



ANALYSIS OF THE RELATIONSHIP BETWEEN THE EFFECTS OF CROWDING OUT AND THE INCREASING OF GOVERNMENT SPENDING IN THE UNITED STATES OF AMERICA FOR THE PERIOD 1988-2020

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Abstract: The research analyzed the relationship between the impact of crowding out and the government spending multiplier in the American economy for the period 1988-2020, as the effectiveness of the fiscal policy that aims to stimulate economic activity depends on the size of the financial multiplier and the extent of its competition with private spending (investment and consumption). The crowding out is one of the defects resulting from the expansionary fiscal policy, which leads to a decrease in the value of the fiscal multipliers, and thus reduces the effectiveness of the government spending policy, as the decline in private spending resulting from the rise in the interest rate will weaken or may cancel the incentive of the expansionary fiscal policy. The research was based on the hypothesis that directing government expenditures towards public projects necessary for the work of the private sector, in addition to the government buying some production requirements provided by the private sector, will make it a complementary factor for this sector on the one hand, in addition to promoting economic growth in the short and long terms. On the other hand, the research was based on both inductive and deductive analysis methodologies, by analyzing the development of time series of data used across different stages, extrapolating the economic reality and analyzing economic phenomena and their development during the research period, and then eliciting the implications of that, in addition to using the ARDL model, to analyze the relationship between the economic variables used in the research. Among the most important conclusions reached by the research is, according to the results of the short-term parameters, it is clear that government expenditures in the current year and in the previous three years have a positive moral effect on the gross domestic product. Also, private expenditures in the current year, the previous year and three previous years have a positive moral effect on the output, as this shows the role of private spending in increasing aggregate demand and thus expanding the economy's output. Based on the results of the long-term parameters, it is clear that government expenditures do not have a significant effect on the output in the long run. As for private expenditures, it has a positive moral effect on the output in the long run.

Keyword: Fiscal policy, Crowding Out, Government spending multiplier, Economic growth.

Introduction

The effectiveness of fiscal policy depends on the extent to which it competes with private spending. If government spending does not replace private spending, fiscal policy is an effective tool to counter cyclical fluctuations. But if the effect of crowding out is significant, then fiscal policy will have only a limited effect on output. To the extent that an increase in government spending reduces private consumption and investment, some of the increase in aggregate demand will be offset. There is additional crowding out, if the additional demand is met through imports rather than domestic production. Therefore, crowding out has implications for the effectiveness of fiscal policy as a tool for achieving short-term macroeconomic stability and structural rebalancing in the medium and long term.

Most economists agree that an increase in government spending in a normal economic situation leads in the short run to partial rather than complete crowding out. If the economy is below the potential real GDP, the expansionary fiscal policy does not lead to complete crowding out in the short term, as it is possible for both government expenditures and private expenditures to increase. But in the long run, any permanent increase in government expenditures must come at the expense of private expenditures, since in the long run the economy returns to potential GDP. A complete crowding out occurs if private expenditures fall by the same amount as the increase in government expenditures.

Under a system of flexible exchange rate and when capital can move freely, and as long as the central bank keeps the money supply constant, there will be complete competition. Under the fixed exchange rate, the fiscal policy has a strong impact on income, and it can be used to stimulate the domestic economy, that is, the fixed exchange rate system forces the monetary policy to absorb any increase in government spending in order to achieve the full multiplier effect.

Government spending on infrastructure affects the rate of economic growth in the long run, as spending on health and education raises the productivity of workers and increases the growth of output. Also, spending on infrastructure reduces production costs and increases private sector investments and project profitability, and this achieves the so-called integration between the public and private sectors, which can reduce the impact of crowding out by making some public investments complementary to private investments, and then increase the rate of economic growth.

Research problem

Government expenditures directed towards economic projects that can be undertaken by the private sector contribute to crowding out private investments, either directly (by substituting government investments instead of private investments) or indirectly (through the interest rate), and thus limiting the rate of economic growth in the short and long term.

research importance

The importance of the research is focused on analyzing the relationship between the effects of crowding out and the multiplier of government spending in the American economy for the period 1988-2020.

research aims

The research items:

- 1- The theoretical rooting of the concept of competition and its economic effects in the short and long terms. In addition to analyzing the evolution of the economic variables used during the research period.
- 2- Measuring and analyzing the impact of spending (governmental and private) on the output for the duration of the research.

Research Hypothesis

The research stems from the hypothesis that directing government expenditures towards public projects necessary for the work of the private sector, in addition to the government purchasing some production requirements provided by the private sector, will make it a complementary factor for this sector on the one hand, in addition to promoting economic growth in the short and long terms from On the other hand.

Research Methodology

The research was based on both inductive and deductive analysis methodologies, by analyzing the development of time series of data used across different stages, extrapolating the economic reality and analyzing economic phenomena and their development during the research period, and then eliciting the implications of that, in addition to using the ARDL model. , to analyze the relationship between the economic variables used in the research.

The first topic: The theoretical framework of competition and the multiplier of government spending

First: The theoretical rooting of competition

1 The concept of competition

In the Keynesian model, the effectiveness of the financial stability policy that aims to stimulate economic activity depends largely on the size of the fiscal multiplier, or the increase in output due to higher government spending or tax cuts (1). Thus, the increase in aggregate demand depends on the magnitude of the financial multiples, which in the case of the basic models are assumed to be positive and high. In fact, there are many economic factors that may negatively affect the size of the multiplier, starting with institutional factors, the macroeconomic situation of a particular economy, foreign trade and ending with the actions of actors in economic markets. And that one of the most important factors, which has been the subject of theoretical and empirical analysis for the past few decades, is crowding out private spending through government spending associated with

fiscal expansion, which leads to a decrease in the value of fiscal multipliers, and thus reduces the effectiveness of the government's expenditure policy (2).

The effectiveness of fiscal policy in reducing output fluctuations in the short term depends largely on the extent to which it crowds out private spending (investment and consumption). If government spending does not replace private demand at all or crowd out additional private demand, fiscal policy will be an effective tool to counter cyclical fluctuations. However, if the crowding-out effect is large, then fiscal policy will have only a limited effect on output in the medium term. To the extent that an increase in government spending reduces private consumption and investment, some of the increase in aggregate demand will be offset. There is additional crowding out, if higher demand is met through imports rather than domestic production. Therefore, competition has implications for the effectiveness of fiscal policy as a tool for achieving macroeconomic stability in the short term and structural rebalancing in the medium and long term.

Thus, crowding out is defined as the situation in which an increase in government spending or a decrease in taxes leads to crowding out private spending (investment and consumption), that is, when the expansionary fiscal policy causes interest rates to rise, and thus reduce the volume of private spending, especially investment (3). The crowding out of the deficits resulting from the expansionary fiscal policy, as the decline in private spending resulting from the rise in the interest rate will weaken or may cancel the incentive of expansionary fiscal policy (4). Thus, the increase in government spending can be offset by a decrease in private spending or net exports (5). It is worth noting that the theory of competition for government spending applies only to cases of structural deficits in the general budget. When economic stagnation occurs for a certain period and the periodic deficit rises, crowding does not occur; This is because in the event of a recession, the demand for money decreases, and hence interest rates. The monetary authority is working to follow an easy monetary policy.

2- Intellectual controversy and competition

The neoclassical model claims that an increase in government spending combined with constant revenue leads to a decrease in output and employment. This result is due to the neoclassical assumptions of full employment and full utilization of capabilities. Neoclassicists see that an increase in government spending, given that government revenues are fixed, yields higher interest rates, thus crowding out private investment. The result of the increase in the interest rate comes from the neoclassical loan-fund theory, whereby government spending financed by bonds creates an insufficient fund for private investment. Since the supply of finance is supposed to be fixed in the theory, competition between the government and the private sector for the available fund leads to higher interest rates. As a result, at least some private investors are leaving the loan market.

On the other hand, the Keynesian view assumes that there is unemployment in the economy and that interest rate sensitivity is low. In this case, expansionary fiscal policy leads to little or no increases in the interest rate and increases in output and income. Additionally, this view assumes that government spending increases private investment because of the positive effect of government spending on investor expectations. So there is attraction instead of crowding (6).

A third view of the effect of government spending on private investment is the Ricardian equivalence theory, which posits that increases in deficits caused by fiscal spending will align with a future increase in taxes and thus leave interest rates and private investment unchanged. This means that the budget deficit has nothing to do with financial decisions. In other words, according to this approach, an increase in the budget deficit is expected to be accompanied by a future increase in taxes, if not today. Therefore, individuals who think about their future income do not change their consumption and/or savings, which leaves interest rates and private investment unchanged, and thus translates into no crowding or attraction in the effect of financial spending (7).

3 channels crowding transmission

Competition is a heterogeneous phenomenon, as the subject of scientific discussion is not only the possibility and scope of its existence, but also the transmission mechanisms that lead to it. Willem Buiter has suggested dividing it according to its impact into two main parts, namely direct competition, as the economic activities of the state interact directly in the structure of private consumption and private economic activities, such as the case in which private consumption is directly replaced by the consumption of public goods. The other is indirect competition, which is more complex than the first, as the reactions of economic actors are mainly related to changes in interest rates and their structure (8).

The introduced changes in the interest rate reduce the positive effect of financial expansion on aggregate demand. If additional government spending is financed not by higher taxes but by government borrowing, the government sells bonds, and to be attractive the interest rate must be raised. The resulting increase in the interest rate will have a negative effect on private investment and consumption. This effect is greater if private investment and consumption are more sensitive to the interest rate. When the bonds mature, the interest must be paid to the

holders. According to the Ricardian equivalence theory, people expect future taxes to be higher, and this leads to more saving to build a reserve so that those expected higher taxes can be paid without disrupting future consumption levels.

Another channel for crowding out is the exchange rate, as higher interest rates attract capital inflows and raise the price of the local currency. And that the deterioration resulting from the current account balance will offset some of the increase in aggregate demand due to the fiscal expansion (9).

