. According to the theory, Woodford showed that fiscal policy affects the rate of inflation when the fiscal policy is a Non-Ricardian Policy (non-neutral) and that this policy is the controlling system, while the relationship between inflation, the budget deficit and money supply derives from the impacts of wealth resulting from the budget deficit funded by bonds. Accordingly, it is probable that the target of the monetary authority represented by debt financing is responsible for the Ricardian system which is monetarily dominant, and which is considered to be a standard for the quantity money theory.

Accordingly, the framework of the theory for this study conducted by Serkan Erkam and Murat Cetinkaya, (2014) in Turkey, showed that the causal relationship between the budget deficit and inflation is consistent with the financial theory of the price level, while the causal sequence is verified for the two periods (1987-2003) and (2005-2013), for the money deficit and inflation hypothesis Sargent-Wallace (1981). The results of the tests for this study revealed the causal

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

connection extending from the inflation to budget deficit in the first period, with a positive and statistically clearly causal relationship extending from budget deficit to inflation rate, where the inflation average is relatively high. This conclusion vanished when the second low-average inflation sub-period was analyzed. These consequences can be related to the strong financial stabilization policies pursued in the Turkish economy after 2001 crisis.

The results of another study by Hamburger and Zwick (1981) reached to called the period 1961 – 1974 the Keynesian period, and emphasize the main role of budget deficit is to make macroeconomic policy. After revising the connection of budget deficit, money supply and inflation in the industrialized countries, of the United States, using Barrow's expected money supply pattern, and analyzing the mutual relation between fiscal and monetary policies. Basing on the special data in that period, the results showed that the money deficit had a significant impact on the money supply, as they believed that the government deficit cause progressive pressure on interest rates as well the central bank financed debts to fix interest rates.

THE LITERATURE REVIEW

Through various studies on the causal relationship between the inflation and budget deficit since the eighties and nineties in developed countries, especially since the beginning of the last century in developing countries and emerging economies, which implemented a set of expansionary fiscal policies to accelerate their economic growth. Moreover, some other studies confirmed that the budget deficit positively affects inflation or causes it. Using different methods, most of them are concerned about financing the deficit and converting the budget deficit into money and therefore. As the results of Solomon, M, et al. (2004) which examine the relationship between rising inflation rates and rising monetary deficit for an extended period by using Cointegration analysis-over the period 1967-2001 revealed a causal relationship extending from budget deficit to inflation rate. The study's result was that there are significant inflationary effects of the increase in the budget deficit due to the conversion of the budget deficit into money in Tanzania.

According to the results of the study data analysis conducted by Lusajo P. Mwankemwa and Eliab Luvanda (2022), the results proved that there is a relationship between inflation and the fiscal deficit and that the deficit leads to a significant increase in inflation. This is attributed to the high expenditures on infrastructure projects. Despite this, the government did not resort to imposing taxes, meaning that taxes are not progressive, which contributed to the high mounts of the budget deficit.

Relevantly, another research for Turkey, by Metin, K. (1998), analyzing inflation bysectoral relation model, found that expansion of fiscal was one of the major determinants for inflation. The reason for the increased demand in money positively had many impacts on inflation in the short term. In the same context, the study of Akcay, O.C., et al, regarding the relationship between budget deficit and the general level of prices, concluded that the growth of the budget deficit positively had many impacts on the increase in price levels in Turkey.

El-Shagi and Giensen's study (2013) indicated that the rate of inflation in the United States

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

raised by more than five percent for more than a decade because of the expansionary monetary policy used by the Federal Reserve Bank as a reaction to the financial crisis. Moreover, persistent federal deficits led to the growth of the money supply through raising and increasing reserve growth. The study conducted by Milo (2012) showed that there is a positive relationship between the monetary financing of the government deficit and the growth of the monetary base. And that financing the budget deficit is not only through direct loans or purchase of government bonds by the state and central banks of Romania, Albania, and Bulgaria.

The results of the monthly statistical data conducted by the study of Nguyen and Nguyen (2010) on the determinants of inflation during the period from 2000 to 2010, by analyzing the effect of the budget deficit on the inflation rates in the long term. It concluded that there is no impact of the budget deficit on the inflation rates in the short term, and the impact is not clear in the long run in Vietnam.

The results of various studies by Dejthamrong (1993), Hondroyiannis and Papapetrou (1997), and Cukierman et al. (1992), for some developing countries, indicate that fiscal deficit has a significant impact on the authorities of money to raise the money supply in order to slow down interest rates. As well, this relation has a negative effect on economy.