Second: Theoretical analysis of the impact of crowding out in reducing the government spending multiplier

1 government spending multiplier

If the government is able to change spending levels, it will be able to change the equilibrium level of output (income). When output rises, the economy generates more income. This effect is desirable, as it creates more employment opportunities. Newly hired workers are also consumers, and some of their income is spent. As consumer spending increases, planned spending will be greater than output, inventories will be less than planned, and firms will raise output (and thus increase income) again. This time, companies are responding to new consumer spending.

An increase in government spending has the same effect on the equilibrium level of output and income as on an increase in planned investment. The government spending multiplier equation is the same as the change multiplier in planned investment. If (MPS) expresses the marginal propensity to save, the amount of the multiplier can be expressed by the following equation:

Government spending multiplier = $1/MPS$

In general, the government spending multiplier can be defined as the ratio of the change in the equilibrium level of output to the change in government spending, as government spending is the independent variable (10).

When autonomous spending increases, so does total spending, as well as equilibrium real GDP. But the increase in real GDP is greater than the increase in independent spending. And that the multiplier is the amount by which the change in independent expenditures is amplified or multiplied to determine the change in the equilibrium of real GDP (10).

Some of the increase in income resulting from the increase in government spending on imports is spent in an open economy, as the portion of income spent on imports does not increase domestic income; Because imports are produced by foreigners. If (MPC) marginal propensity to consume domestic goods and (MPM) marginal propensity to import, then the multiplier of the open economy:

$1/(1-(MPC-MPM))$

Thus, the government spending multiplier in an open economy is smaller than in a closed economy.

2 Effect of crowding

The effect of crowding out can be analyzed in the short and long run, as it is analyzed in the short run in the cases of closed and open economy.

A short-run competition

Changes in fiscal policy shift the IS curve, as fiscal expansion shifts the IS curve to the right. It is the curve that describes the equilibrium in the commodity market. The IS curve descends from the top left downward toward the right; Because a decrease in the interest rate increases investment spending, which increases aggregate demand and the level of equilibrium output in the commodity market (11).

Government spending increases income and real GDP. With higher levels of real GDP and income, households and firms demand more money at each interest rate. When the demand for money increases with a constant supply, the equilibrium interest rate rises. Higher interest rates cause each component of private expenditure to fall. Consumer spending and investment spending fall because households borrow less, and businesses borrow less for the purpose of investing. Net exports also decline; Because high interest rates attract foreign investors. The increased demand for the local currency leads to an appreciation in the value of the currency compared to other currencies. When the value of the currency increases, the prices of domestic products in foreign countries increase, which leads to a decrease in exports and an increase in imports. This means a decrease in net exports (12).

The more sensitive consumption, investment, and net exports are to changes in interest rates, the more crowding out. In a severe recession, many companies may be so pessimistic about the future and have so much spare capacity that investment spending falls to such low levels that it is unlikely to fall much further, even if interest rates rise. In this case, crowding is not likely to be a problem. If, on the other hand, the economy is close to potential GDP, and companies are optimistic about the future, an increase in interest rates may lead to a significant reduction in investment spending.

When the output is less than the level of full employment, the increase in demand resulting from the financial expansion leads to an increase in the level of output and employment, since with idle resources in the economy

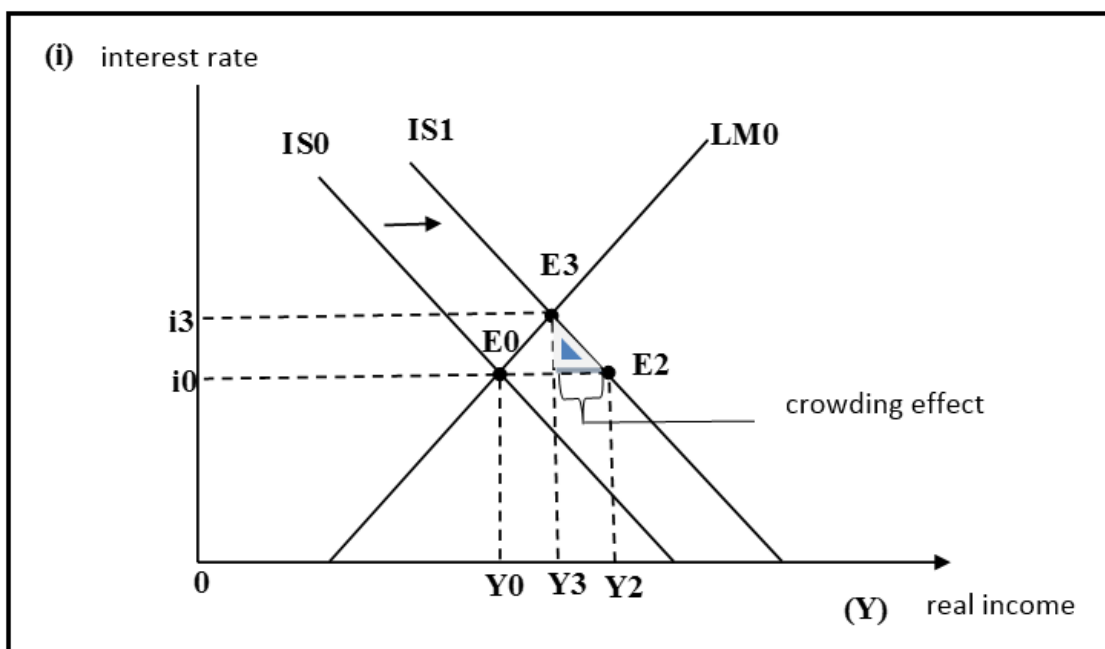
there will be no complete crowding out; Because the LM curve is not vertical, because although the financial expansion leads to higher interest rates, income will also rise. This means that crowding out is a matter of degree. By plotting the difference between the IS and LM curves, the amount of crowding out that occurs can be determined. In other words, determining the extent to which interest rate adjustments curb the expansion of output through increased government spending. The crowding out becomes greater the higher the interest rate with the increase in the volume of government spending (13).

1. Competition in a closed economy

A crowding out in the case of a slope of the normal LM curve

Figure (1) shows that the effect of expansionary fiscal policy on real income does not refer to the size of the original multiplier. The full fiscal multiplier works when the economy is moved horizontally from the initial equilibrium position at point E0 to point E2, and income increases from Y0 to Y2. However, the money market will not be in equilibrium; Because E2 is below the LM0 curve and income is above E0, which increases the demand for money. But the real money supply remains unchanged at the original assumed value, which means that there is an excess demand for money. To reduce the demand for money to the level of constant supply, the interest rate must rise. But the increase in the interest rate makes point E2 unworkable by reducing planned consumption and investment spending, since at point E3 both the commodity and money market are in short-run equilibrium. The high interest rate also explains the fact that the fiscal policy multiplier is less than the full multiplier in the absence of competition (14).

Figure (1), the crowding-out effect in the case of a normal LM curve



Reference: Robert J. Gordon and Stanley G. Harris: Macroeconomics, Eleventh Edition, Pearson Education, Inc, United States of America, 2009, p.107.

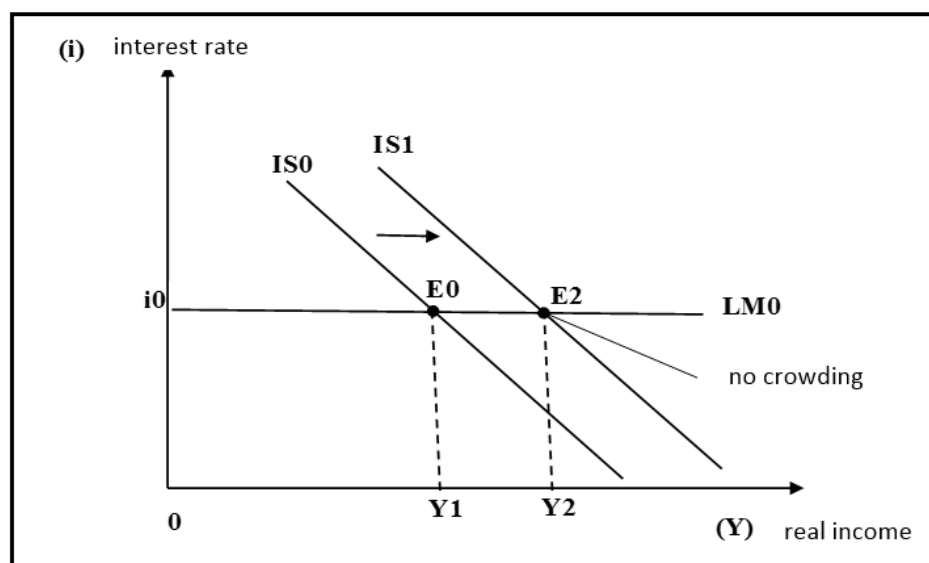
Some economists use the term 'crowding out' to compare points such as E2 and E3 in Figure 1. The difference in real income between points E2 and E3 is due to competition due to higher interest rate. The point E2, used in calculating the size of the effect of crowding out, is a purely hypothetical situation that the economy cannot reach. In fact, apart from the crowding-out effect, total private spending is higher in the new equilibrium at point E3 than in the original situation at E0(14).

b- The crowding out in the case of a slope of the horizontal LM curve

The effect of fiscal policy incentives on real income depends on the slope of the IS and LM curves. Thus, fiscal policy is strong when the demand for money is highly sensitive to changes in the interest rate, as shown in Figure (2). With this extreme case of the horizontal LM curve, the multiplier becomes just a simple multiplier and there is no crowding; Because the interest rate remains constant (15). That is, if the economy is in a liquidity

trap, at which the LM curve is horizontal, the increase in government spending has a full multiplier effect on the equilibrium income level. There is no change in the interest rate associated with the change in government spending and thus investment spending does not decrease. Therefore, there is no discouragement of the effects of increased government spending (15).