The study conducted by Oladipo N, et al (2011). proved that it is only a one-way causal relationship that extending from the budget deficit to inflation, which means that the budget deficit has an impact on inflation through exchange rates' fluctuations as well through its impact on the components of the general budget represented by expenditures and revenues. The impact is direct and indirect. Through the results, it was found that the exchange rate causes price inflation in Nigeria because of its use of expansionary monetary policy greatly over the past decades. In the same context, Bwire and Nampewo (2014) found a one-way causal relationship extending from inflation to budget deficit and did not find any statistically significant causal relationship from budget deficit to inflation or from budget deficit to the money supply in the short term in Uganda during the period 1999 to 2012.

In the same context, the results of the study conducted by Alani J (1995), which interpreted the connection of government deficit, inflation and money supply, revealed that the relation between budget and inflation is not exist although there is a short-term causal relationship extending from the money supply to inflation by analyzing quarterly data from the second quarter of 1985 to the second quarter of 1993 using the least squares method.

The findings of Mukhtar and Zakaria (2010) study of Pakistan stated that a significant long-term relationship between inflation and the budget deficit was not founded. Rather, inflation is connected to the money supply, although there is no significance causal relation between the budget deficit and the money supply in Tanzania. The Ndanshau study (2012) support that budget deficit didn't have an effect on inflation. It was noted that Granger's relation extends from inflation to budget deficit.

Karras, G, study (1994) investigated this relation through using annual data for several countries. According to the results, deficits do not lead to inflation especially for developing countries. This is the same conclusion reached by a study, carried out by Altıntaş et al. (2008),

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

which investigated the relationship between budget deficit and inflation through the ARDL approach during the period 1992-2006. By analyzing the results of the study, there is no clear relations can be investigated between inflation and the budget deficit of the economy of Turkish. In addition, the study presented by Kurayish, S et al, (2019), explained the relationship between budget deficit, inflation, and money supply. The results indicated that there is not relationship extending from the budget deficit to inflation and from the money supply to inflation in the short term, meaning that the budget deficit clearly causes inflation in Uganda.

As for the relation between inflation and money supply, the study of Narayan, P. K. et al. (2006), a two-way causal relationship between money supply and budget deficits in the long term, and a one-way causal relationship in the short-run extending from money supply to inflation. Both money supply and deficits are the 'Granger cause' for inflation, although there are other studies with statistical evidence of a causal trend between inflation and the budget deficit, such as the study of Viera 2000, and Cevdet Akcay et al.2001, this indicates that both inflation and budget deficit are not 'Granger cause'.

By analyzing the data and conclusions, Hondroyiannis and Papapetrou (1994) suggested that there is a long-term relationship between the government budget and the price level in order to support the hypothesis of a bidirectional causal relationship between the two variables in Greece. Using the analytical approach to statistics and data, during the period 1999-2022, Ahmed Ashour's study concluded that there is a significant effect of each of the exchange rate, interest rate, inflation rate, and external debt on the budget deficit in Egypt. During this period, and by analyzing the budget deficit data 2000/2001-2021/2022, there is an accelerating and steady deficit appeared, that is, the growth in the budget deficit has exceeded the increase of real output and inflation, which indicates that there is a clear problem in controlling this deficit. The study also proved that the budget deficit in Egypt is predominantly increasing.

As indicated by the study of Manal Gaber Morssi Mohamed (2021), using the causality test, to a correlation between the budget deficit and the inflation rate during the period from 1999/2000 - 2018/2019, the presence of a structural deficit in the state's general budget, and that there is a positive correlation between the inflation rate and the budget deficit, either in the short or long term, considering that inflation has a strong impact on the budget deficit and with high spirits in Egypt.

The Study by Maio, Bulawayo, et al. (2018) using standard analysis, the (Ardl) method, confirmed the causal relation between the inflation and budget deficit and the role of the deficit contributing to inflation, in the short and not the long term, which is affected by money supply. In addition to economic and institutional factors and policy decisions in Zambia, where most of the results of studies have proven that budget deficit and inflation are strongly linked.

A study carried out by Aviral Kumar Tiwari, et al (2015) by examining the relationship between inflation and the budget deficit of nine European Union countries during the period 1990-2013, to discount the connection of inflation and budget deficit, using Granger causal trails in the short and long run. The results showed that there the causal relationship between the budget deficit and inflation in the short term for developing and developed countries does not exist,

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

and also indicate that there is a relation between inflation and the budget deficit in the long term for Belgium and France.