Figure (2), the effect of crowding out in the case of the horizontal LM curve



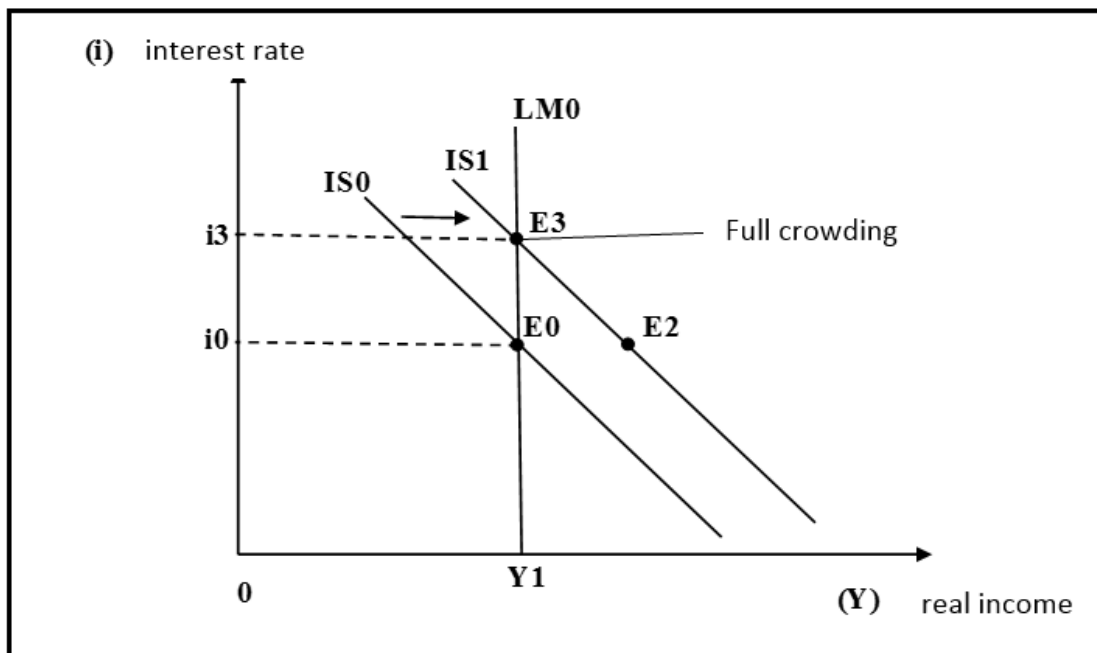
reference: Robert J. Gordon and Stanley G. Harris: Macroeconomics, Eleventh Edition, Pearson Education, Inc, United States of America, 2009, p.113.

(c) The crowding out in the case of the slope of the vertical LM curve

When the demand for money does not respond to changes in the interest rate, the LM curve is vertical, which is called the classical case. In this case, the shift in the IS curve associated with the financial expansion leads to changes in the interest rate only. However, it does not lead to changes in the volume of aggregate demand, but rather to a change in its structure.

An increase in government spending shifts the IS curve to the right as shown in Figure 3, with a distance $E0$ to $E2$. However, real income cannot be increased without bringing the money market out of equilibrium. And that the increase in real income would increase the demand for money above the fixed money supply (16). If the LM curve is vertical, then the increase in government spending has no effect on the equilibrium income level and only increases the interest rate. The increase in government spending shifts the IS_0 curve to IS_1 , but it has no effect on the income level. If the demand for money is not linked to the interest rate, as indicated by the vertical LM curve, the increase in government spending cannot change the equilibrium level of income, as it only raises the equilibrium interest rate. But if government spending is higher and output does not change, there must be a corresponding reduction in private spending. In this case, an increase in interest rates reduces the amount of private spending (particularly investment) by an amount equal to the increase in government spending. Thus there is perfect crowding out when the LM curve is vertical (17).

Figure (3), the effect of crowding out in the case of the vertical LM curve



Reference: Robert j. Gordon and Stanley G. Harris: *Macroeconomics, Eleventh Edition*, Pearson Education, Inc, United States of America, 2009, P.113.

Based on the foregoing, the greater the elasticity of the demand for money in relation to the interest rate, the more effective the fiscal policy; This is because the rise in the interest rate is less, and then the decline in investment is less, and this means that the amount of partial decline in income resulting from the expansionary fiscal policy is less (17).

2. Competition in an open economy

Competition in an open economy can be analyzed based on the Mundell-Fleming model, which is a tool for analyzing macroeconomic issues. It includes the commodity market (IS), money market (LM), and foreign exchange market (FE). Its simplicity has made it a tool often used for exchanging views between economists and academics, as the Mundell-Fleming model, which has been employed wisely and with high awareness, can be a powerful tool for understanding the role of aggregate demand in the business cycle (). The model is based on basic assumptions, which are the complete freedom of movement of capital and the stability of the price level of an open economy (17).

The horizontal FE curve reflects the perfect movement of capital, and that the domestic interest rate is always equal to the world interest rate, since any small changes in the domestic interest rate lead to large enough short-term capital movements that the domestic rate is equal to the world rate.

The effect of crowding out according to the above model can be divided into two parts, depending on the nature of the exchange rate.

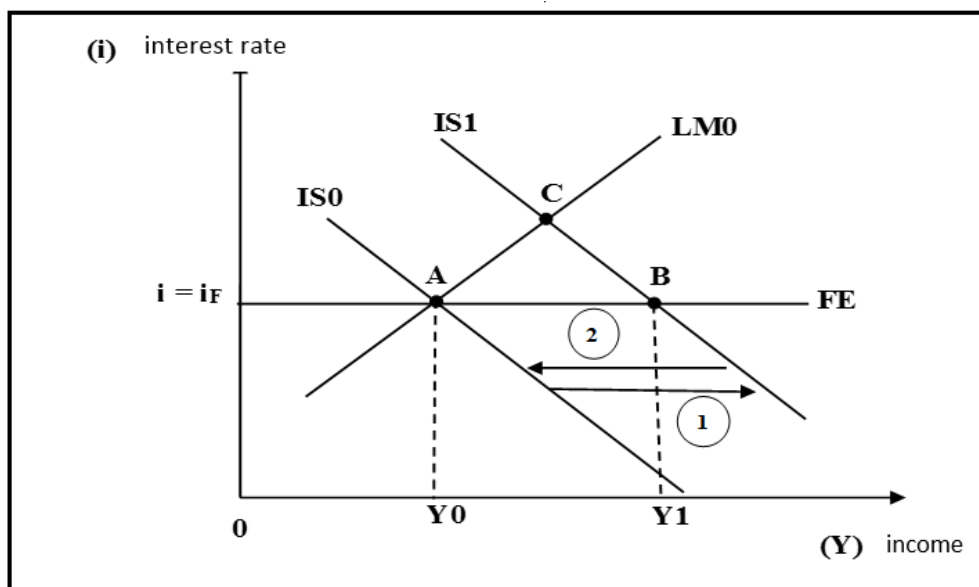
A competition under a system of flexible exchange rates

Under the flexible exchange rate system, the exchange rate fluctuates freely according to the foreign exchange market conditions. Accordingly, the value of the currency exchange is determined according to the terms of supply and demand for currency in the foreign exchange market without the intervention of the Central Bank (18).

Expansionary fiscal policy shifts the IS curve to the right, from IS0 to IS1. This shift leads to intermediate equilibrium at point C. At this point the commodity and money market are in equilibrium, while the foreign exchange market is out of equilibrium. At this equilibrium income rises and the interest rate rises at a level higher than the world rate. This increases demand for interest-bearing domestic assets. If financial investors cannot get the local currency at the current rate, which is the exchange value of the exchange rate, they are more willing to raise the price per unit of the local currency (ie the price of the local currency goes up). As we know, this has recycles in the goods market, as domestic goods become more expensive relative to foreign goods and net exports decline. The IS curve shifts to the left, ie back to IS0. During this process, C gradually slides down the LM0 curve towards A. This cannot stop before point A is reached, or else the domestic interest rate will still exceed the world interest rate, causing the demand for domestic currency to continue to increase. Only when IS returns to its original position and the economy returns to A do the three markets become equilibrium.

This gives an important insight under a system of flexible exchange rates and when capital moves freely across borders, fiscal policy does not give the government influence on aggregate income. As long as the central bank keeps the money supply constant, there will be complete crowding out. The exchange rate will rise enough to reduce net exports just as government spending increases, leaving aggregate demand unchanged.

Figure (4), crowding out under flexible exchange rates



Reference: Manfred Gartner: Macroeconomics, Third Edition, Pearson Education Limited Edinburgh Gate, England, 2009, P.125.

B - Competition under the system of fixed exchange rates

A fixed exchange rate expresses a commitment by the central bank to buy and sell the local currency at fixed rates that do not change against other currencies. To implement this obligation, the central bank must maintain foreign exchange reserves.

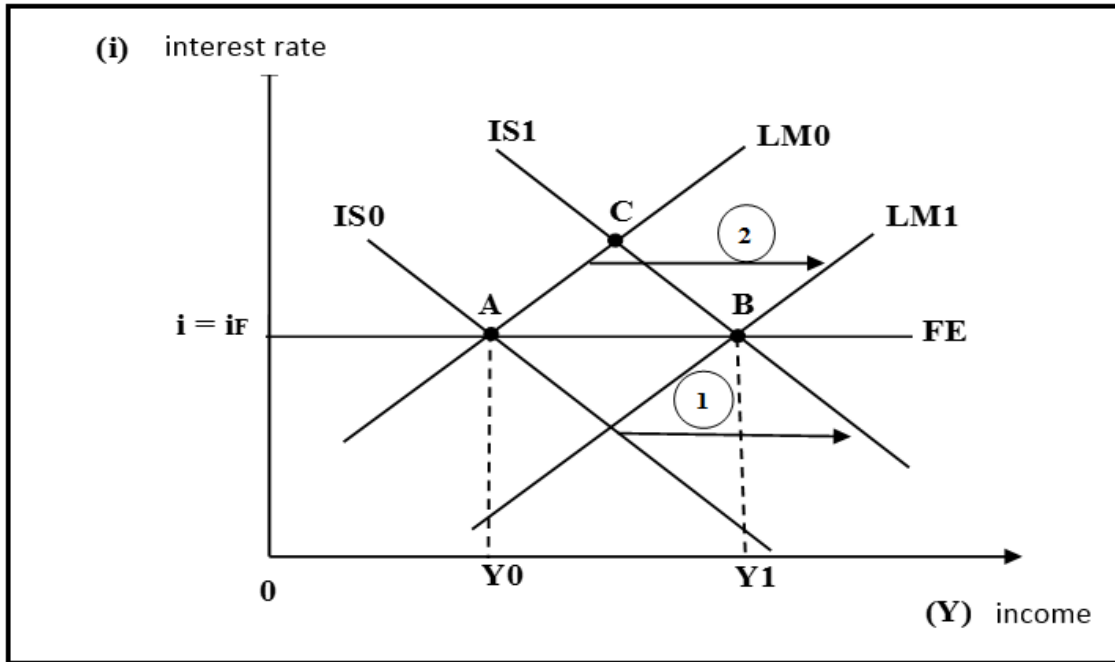
The increase in government expenditures shifts the IS curve to the right, and again income increases and hence the demand for money and the interest rate rises beyond the world interest rate. This makes domestic bonds more attractive, which increases the demand for the local currency. However, the excess demand for the local currency cannot be eliminated through the appreciation of the currency, as the central bank is obligated to provide this amount of additional money that buyers cannot find in the market. Therefore, two things happen, which did not happen with flexible exchange rates: -

1 The value of the local currency cannot rise, which means that the IS curve cannot fall back, but rather stays at its new location, IS1.