STATISTICAL ANALYSIS

To achieve the objectives of the study, the study uses the following model

(1) … … … … … … … … … … … $Y_t = a_0 + a_1 X_{1t} + a_2 X_{2t} + \epsilon_t Y_t = a_0 + a_1 X_{1t} + a_2 X_{2t} + \epsilon_t$

(2) … … … … … … … … … … … $X_{1t} = a_0 + a_1 Y_t + a_2 X_{2t} + \epsilon_t X_{1t} = a_0 + a_1 Y_t + a_2 X_{2t} + \epsilon_t$

(3) … … … … … … … … … … … $X_{2t} = a_0 + a_1 Y_t + a_2 X_{1t} + \epsilon_t X_{2t} = a_0 + a_1 Y_t + a_2 X_{1t} + \epsilon_t$

As:

$Y_t Y_t$: Budget deficit

$X_{1t} X_{1t}$: Inflation rate

$X_{2t} X_{2t}$ Money Supply

$\epsilon_t \epsilon_t$: Indicates the error limit.

Test of Unit Root

Regression analysis, which is used to evaluate time series, has considerable econometric value; it assumes that the series is static and concludes that it is not static if there is a unit root in the time series. Hindi (1999). Granger and Newbold (1974) claim that analyses using non-static series exhibit spurious regression, leading to the production of inconsistent conclusions. As a result, the results of the regression analysis employing a non-stationary series do not precisely reflect the connection between the variables.

Based on that, it is important to understand whether or not the variables are constant. In this study, the series' stability and stability rank were assessed using the ADF and PP unit root tests. This table shows that all the variables m2, Deficit, and inf are unstable at the level, while the variables are stable at the first difference of the three models, which confirms the possibility of a simultaneous (co-integration) relationship.

Table 1: ADF Unit Root Test Results

variable	Level		Critical Values (%5)	I Diff		Result
	Test Statistics	Probability		Test Statistics	Probability	
M2	-1.00918	0.7359	-2.97185	-7.25916	0.0000	I(1)
deficit	-1.89107	0.3316	-2.97185	-6.73322	0.0000	I(1)
inf	0.129334	0.9626	-2.97185	-4.72838	0.0008	I(1)

Source: Eviews analysis results

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

Table 2: PP Test Results

variable	Level		Critical Values (%5)	I Diff		Result
	Test Statistics	Probability		Test Statistics	Probability	
M2	2.03418	0.9998	-2.96776	-6.47728	0.0000	I(1)
deficit	-1.78856	0.3784	-2.96776	-7.11591	0.0000	I(1)
inf	1.29334	0.9626	-2.96776	-4.72838	0.0008	I(1)

Source: Eviews analysis results

Result of Cointegration Test

All variables are unstable (fixed and unstable) at their levels, according to the results of the ADF and PP unit root tests in Tables 1 and 2. When the initial difference is discovered, levels become steady. All series are stable on the first difference and are in the same sequence. This finding demonstrates the existence of a long-term relationship between the money supply, inflation, and budget deficit and suggests the potential for cointegration analysis.

Table 3: Cointegration Test results

Unrestricted Cointegration Rank Test (Trace)

Prob.**	0.05 Critical Value	Trace Statistic	Eigenvalue	Hypothesized No. of CE(s)
0.0866	29.79707	27.65342	0.450912	None
0.2198	15.49471	10.86754	0.309437	At most 1
0.4792	3.841466	0.500601	0.017720	At most 2

The test demonstrates no Cointegration at the 0.05 level
* denotes that hypothesis is rejected at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The trace test demonstrates no cointegration at the 0.05 level

When the results of the trace value test and the maximum Eigen value in the table are taken into account because the trace test with a significance level of 5% and the fixed values of the maximum Eigen value test is less than the table critical values. It is concluded that there is no cointegration between the series. This indicates the rejection of the hypothesis at the level of 0.05.

Causal test:

The co-integration results demonstrate a long-term association between the variables when

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

analyzing the causal relationship, but they reveal nothing about the relationship's direction. The Granger causality test (Granger, 1969) will be used to help assess the direction of the relationship between the variables. Based on the findings of the Granger causal test, these results are crucial for policymakers to understand the existence and direction of the long-term relationship between variables. The Granger causality test's current findings are displayed in the table so that you can examine the cause-and-effect connections between the series.