2- The domestic money supply increases due to the compulsory intervention in the foreign exchange market by the central bank, which shifts the LM0 curve to the right.

The LM curve must keep shifting until it intersects with the IS1 curve at point B. It cannot stop earlier because this will leave an initial advantage of the domestic interest rate, increasing the demand for domestic money.

Figure (5), crowding out under constant exchange rates



Reference: Manfred Gartner: Macroeconomics, Third Edition, Pearson Education Limited Edinburgh Gate, England, 2009, P.127.

The transition from flexible to fixed exchange rates reflects the roles of fiscal and monetary policy. With flexible exchange rates, monetary policy sets a cap and can force outright crowding out of government spending. In light of fixed exchange rates, fiscal policy has a strong impact on income and can be used to stimulate the domestic economy, meaning that the fixed exchange rate system forces monetary policy to absorb any increase in government spending in order to achieve the full multiplier effect (18).

This means, that with the fixed exchange rate system, the fiscal policy will have a full impact on the local economy, meaning there is no crowding out, as the commitment of the Central Bank to fix the exchange rate of the local currency will cancel the effects of the expansionary fiscal policy, but rather will increase the government spending multiplier.

b. Competition in the long run

Most economists agree that an increase in government spending in a normal economic situation leads in the short run to partial rather than complete crowding out. If the long-term effect of a permanent increase in government spending is explained, the result vanishes entirely. In the long run, the decline in investment, consumption and net exports perfectly offsets the increase in government expenditures, and aggregate demand remains unchanged. In the long run the economy returns to potential GDP. A complete crowding out occurs if private expenditures fall by the same amount by which government expenditures have increased. If government spending takes a larger share of GDP, then private spending should take a smaller share.

Expansive fiscal policy should not cause outright crowding out in the short run. If the economy is below potential real GDP, it can increase both government and private expenditures. But in the long run, any permanent increase in government expenditures must come at the expense of private expenditures. However, it must be taken into account that it may take several years to reach this result in the long term.

Third: Factors that reduce the impact of crowding out

The main reason for crowding out is the increase in the interest rate. As income rises with a constant money supply, the demand for money increases. To offset the increase in money demand, it is necessary that the interest rate rise enough to offset the effects of higher income. The simplest way to avoid crowding out is for the central bank to increase the money supply, allowing the LM curve to shift to the right by the same amount as the IS curve (19).

While some researchers went, that the increase in government spending can be an effective tool to stimulate aggregate demand in a stagnant economy and have harmful effects on the private sector. According to the Keynesian view, the government can reduce economic stagnation by borrowing money from the private sector and then returning the money to the private sector through various spending programs. Higher levels of government spending are likely to increase employment, profitability, and investment through multiplier effects on aggregate demand. Thus, government expenditures, even those of a recurring nature, can contribute positively to economic growth (19).

Some studies indicate that increased government spending on infrastructure affects the long-term growth rate. For example, government spending on health and education raises labor productivity and increases national product growth. Similarly, spending on infrastructure such as roads, bridges, etc., reduces production costs, increases private sector investment and project profitability, and this achieves the so-called integration between the public and private sectors, which can reduce the impact of crowding out by making some public investments. The private are complementary to each other, which ensures an increase in the rate of economic growth (20). Public spending can have a positive impact on private consumption and investment by boosting consumer and business confidence. This kind of confidence-boosting effect is particularly relevant to severe shocks such as the global financial crisis when the public is desperately looking for signs that the government is doing something to revive the economy.

Fiscal policy can also have an indirect effect on aggregate demand through its supply side effects. Although public expenditure policy has an effect on the demand side in the short term, it can have a more significant supply impact in general over a longer horizon; This is because long-term growth expectations will be higher as a result of growth-friendly fiscal policy that can stimulate private demand. Growth-friendly fiscal policy takes the form of tax cuts and public spending that expands the supply of labor and capital, and thus has a positive effect on growth in the long run. For example, lower personal income taxes may encourage more workers to work, and lower payroll taxes may encourage companies to hire more workers. Similarly, some types of public spending, for example research and development expenditures, may create public goods that benefit the supply side. The more significant the effect of the supply-side feedback to the demand side, the greater the impact of fiscal policy on output.

The second topic: data analysis and standard test results

First: Presentation and analysis of data

Table (1) shows the evolution of some macroeconomic variables in the US economy used in the research for the period 1988-2020, at constant prices 2010 = 100. The relative stability of GDP growth is evident for most years of research. The highest growth rate of output was achieved in 1999, when it recorded (4.01%). While the output declined in 2008 at a rate of (2.09%), due to the financial crisis that hit the economy during that period. The compound growth rate for the period 1988-2020 was (1.92%).

The table also shows the development of government spending during the research period, as it fluctuated at positive and negative rates. Government spending witnessed a decline in 1992 at a rate of (6.08%), after the end of the second Gulf War and the decline in military spending. Government spending achieved the highest growth rate in 2001, recording (16.72%), due to the war in Afghanistan, which led to an increase in military spending. The compound growth rate for the period 1988-2020 was (2.30%).

The fluctuation of private spending during the research period is also evident based on the economic situation, as the year 1999 recorded the highest growth rate (5.85%). The year 2009 recorded a decline of 8.41%, due to the financial crisis that hit the US economy during that period. The compound growth rate for the period 1988-2020 was (1.63%).

National spending witnessed the highest growth rate in 1999, as it recorded (4.90%), due to the increase in private spending. In 2009, it recorded a decline of (3.72%), due to the decline in private spending due to the financial crisis. The compound growth rate for the period 1988-2020 was (1.78%).

Table (1), the evolution of output, expenditure, in the economy at constant prices 2010 = 100 US dollars for the period 1988-2020 (million dollars)

Years	Gross domestic product	growth rate %	Government spending	growth rate %	private spending	growth rate %	national spending	growth rate %
1988	9685276.38		2030566.74		7856418.80		9886985.54	
1989	9951796.79	2.75	2127545.06	4.78	7976831.19	1.53	10104376.25	2.20
1990	9979327.27	0.28	2259071.11	6.18	7850179.24	-1.59	10109250.36	0.05
1991	9885215.93	-0.94	2381657.60	5.43	7549379.21	-3.83	9931036.81	-1.76
1992	10162229.10	2.80	2236800.32	-6.08	7979412.48	5.70	10216212.79	2.87
1993	10383217.49	2.17	2247374.20	0.47	8234213.33	3.19	10481587.52	2.60
1994	10751993.43	3.55	2244401.24	-0.13	8643648.82	4.97	10888050.06	3.88
1995	10967015.87	2.00	2262530.32	0.81	8832932.14	2.19	11095462.46	1.90
1996	11261035.25	2.68	2258003.98	-0.20	9137016.89	3.44	11395020.87	2.70
1997	11694324.84	3.85	2270557.52	0.56	9562274.30	4.65	11832831.81	3.84

1998	12158538.35	3.97	2281546.54	0.48	10094640.07	5.57	12376186.61	4.59
1999	12646268.63	4.01	2297178.53	0.69	10685032.63	5.85	12982211.16	4.90
2000	13023534.42	2.98	2345641.50	2.11	11153761.06	4.39	13499402.56	3.98
2001	13080650.28	0.44	2737758.72	16.72	10796923.50	-3.20	13534682.23	0.26
2002	13307615.31	1.74	2861160.19	4.51	10963445.65	1.54	13824605.84	2.14
2003	13644203.32	2.53	3020987.07	5.59	11220228.84	2.34	14241215.91	3.01
2004	14170734.47	3.86	3104011.10	2.75	11781520.77	5.00	14885531.87	4.52
2005	14619973.39	3.17	3262858.68	5.12	12162358.70	3.23	15425217.37	3.63
2006	14987487.51	2.51	3305610.22	1.31	12515789.84	2.91	15821400.06	2.57
2007	15225673.50	1.59	3418243.99	3.41	12563094.28	0.38	15981338.27	1.01
2008	14906783.51	-2.09	3718782.98	8.79	11920317.50	-5.12	15639100.48	-2.14
2009	14655212.58	-1.69	4138955.56	11.30	10918178.55	-8.41	15057134.11	-3.72
2010	14964372.00	2.11	4225845.20	2.10	11251195.30	3.05	15477040.50	2.79
2011	15043041.03	0.53	4123340.18	-2.43	11481949.35	2.05	15605289.53	0.83
2012	15343360.39	2.00	3961561.30	-3.92	11919032.93	3.81	15880594.24	1.76
2013	15623809.47	1.83	3868395.97	-2.35	12215945.45	2.49	16084341.42	1.28
2014	16052409.94	2.74	3917959.66	1.28	12603754.32	3.17	16521713.98	2.72
2015	16671046.18	3.85	4015745.63	2.50	13137418.88	4.23	17153164.51	3.82
2016	16921033.09	1.50	4081267.26	1.63	13313331.89	1.34	17394599.15	1.41
2017	17249653.39	1.94	4139124.49	1.42	13335505.49	0.17	17474629.99	0.46
2018	17564845.79	1.83	4194617.60	1.34	13356773.05	0.16	17551390.65	0.44
2019	17867416.86	1.72	4247888.57	1.27	13377188.99	0.15	17625077.56	0.42
2020	18158109.80	1.63	4299068.27	1.20	13396803.45	0.15	17695871.73	0.40
Durations		compound growth rate						
1988-1998	2.09			1.07		2.31		2.06
1999-2009	1.35			5.50		0.20		1.36
2010-2020	1.77			0.16		1.60		1.23
1988-2020	1.92			2.30		1.63		1.78

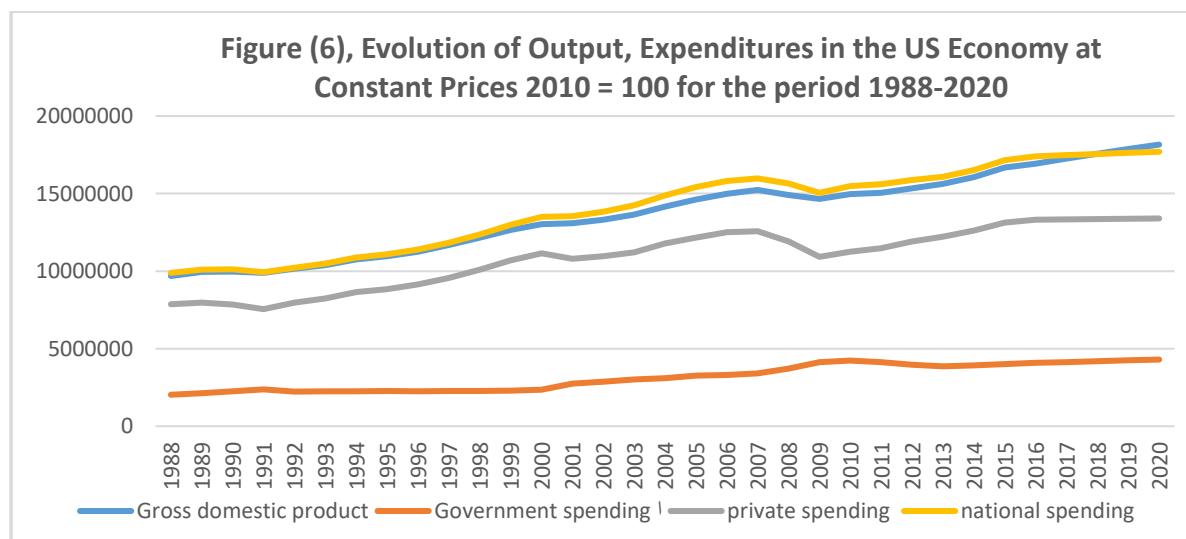
Table of numbers of researchers based on the appendix of data.

The simple growth rate was calculated according to the formula: -

The compound growth rate was calculated according to the formula: -

$$R = \frac{N_t - N_{t-1}}{N_{t-1}} * 100$$

$$R = \left[\left(\frac{N_t}{N_0} \right)^{\frac{1}{n}} - 1 \right] * 100$$



The graph was prepared by researchers based on Table (1).

Table (2) shows the evolution of the relative importance of spending (government and private) in the US economy during the research period. The relative stability of government spending to GDP is evident for most of the research years, and the year 2000 witnessed the lowest ratio of government spending to output, as it scored (18.01%), and this means a decline in the role of the state in the economy. While the year 2009 witnessed the highest ratio of government spending to output, as it recorded (28.24%), and this means an increase in the role of the state in the economy due to the negative effects of the financial crisis and the state's intervention to save the economy.

As shown in Table (2), the relative stability of private spending to GDP for most of the research years. In 2000, the highest rate of private spending to output was achieved, as it recorded (85.64%), and this means an increase in the contribution of the private sector to the GDP. While the year 2020 witnessed the lowest contribution of private spending to the output, as it recorded (73.78%), and this means a decline in the role of the private sector in the output due to the negative effects of the Corona pandemic.

Table (2) shows that aggregate spending (which is part of aggregate demand) exceeds GDP (which expresses aggregate supply).

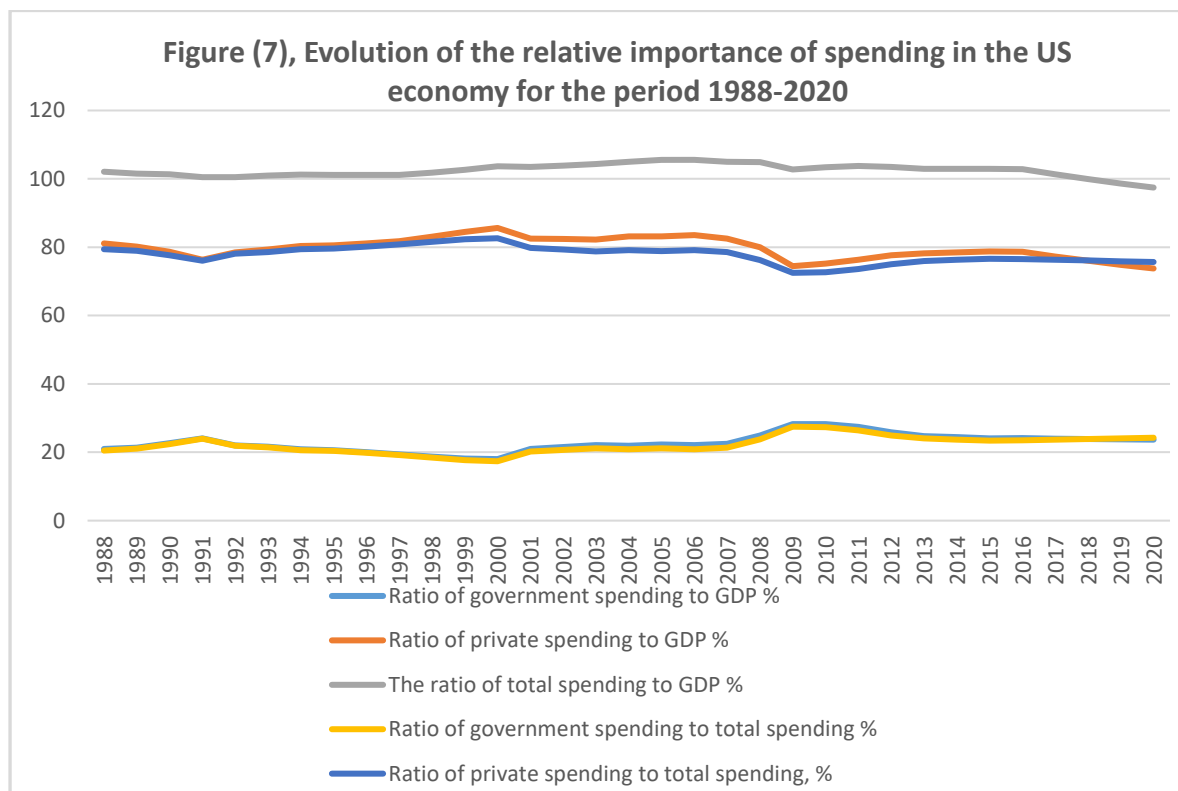
The ratio of government spending and private spending to total spending has been relatively stable for most of the research years. In 2000, the lowest proportion of government spending was achieved (17.38%). While the year 2009 witnessed the highest percentage of government spending, as it recorded (27.49%). In 2000, the highest ratio of private spending to total spending was achieved, as it scored (82.62%), while 2009 witnessed the lowest ratio of private spending to total expenditure, which scored (72.51%).

Table (2), the evolution of the relative importance of government and private spending in the US economy for the period 1988-2020

Years	Ratio of government spending to GDP %	Ratio of private spending to GDP %	The ratio of total spending to GDP %	Ratio of government spending to total spending %	Ratio of private spending to total spending, %
1988	20.97	81.12	102.08	20.54	79.46
1989	21.38	80.15	101.53	21.06	78.94
1990	22.64	78.66	101.30	22.35	77.65
1991	24.09	76.37	100.46	23.98	76.02
1992	22.01	78.52	100.53	21.89	78.11
1993	21.64	79.30	100.95	21.44	78.56
1994	20.87	80.39	101.27	20.61	79.39
1995	20.63	80.54	101.17	20.39	79.61
1996	20.05	81.14	101.19	19.82	80.18
1997	19.42	81.77	101.18	19.19	80.81
1998	18.76	83.03	101.79	18.43	81.57
1999	18.16	84.49	102.66	17.69	82.31
2000	18.01	85.64	103.65	17.38	82.62
2001	20.93	82.54	103.47	20.23	79.77
2002	21.50	82.38	103.88	20.70	79.30
2003	22.14	82.23	104.38	21.21	78.79
2004	21.90	83.14	105.04	20.85	79.15
2005	22.32	83.19	105.51	21.15	78.85
2006	22.06	83.51	105.56	20.89	79.11
2007	22.45	82.51	104.96	21.39	78.61
2008	24.95	79.97	104.91	23.78	76.22
2009	28.24	74.50	102.74	27.49	72.51
2010	28.24	75.19	103.43	27.30	72.70
2011	27.41	76.33	103.74	26.42	73.58
2012	25.82	77.68	103.50	24.95	75.05
2013	24.76	78.19	102.95	24.05	75.95

2014	24.41	78.52	102.92	23.71	76.29
2015	24.09	78.80	102.89	23.41	76.59
2016	24.12	78.68	102.80	23.46	76.54
2017	24.00	77.31	101.30	23.69	76.31
2018	23.88	76.04	99.92	23.90	76.10
2019	23.77	74.87	98.64	24.10	75.90
2020	23.68	73.78	97.45	24.29	75.71

Table of numbers of researchers based on the appendix of data.