Table 4: Granger Causality Tests results

Prob.	F-Statistic	Obs	Null Hypothesis:
0.2691	1.39039	28	Deficit does not Granger Cause M2
0.0272	4.23346		M2 does not Granger Cause Deficit
0.1402	2.14261	28	INF does not Granger Cause M2
0.5773	0.56279		M2 does not Granger Cause INF
0.0164	4.93839	28	INF does not Granger Cause Deficit
0.4723	0.77517		Deficit does not Granger Cause INF

Through the results of the table, the results of causation become clear, that there is a one-way relationship between the budget deficit and inflation, as the causality extends from the fiscal deficit to inflation at a large 5 percent level, considering that the main reason for the increase in the money supply is the budget deficit, the central bank printing money to finance budget deficits that increased the money supply, which led to an increase in consumption and then an increase in prices. In this case, aggregate supply will not be able to meet aggregate demand due to the weak purchasing power of the local currency. In addition, the real value of tax revenues will decrease due to the increase in inflation as a result of the increase in the budget deficit. Moreover, changes in the budget deficit and money supply cause inflationary effects.

0.1402	2.14261	28	INF does not Granger Cause M2
0.5773	0.56279	M2 does not Granger Cause INF	

The results are shown by the Granger causal tests indicated by the causal table between the money supply and inflation in the long and short term in the Jordanian economy during the period 1992-2021. The results of Granger's causality indicate that there is no causal relationship between money supply and inflation and that money supply does not significantly affect inflation in the long run or the short run. This may sometimes be due to stagnation in the Jordanian economy, weak economic policies, in addition to the large budget deficit, inflated import of commodities from abroad, and international oil prices on the consideration that money supply is not the main factor, which can equally cause inflation in Jordan. As concluded

ISSN 1533-9211

DOI 10.17605/OSF.IO/FJWUH

by the study of Ditimi et al, (2017), inflation is due to increased government and private spending, natural disasters, and increases in prices and wages. Unnecessary spending by both government and individuals leads to inflated demand, natural disasters and poor fuel supplies which cause cost-push inflation. In Nigeria and most developing countries.

0.0164	4.93839	28	INF does not Granger Cause Deficit
0.4723	0.77517		Deficit does not Granger Cause INF

As for the results shown by the Granger causality tests indicated by the causal table between inflation and the budget deficit.

According to the sense of the monetary theory, inflation is linked to an increasing money supply, that is, the high rates of inflation are because of increasing in the money supply resulting from the increase in the budget deficit, which is caused by the dependence of inflation on fiscal policy more than monetary policy according to the general financial theory of prices level. As for the results shown by Granger causality tests between the budget deficit and inflation, there is no causality between them, as they indicate that inflation is mainly caused by increased money supply. That was a determinant factor for inflation and that the increase in the demand for money positively affected inflation, while it proved a study of both they, Dwyer (1982). Karras (1994), Abizadeh and Yousefi (1998) found no relationship between budget deficit and inflation. For developing countries, on the other hand, Hondroyiannis, G. et al. (1997) found no evidence or direct effect of the budget deficit on inflation in Greece.

CONCLUSION

1. All the variables, money supply, budget deficit, and inflation are not stable at the level, while the variables are stable at the first difference of the three models, which confirms the possibility of a simultaneous integration relationship (cointegration) that gives the value existed between the brackets of the optimal length of the delay, and becomes stable when taking its first difference. All On the top level (1), the series in the same sequence are stable. This finding suggests the possibility of cointegration analysis and suggests that the budget deficit, inflation, and money supply may have a long-term link.
2. The trace test indicates no cointegration at the level of 0.05.
3. There is a one-way relationship between the budget deficit and inflation, as the causality extends from the fiscal deficit to inflation at a large 5 percent level. Considering that the budget deficit is the main reason for the increase in the money supply. Printing money by the central bank to finance the budget deficit is leading to raising money supply; which led to an increase in consumption and then an increase in prices. In this case, aggregate supply could not be able to meet aggregate demand due to the weak purchasing power of the local currency. In addition, the real value of tax revenues will decrease due to the increase in inflation as a result of the increase in the budget deficit. Moreover, changes in the budget deficit and money supply cause inflationary effects.