The graph was prepared by researchers based on Table (2).

Second: Analyzing the results of standardized tests

A set of standard tests were conducted for the variables used in the research in order to clarify the nature of economic relations. The values of the variables used were adopted at constant prices 2010 = 100 for the duration of the research. Which can be expressed as follows:

GDP Gross domestic product.

-GE government expenditures.

-PE special expenses.

-IR interest rate.

The impact of spending (government and private) and interest rate on the gross domestic product (GDP) in the American economy for the period 1988-2020 was measured and analyzed, as the dependent variable is the gross domestic product (the unit of measure is million dollars), which is a measure of economic growth. As for the independent variables, they are government expenditures as an indicator of state intervention in the economy, private expenditures as an indicator of private sector activity in the economy, and the interest rate as a monetary policy tool. Data from the World Bank was relied upon.

The degree of stability of the economic variables used in the analysis should be determined before choosing the appropriate model for estimating the output function.

1 Unit Root Test

Table (3) shows the results of the extended Dickie-Fuller unit root test, where the instability of the original series is evident at the level of GDP, government expenditures, and private expenditures. These variables settled on the first difference, as the GDP variable stabilized with the presence of a categorical and general trend at the level of morality 10%, and categorically only at the level of 5% morale and without definite and a general trend at the level of morality 10%. The variables of government spending and private spending with a segmenter and

general trend stabilized at the level of morale of 10%, and interrupted only at the level of morality of 5% and no definite and general trend at the level of morale of 1%. As for the interest rate variable, it has stabilized at the level with a breaker and a general trend at the 10% level.

Table (3) Dickey-Fuller Extended Unit Root Test

Variables	the level						The first difference					
	a		b		c		a		b		c	
	t calculated	t critical	t calculated	t critical	t calculated	t critical	t calculated	t critical	t calculated	t critical	t calculated	t critical
GDP	-2.90	-3.21	0.04	-2.61	2.52	-1.61	-3.30***	-3.21	-3.32**	-2.96	-1.84***	-1.61
GE	-2.47	-3.21	-0.60	-2.61	1.33	-1.61	-3.28***	-3.21	-3.34**	-2.96	-2.87*	-2.64
PE	-2.53	-3.21	-1.17	-2.61	1.27	-1.61	-3.46***	-3.21	-3.49**	-2.96	-3.07*	-2.64
IR	-3.48***	-3.21	-2.30	-2.61	-1.23	-1.61						

a means the regression contains secant and general direction.

b means the regression contains only a secant.

c stands for gradient without secant and general direction.

*, **, *** mean significant at the 1%, 5%, and 10% level, respectively.

The table was prepared by researchers based on the program E-views10.

Since some variables are integral of order I(0) and others integral of order I(1), the output function can be estimated using the ARDL model.

2- Estimation of the product function using the autoregressive ARDL model

Table (4) Results of the ARDL model of the output function

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	0.778850	0.163917	4.751493	0.0004
GDP(-2)	1.094309	0.239069	4.577376	0.0005
GDP(-3)	-0.568657	0.215558	-2.638067	0.0205
GE	1.307974	0.232396	5.628206	0.0001
GE(-1)	-1.257431	0.251215	-5.005394	0.0002
GE(-2)	-0.211880	0.278402	-0.761057	0.4602
GE(-3)	0.798010	0.296087	2.695189	0.0184
GE(-4)	-0.665898	0.194171	-3.429434	0.0045
PE	0.880864	0.060074	14.66288	0.0000
PE(-1)	-0.910828	0.141689	-6.428355	0.0000
PE(-2)	-0.542499	0.186034	-2.916133	0.0120
PE(-3)	0.530975	0.174482	3.043160	0.0094
PE(-4)	-0.345848	0.081995	-4.217909	0.0010
IR	30250.88	10187.34	2.969457	0.0109
IR(-1)	-33278.05	10002.53	-3.326963	0.0055
C	38894.46	148279.8	0.262305	0.7972
R-squared	0.999887	Mean dependent var		14245020
Adjusted R-squared	0.999756	S.D. dependent var		2331919.
S.E. of regression	36432.56	Akaike info criterion		24.14542
Sum squared resid	1.73E+10	Schwarz criterion		24.89979
Log likelihood	-334.1085	Hannan-Quinn criter.		24.38167
F-statistic	7646.543	Durbin-Watson stat		2.891730

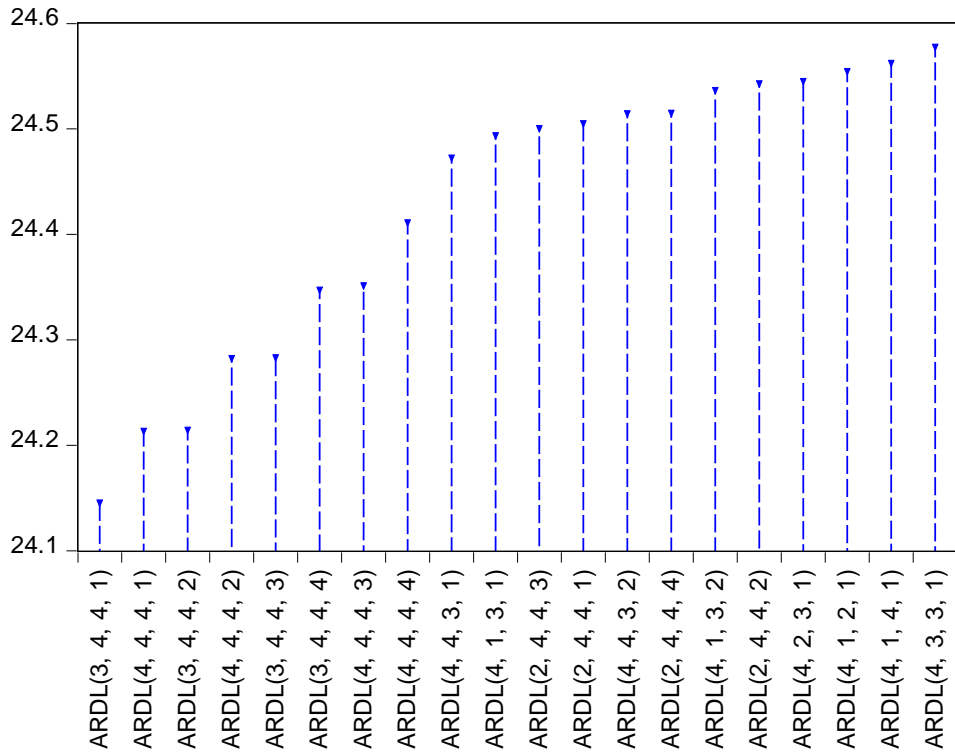
Prob(F-statistic)	0.000000			
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The table was prepared by researchers based on the program E-views10.

Based on the results of the ARDL model shown in Table (4), it is clear that the value of R-squared = 0.999887, and this means that the independent variables explain 99.98% of the change in the model. As it can be seen from the table that the value of Adjusted R-squared = 0.999756. Based on the F-statistic value, it is clear that the model is significant at the 1% level.

From Figure (8) and based on Akaike's criterion, it is clear that the optimal slowdown periods are (3,4,4,1), as the period with the least value was chosen.

Figure (8) Optimum deceleration periods
Akaike Information Criteria (top 20 models)



The graph was prepared by researchers based on the program E-views10

3- Bounds Test

Based on the results of the limits test in Table (5), it is clear that the F-statistic value = 6.356467, which is greater than the maximum tabular F value of (4.66) at the 1% level of significance. This means that there is a long-run equilibrium relationship, that is, we reject the null hypothesis.

Table (5) Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	6.356467	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual Sample Size	29	Finite Sample: n=35		
		10%	2.618	3.532

		5%	3.164	4.194
		1%	4.428	5.816
		Finite Sample: n=30		
		10%	2.676	3.586
		5%	3.272	4.306
		1%	4.614	5.966

The table was prepared by researchers based on the program E-views10.

4 Diagnostic tests

A Heteroskedasticity Test

From the results of Table (6), it is clear that the two probabilities of F-statistic and Chi-Square values are greater than 5%, that is, they are not significant. Thus, we reject the variance heterogeneity problem, that is, the estimated model does not suffer from the variance instability problem.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic 1.298730 Prob. F(15,10) 0.3213

Obs*R-squared 17.39320 Prob. Chi-Square(15) 0.2959

Scaled explained SS 2.850494 Prob. Chi-Square(15) 0.9997

Table (6) Results of the variance instability test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.298730	Prob. F(15,10)	0.3213
Obs*R-squared	17.39320	Prob. Chi-Square(15)	0.2959
Scaled explained SS	2.850494	Prob. Chi-Square(15)	0.9997

The table was prepared by researchers based on the program E-views10.

B- Serial Correlation LM Test

According to the results of Table (7), it is clear that the probability F-statistic value is greater than 5%, that is, it is not significant. Thus, we accept the null hypothesis, that is, the estimated model does not suffer from the problem of the serial correlation between the residuals.

Table (7) Results of the serial correlation test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.667939	Prob. F(2,8)	0.1046
Obs*R-squared	12.89230	Prob. Chi-Square(2)	0.0049

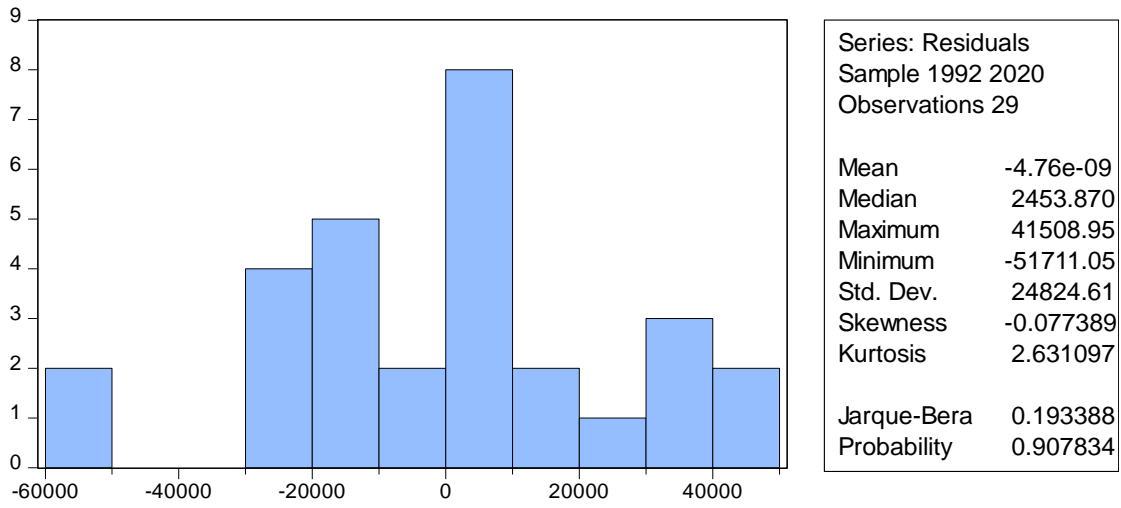
The table

was prepared by researchers based on the program E-views10

-5Histogram - Normality Test

Chart (9) shows the distribution of random errors, and since the probability value of the Jarque-Bera test is greater than 5%, it means that the estimated model follows a normal distribution of errors.

Figure (9) Random Error Distribution Test

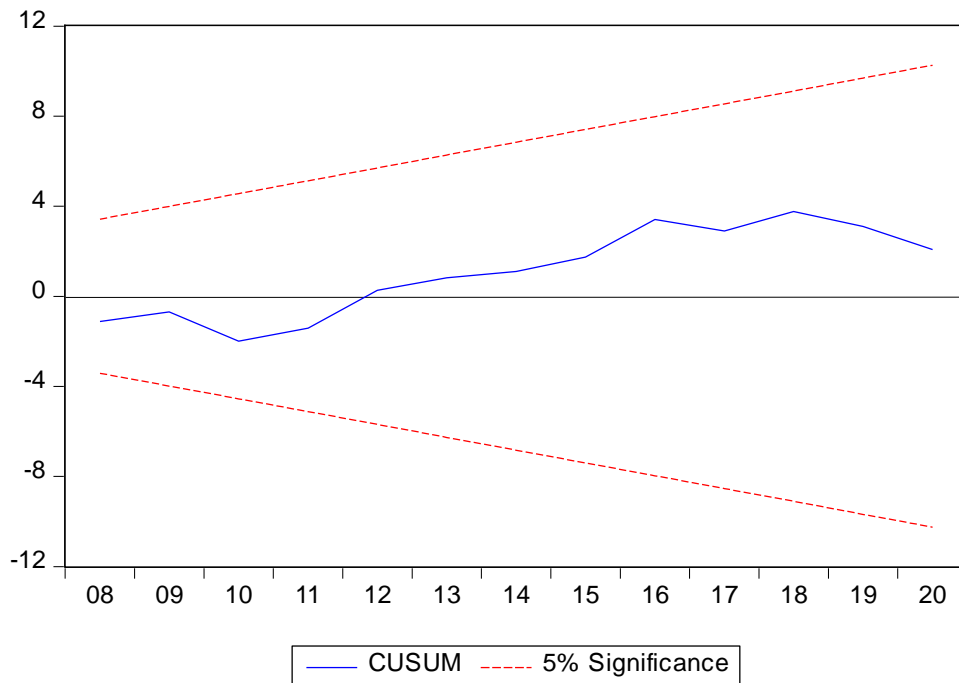


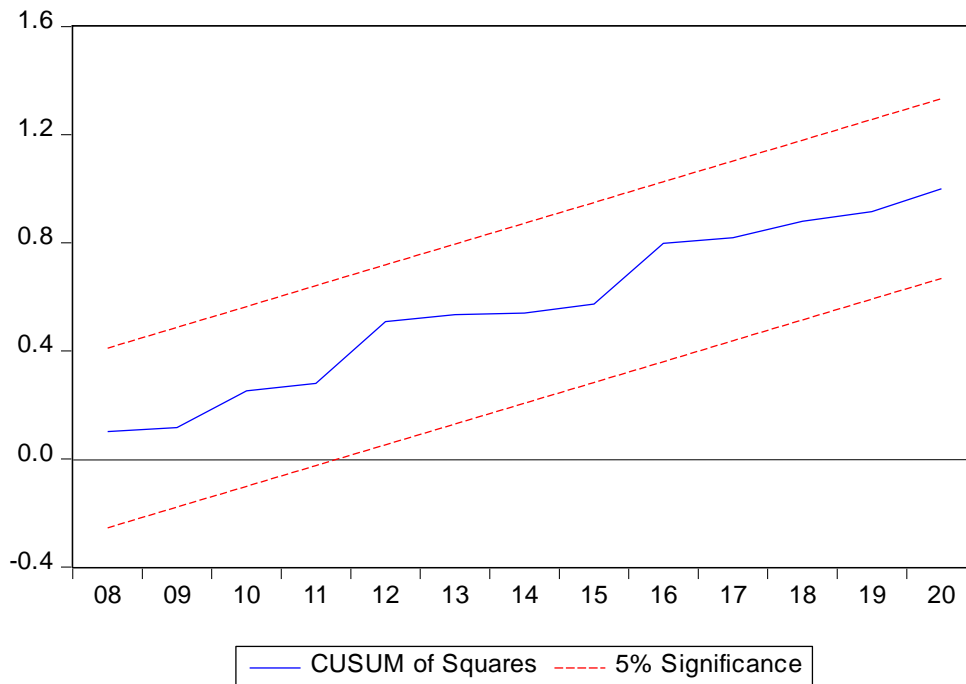
The figure was prepared by researchers based on the program E-views10

6- Structural stability test for model parameters: Stability Diagnostics

Figure (10) shows the structural stability test for the model parameters. According to the CUSUM TEST test shown in the upper part of the graph, it is clear that the sum of the residuals is within the critical values column, and this indicates that the estimated parameters are stable at a significant level of 5%. Whereas, according to the CUSUM of Squares TEST test shown at the bottom of the graph, it is clear that the sum of the squares of the residuals is within the critical values column, and this means that the variables included in the model are stable at the level of significance of 5%.

Figure (10) Structural stability test for model parameters





The figure was prepared by researchers based on the program E-views10.

8-Estimation of the short-term parameters, the error correction parameter and the long-term

A Estimate the short-run parameters and the error correction parameter

Based on the short-term parameters shown in Table (8), it is clear that the GDP in a previous year and two previous years has a significant effect at the level of 1%, as the increase in GDP by one unit in the previous year leads to a decline in GDP in the year The current increase is by (0.52), and this can be explained by the fact that an increase in output leads to an increase in income and then an increase in imports, which is a positive function of income, which leads to a decline in output. As for the increase in the gross domestic product by one unit in the previous two years, it leads to an increase in the gross domestic product in the current year by (0.56), and this explains the positive impact of the increase in the output in income according to the multiplier work mechanism.

Table (8) Short-Term Parameters and Error Correction Model

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.525652	0.139538	-3.767095	0.0023
D(GDP(-2))	0.568657	0.110201	5.160199	0.0002
D(GE)	1.307974	0.116215	11.25479	0.0000
D(GE(-1))	0.079768	0.160953	0.495598	0.6285
D(GE(-2))	-0.132112	0.144611	-0.913570	0.3776
D(GE(-3))	0.665898	0.108301	6.148610	0.0000
D(PE)	0.880864	0.032727	26.91576	0.0000
D(PE(-1))	0.357371	0.127425	2.804564	0.0149
D(PE(-2))	-0.185128	0.099701	-1.856837	0.0861
D(PE(-3))	0.345848	0.050804	6.807510	0.0000
D(IR)	30250.88	7368.537	4.105411	0.0012
CointEq(-1)*	0.304501	0.047233	6.446822	0.0000
R-squared	0.984377	Mean dependent var		285272.2
Adjusted R-squared	0.974268	S.D. dependent var		198608.2
S.E. of regression	31859.35	Akaike info criterion		23.86955
Sum squared resid	1.73E+10	Schwarz criterion		24.43533
Log likelihood	-334.1085	Hannan-Quinn criter.		24.04675
Durbin-Watson stat	2.891730			

* p-value incompatible with t-Bounds distribution.				
F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.356467	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

The table was prepared by researchers based on the program E-views10.

As shown in Table (8), government expenditures in the current year and three previous years have a significant effect on output at the level of 1%, as the increase in government expenditures in the current year by one unit leads to an increase in output by (1.30), and this explains the role of Government expenditures increase output through the multiplier mechanism. While it is clear that the increase in government expenditures in the previous three years by one unit leads to an increase in output in the current year by (0.66), although this shows the positive impact of government expenditures on output, especially expenditures directed towards infrastructure and some public projects that have a role It is complementary to the activity of the private sector, but its impact on output is less due to the crowding-out effect that can result from government spending.

It is also clear that private expenditures in the current year, the previous year and the previous three years have a significant effect on the output at the level of (1%, 5%, 1%) respectively, as the increase in private expenditures in the current year and the previous year by one unit leads to an increase in output in the current year by (0.88,0.35), respectively. The increase in private expenditures in the previous three years by one unit leads to an increase in output in the current year by (0.34), as this shows the role of private spending in increasing aggregate demand and thus expanding the output of the economy.

It is also clear that the interest rate has a significant effect on the output at the level of 1%, as the increase in the interest rate in the current year and in light of the complete freedom of capital movement, will lead to the influx of foreign investments looking for the difference in interest rates, which leads to an increase in the output in the term Too short.

According to Table (8), it is clear that the error correction factor $CointEq(-1)^*$ is significant at the level of 1%, that is, (0.304501) of the errors are corrected in the short term, that is, it takes more than three years ($1/0.304501 = 3.28$).). This means that the speed of adaptation is very slow in order to reach a long-term equilibrium.

It turns out that $R\text{-squared} = 0.984377$, that is, the independent variables explain 98.4% of the change in the model.