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

4. The results of Granger causality indicate that there is no causal relationship between money supply and inflation and that money supply does not significantly affect inflation in the long term and the short one. This may sometimes be due to stagnation in the Jordanian economy, weak economic policies, large budget deficit, inflated import of commodities from abroad, and international oil prices, on the consideration that money supply is not the main factor, which can equally cause inflation in Jordan.
5. Inflation is strongly associated with an increase in money supply, that is, the high inflation rates are due to the increase in the money supply resulting from the increase in the budget deficit, which is caused by the dependence of inflation on fiscal policy more than monetary policy, according to the general financial theory of prices level.
6. The results indicate that inflation is mainly caused by an increase in the money supply, which was a determinant factor for inflation, and that the increase in the demand for money positively affected inflation.

RECOMMENDATIONS

Governments should be careful about the budget deficit, money supply, government spending, and the interest rate because they contribute to the rise in inflation of the economy, when using fiscal and monetary policies to stimulate the economy, on the consideration that the budget deficit, government spending, and interest rate are influencing factors for inflation in the estimation process.

References

1. Agha, A. I. and Khan, M. S. (2006), An Empirical Analysis of Fiscal Imbalances and Inflation in Pakistan, State bank of Pakistan Research Bulletin, 2(2), 343-362.
2. Ahking, F.W. and Miller, S. M. (1985), The Relationship Between Government Deficits, Money Growth, and Inflation, Journal of Macroeconomics, 7 (4), 447-467
3. Akcay, O.C., Alper, C. E., and S. Ozmucur. (1996) "Budget deficit, money supply, and inflation: evidence from low and high-frequency data for Turkey", Bogazici University, Department of Economics, December.
4. Alani J (1995) Government deficits, money supply and inflation in Uganda. A triangulation of VECM model. Makerere University, Kampala, pp 10–22
5. Alintas, H, Cetinkaya, H. and Taban, S., (2008), Türkiye'de Bütçe Açığı, Parasal Büyüme ve Enflasyon Arasındaki İlişkinin Ekonometrik Analizi: 1992–2006, Anadolu Üniversitesi Sosyal Bilimler Dergisi, 8(2), 185–208.
6. Ashour, Ahmed. 2022. Determinants of the Budget Deficit in Egypt: 1999-2022. International Journal of Public Policies in Egypt - Volume 1, Issue 4 (October 2022)
7. Bwire, T. and Nampewo, D. (2014). Fiscal Deficit Financing: Implications for Monetary Policy Formulation in Uganda. Journal of Applied Finance and Banking, Vol. 4 Issue No. 2
8. Cardoso, E. A. (1992), Deficit finance and monetary dynamics in Brazil and Mexico, Journal of Development Economics, 37, 173-197.
9. Cevdet Akcay O, Emre Alper C, Ozmucur S (2011) Budget deficit, inflation, and debt sustainability: evidence from turkey (1970–2000). In: Rittenberg L, Kibritcioglu A (eds) Selcuk F. Inflation and disinflation