B - Estimating long-term milestones

Table (9) shows the results of the long-term parameters, as it is clear that government expenditures do not have a significant effect on the output in the long run, as the increase in government expenditures and when the economy is at or near the level of the possible output does not have a significant impact on the output, that is, it can That government expenditures in this case lead to complete crowding out. This is consistent with the theoretical side.

As for private expenditures, they have a significant effect in the long run at the level of 1%, as an increase in private expenditures by one unit leads to an increase in the long-term output by (1.27 units), and this explains the positive role of private spending in expanding production capacities and increasing output in the long run. . While it is clear that the interest rate has no significant effect in the long term, as the differences in international interest rates and in light of the complete freedom of capital movement will disappear in the long term.

Table (9) Long-term milestones

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GE	0.095979	0.308112	0.311505	0.7604

PE	1.272031	0.145264	8.756658	0.0000
IR	9941.400	30939.60	0.321316	0.7531
C	-127731.6	499447.0	-0.255746	0.8021
$EC = GDP - (0.0960*GE + 1.2720*PE + 9941.4001*IR - 127731.6029)$				

The table was prepared by researchers based on the program E-views10.

Conclusions and Recommendations

Conclusions

1. Government expenditures directed towards public projects that complement the activity of the private sector, in addition to the government's purchase of some production requirements provided by the private sector, contribute to promoting economic growth in the short and long terms.
2. The effectiveness of the fiscal policy depends on the size of the fiscal multiplier and the extent to which it crowds out private spending (investment and consumption). If the impact of crowding out is great, fiscal policy will have only a limited impact on output. Therefore, crowding out has implications for the effectiveness of fiscal policy as a tool for achieving macroeconomic stability in the short term and structural rebalancing in the medium and long term.
3. The theory of competition for government spending applies only to cases of structural deficits in the general budget, as crowding does not occur in the case of economic stagnation; In the event of a recession, the demand for money and therefore interest rates decreases, and the monetary authority adopts a soft monetary policy.
4. Competition is divided according to its impact into two main parts, namely direct competition and indirect competition, which is more complex than the first, as the reactions of economic actors are mainly related to changes in the level and structure of interest rates.
5. Another channel for competition is the exchange rate. Higher interest rates attract capital inflows and raise the price of the local currency. The resulting deterioration in the current account balance will offset part of the increase in aggregate demand caused by the fiscal expansion.
6. In the short term, and when the output is less than the level of full employment, the increase in aggregate demand resulting from the fiscal expansion leads to an increase in the level of output and employment. With idle resources in the economy, there will be no complete competition, as the effect of fiscal policy incentives depends on real income. on the slope of the IS and LM curves. The more sensitive consumption, investment, and net exports are to changes in interest rates, the more crowding out will occur. Fiscal policy is effective when the demand for money is highly sensitive to changes in the interest rate; This is because the rise in the interest rate is less, and then the decrease in investment is less, and this means that the partial decrease in income resulting from the expansionary fiscal policy is less. In the long run, the economy can return to potential GDP, and complete crowding out occurs if private expenditures fall by the same amount that government expenditures have increased.
7. Under a system of flexible exchange rates and when capital moves freely across borders, there is perfect competition. In light of fixed exchange rates, fiscal policy has a significant impact on income, as it can contribute to stimulating the local economy.
8. The government can reduce the size of the economic recession by borrowing money from the private sector and then redirecting it to the private sector through various spending programs. High levels of government spending increase employment, profitability, and investment through their multiplier effects on aggregate demand, and hence economic growth.
9. Increasing government spending on infrastructure affects the growth rate in the long run. Despite the impact of government spending policy on the demand side in the short term, it can have a more important impact on supply over a longer horizon; As government spending on health and education raises labor productivity and increases output growth. Also, spending on infrastructure such as roads and bridges reduces production costs, increases investments and profitability of private sector projects, and this leads to achieving integration between the public and private sectors that can reduce the impact of crowding out, by making some public and private investments complement each other., thus ensuring an increase in the rate of economic growth.
10. By analyzing the time development of the economic variables used in the research, the relative stability of GDP growth for most years of the time series becomes clear, as this explains the stability of the output structure. It is clear that government and private spending fluctuate at positive and

negative rates according to economic and military changes. The years of decline in the economic situation have witnessed an increase in the ratio of government spending to output, and this explains the increase in the role of the state in the economy to compensate for the decline in the role of the private sector.

11. Among the most important conclusions of the standard aspect are the following:

A- According to the results of the short-term milestones, it is clear that government expenditures in the current year and the previous three years have a positive moral effect on the gross domestic product, as this shows the role of government expenditures in increasing output through the multiplier action mechanism.

B - Despite the positive impact of government expenditures on the output, especially expenditures directed towards infrastructure and some public projects that have a complementary role to the activity of the private sector, their impact is less for the previous three years, due to the effect of crowding out.

c- It is clear that private expenditures in the current year, the previous year and three previous years have a positive moral effect on the output, as this shows the role of private spending in increasing aggregate demand and thus expanding the economy's output.

D- The interest rate has a positive moral effect on the output, as in light of the complete freedom of capital movement, the interest rate rise above the international level leads to the influx of foreign investments looking for the difference in interest rates, and thus increase the output.

E - Based on the results of the long-term parameters, it is clear that government expenditures do not have a significant effect on the output in the long run, as the increase in government expenditures and when the economy is at a level or close to the possible output does not have a significant impact on the output, that is, it can lead Government expenditures in this case to a complete crowding out. This is consistent with the theoretical side (21).

F- Private expenditures have a positive, moral effect on the output in the long run. This explains the positive role of private spending in expanding production capacities and increasing output in the long run. While it is clear that the interest rate has no significant effect in the long term, as the differences in international interest rates and in light of the complete freedom of capital movement will disappear in the long term (22).

Recommendations

1- Directing government expenditures towards investments in public projects that the private sector is unable to undertake, either because of their high costs or because of the long payback period and the lack of direct returns from them, as the state has the ability to carry out such projects, which are necessary for the activity of the private sector.

2- Giving priority to the private sector or participating with the government sector in the implementation of some public projects that can be carried out according to the principle of economic efficiency, which limits the impact of direct competition.

3- The government's purchase of goods and services produced by the private sector, which is a catalyst for the activity of this sector and increase employment on the one hand and increase the rate of economic growth on the other.

4- When the government resorts to borrowing from the private sector, it should work to direct the revenues generated from borrowing towards infrastructure projects that complement the work of the private sector, and thus money is taken from the private sector in the form of loans and returns in the form of benefits from the investments of public projects, as this procedure reduces from the effect of indirect competition.

5- The necessity of high coordination between the fiscal and monetary policies, so that the fiscal policy measures are not reflected in raising interest rates and thus negatively affecting the output, as monetary policy measures should be complementary to the work of fiscal policy tools and to ensure an increase in the rate of economic growth.

6- When adopting an expansionary fiscal policy, the state of the economy should be taken into consideration in terms of the level of full employment according to a specific time range, as the policy is more effective when the economy is below the level of full employment. But if the economy is at or near the level of full employment, fiscal policy tools should be directed towards increasing the components of domestic supply in the long term.

Data supplement, output development, expenditures, interest rate, consumer price index in the US economy for the period 1988-2020

Years	Gross Domestic Product at Current Prices (Million Dollars)	Government spending at current prices (million dollars)	Total Expenditures at Current Prices (Million Dollars)	Total National Expenditure at Current Prices (Million Dollars)	real interest rate	2010 Consumer Price Index = 100
1988	5252629	1101240	4260782.2	5362022.2	5.6	54.2
1989	5657693	1209530	4534905.9	5744435.9	6.7	56.9
1990	5979589	1353630	4703808.6	6057438.6	6.1	59.9
1991	6174043	1487520	4715141.5	6202661.5	5	62.5
1992	6539299	1439360	5134677	6574037	3.9	64.3
1993	6878718	1488850	5455036.6	6943886.6	3.5	66.2
1994	7308755	1525650	5875590.6	7401240.6	4.9	68.0
1995	7664060	1581120	6172702.1	7753822.1	6.6	69.9
1996	8100201	1624210	6572368.5	8196578.5	6.3	71.9
1997	8608515	1671420	7039053.8	8710473.8	6.6	73.6
1998	9089168	1705580	7546291.9	9251871.9	7.2	74.8
1999	9660624	1754840	8162414.2	9917254.2	6.4	76.4
2000	10284779	1852370	8808205.5	10660575.5	6.8	79.0
2001	10621824	2223130.4	8767379.2	10990509.6	4.5	81.2
2002	10977514	2360184.4	9043797.5	11403981.9	3.1	82.5
2003	11510670	2548597.7	9465730.5	12014328.2	2.1	84.4
2004	12274928	2688746.5	10205351	12894097.5	1.5	86.6
2005	13093726	2922233.6	10892673.2	13814906.8	2.9	89.6
2006	13855888	3056026.9	11570810.8	14626837.7	4.7	92.4
2007	14477635	3250305.4	11945868.5	15196173.9	5.2	95.1
2008	14718582	3671832.5	11769820.8	15441653.3	3.1	98.7
2009	14418739	4072170.2	10742005	14814175.2	2.5	98.4
2010	14964372	4225845.2	11251195.3	15477040.5	2	100.0
2011	15517926	4253507.5	11844416.3	16097923.8	1.2	103.2
2012	16155255	4171187.5	12549729.1	16720916.6	1.4	105.3
2013	16691517	4132756.3	13050764.7	17183521	1.6	106.8
2014	17427609	4253608.6	13683509.4	17937118	1.4	108.6
2015	18120714	4364943.7	14279812.3	18644756	2.2	108.7
2016	18624475	4492128.8	14653586.2	19145715	2.2	110.1
2017	19390604	4652854.3	14990649.4	19643503.7	2.1	112.4
2018	20156733	4813579.8	15327712.6	20141292.4	2	114.8
2019	20922862	4974305.3	15664775.8	20639081.1	1.9	117.1
2020	21688991	5135030.8	16001839	21136869.8	1.8	119.4

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