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

in Turkey. Taylor & Francis Group, London

10. Cukierman, A., Webb, B. and Neyapti, B. (1992). The Measurement of Central Bank Independence and its Effect on Policy Outcomes. World Bank Economic Review, 6(September), 353-398.
11. Dejthamrong, T., 1993. The budget deficits: its impact on money supply and output in selected Seacen countries, South East Asian Central Banks, Bangkok.
12. Demopoulos, G. D. Katsimbris, G. M. and Miller, S. M. (1987), Monetary policy and central bank financing of government budget deficits, European Economic Review, 31, 1023-1050.
13. El-Shagi, M., & Giensen, S. (2013). Money and inflation: Consequences of the recent monetary policy. Journal of Policy Modeling, 35, 520-537.
14. Friedman, M. 1970. The Counter-Revolution in Monetary Theory, London: Institute of Economic Affairs.
15. Gujarati, D.N. (1999). Temel Ekonometri, (Çev. Ü. Şenesenve G.G. Şenesen), Literatür Yayınları, İstanbul
16. Gupta P (2013) The impact of expectations of reduced federal reserve security purchase emerging markets. MPRA Paper from University Library of Munich, Germany, pp 18–19
17. Hamburger, M.J. and Zwick, B. 1981. Deficits, Money and Inflation. Journal of Monetary Economics, Vol. 7, No.1, pp. 141–150.
18. Hondroyiannis, G. and Papapetrou, E. (1994). Cointegration, Causality and the Government Budget-Inflation Relationship in Greece. Applied Economics Letters, 1, 204-206.
19. Hondroyiannis, G. and Papapetrou, E., 1997. 'Seasonality-Cointegration and the inflation, productivity and wage growth relationship in Greece', Social Science Journal, 34:235–47
20. KARRAS, G., (1994), Macroeconomic Effects of Budget Deficits: Further International Evidence, Journal of International Money and Finance, 13(2), 190-210.
21. Kurayish Ssebulime and Bbaale Edward (2019) Budget deficit and inflation nexus in Uganda 1980–2016: A Cointegration and error correction modeling approach, Journal of Economic Structures, pp. 1-14.
22. Lusajo P. Mwankemwa ⁑ and Eliab Luvanda (2022). Fiscal Deficit and its Threshold Effects on Inflation in Tanzania. African Journal of Economic Review, Volume 10(1), pp 191-208. January 2022
23. Maio, Bulawayo. Venkatesh, S and Francis C. (2018)," The Impact of Budget Deficit on Inflation in Zambia ", Journal of Economics and Development Studies, Join.
24. Manal Gaber Morssi Mohamed. The reciprocal relationship between the Egyptian public budget deficit and the inflation rate. Scientific Journal of Economic and Commerce, Ain Shams University, vol.51. No.1 pp. 361- 408.
25. Metin, K, (1995), An Integration Analysis of Turkish Inflation, Oxford Bulletin of Economic Statistics, Vol 57, No. 4, pp. 513-533.
26. Metin, K. (1998). The Relationship Between Inflation and the Budget Deficit in Turkey. Journal of Business & Economic Statistics, pp. 412-422.
27. Milo, P. (2012). The impact of the budget deficit on the currency and inflation in the transition economies. Journal of Central Banking Theory and Practice, 1, 25-57
28. Mukhtar Z, Zakaria A (2010). Inflation and budget deficit in financial markets with adverse selection and costly state verification. Acad Econ Papers 29(1):67–89
29. Narayan, P. K., Narayan, S. and Prasad, A. D. 2006. Modeling the Relationship Between Budget Deficits, Money Supply and Inflation in Fiji. Pacific Economic Bulletin, Vol. 21, No. 2, pp. 103-116.

The Seybold Report
ISSN 1533-9211
DOI 10.17605/OSF.IO/FJWUH

30. Ndanshau MA (2012) Inflation, deficit, and capital accumulation under a finite horizon. J Monet Econ 8:247–260
31. Nguyen, H. and Nguyen, T.D. (2010). Macroeconomic determinants of Vietnam's inflation 2000–2010: Evidence and analysis. VEPR Working Paper WP-09, Vietnam Centre for Economic and Policy Research, Hanoi.
32. Oladipo N, Akimbobola G (2011) Inflation and budget deficit in a peripheral economy. The Nigerian experience. ISS, pp 80–82
33. Sargent T.J. and N. Wallace 1981. Some Unpleasant Monetarist Arithmetic, Federal Reserve Bank of Minneapolis Quarterly Review, Fall.
34. Serkan Erkam and Murat Cetinkaya, Budget Deficits, and Inflation: Evidence from Turkey the Macro Theme Review A multidisciplinary journal of global macro trends, pp. 12-13.
35. Sims C.A. 1994. A Simple Model for the Study of the Determination of the Price Level and the Interaction of Monetary and Fiscal Policy, Economic Theory, Vol. 4, No.63, pp. 381-399.
36. Sims C.A. 1997. Fiscal Foundations of Price Stability in Open Economies, unpublished manuscript, Yale University, September.
37. Solomon, M and De Wet, WA 2004, 'The effect of a budget deficit on inflation: The case of Tanzania', South African Journal of Economic and Management Sciences, Vol. 7, No. 1, pp.100-116.
38. Sowa, N. K. (1994), Fiscal Deficits, Output Growth and Inflation Targets in Ghana, World Development Report, 22(8), 1105-1117.
39. Vieira, C. (2000). Are fiscal deficits inflationary? Evidence for the European Union. Loughborough, Leics.
40. Woodford, M. 1994. Monetary Policy and Price-Level Determinacy in a Cash-in-Advance Economy, Economic Theory, Vol. 4, No. 3, pp. 345-380.
41. Woodford, M. 1995. Price-Level Determinacy without Control of a Monetary Aggregate, Carnegie Rochester Conference Series on Public Policy, Vol. 43, pp. 1-46.
42. Woodford, M. 1996. Control of Public Debt: A Requirement for Price Stability? NBER Working Paper, No. 5684, July.