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MEASURING AND ANALYZING THE IMPACT OF MILITARY SPENDING ON SOME HUMAN DEVELOPMENT INDICATORS IN IRAQ USING THE SELF-REGRESSION VECTOR (VAR)

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Abstract:

The research deals with measuring and analyzing the impact of the reciprocal relationship between military spending Some human development indicators (expenditure on education, health and average) Per capita income)view For the great rise in Size of military spending Because of successive wars and the deterioration of themona and Regulation Acquisition Al , Jamaah on A large part of the provinces of Iraq which has been affected asphalt A lot of financial, economic and human resources from Most of the confrontation with terrorist organizations, which More spending will be called on the military sector, And the research arrived into A set of conclusions through the model used in the research, There is no common integration relationship between the search variables according to test Johansen-Jesilius, The absence of a long time relationship Gel between the miserable tunnels CREE and Human Development Indicators, So done use Autoregression vector (VAR), Structural self-regression vector (SVAR) To detect The shock of military spending which The influence the negative For tunnels Ali Al , Askari some Human Development Indicators .

INTRODUCTION:

Military spending and its effects on human development occupy a special importance and place in light of the comprehensive economic development by decision-makers in all countries of the world, for several considerations, the most important of which is the impact that economic researchers have attributed during the past decades in particular to military spending in the economy as it acquires large economic resources at a time when these resources can be used to finance human and economic development projects. Iraq is also entering the circle of conflict, internal crises and the increase in military spending in Iraq, which is reflected in its ability to achieve high rates of development, especially human development and its various aspects such as health, education and the standard of living.

RESEARCH IMPORTANCE

The importance of the research lies in the fact that it is an attempt to measure and analyze the impact exerted by the increasing military spending in Iraq and its reflection on some human development indicators, as well as the country's continuous need to develop its military and security capabilities as a result of the difficult circumstances that the country is going through that require more spending on the military sector in exchange for the deterioration of economic and security conditions due to the conditions witnessed by the wars and the Coronavirus crisis.

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RESEARCH PROBLEM:

There is a debate between military spending and human development indicators as to whether that effect is positive or negative, or that the impact will be positive in human development and its indicator if military spending is directed towards increasing the level of safety in the country, in the sense of creating a safe environment that improves the educational and health reality and raises the standard of living in the country, and vice versa whether military spending is directed to other purposes such as tunnels on wars and others.

RESEARCH HYPOTHESIS:

The research proceeds from the premise that increased military spending is a natural consequence of insecurity in the country and the increased level of threat, which makes it have a negative impact on some human development indicators in Iraq under the current conditions during the research period.

RESEARCH OBJECTIVE:

The research aims to clarify the concept of military spending, its determinants and implications on some human development indicators in Iraq, as well as to use standard methods to measure the size and impact of the shock of military spending in some human development indicators during the duration of the research.

First Section: The Theoretical Framework of Expenditure and Human Development Indicators

1.1 Concept Military Spending

Military spending in many countries is one of the most important components of the balance sheet of the state, it has become the basic need of all countries of the developed and developing world alike, to stabilize various political, economic and social aspects, economic thought has been interested in the subject of military spending for two reasons: **(Al-Fares, 1993:31)**

The first is how to finance the military institution during periods of peace and war and in a way that achieves the optimal use of available resources without imposing additional burdens on society.

Second: Reaching the necessary budget to achieve the best returns with the least economic and social effects of military spending.

The definition received by the International Monetary Fund is one of the most prominent definitions of military expenditure, as it is defined as "total expenditure, whether under the defense item, or in other items, which is intended for the maintenance of military forces, including military purchases of ammunition and equipment, as well as for military construction, mobilization, training, processing, transportation, food, clothing and housing of the military, in addition to treatment and other services, as well as investment expenses allocated to provide housing for the families of military personnel, spending on military schools

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and research expenses. and development that mainly serves defense services." **(Kadawi, 40-39:1997).**

However, the status of foreign military assistance received is somewhat unclear in the IMF definition and whether or not it is included in the requests submitted by States to the IMF, and is excluded from the IMF's definition of military pensions as a transfer payment, although when the burden of spending on defense is calculated, the country will bear the burden of military pensions. Therefore, it is preferable to define the United Nations and the Stockholm International Peace Research Institute, which distinguishes between the three functional categories, which are (manpower and operational elements, investment in current weapons and assets, and future investment) **(Lamb & Kallab, 1992:4).**

The Human Development Report (2007-2008) defined military spending as all expenditures of the Ministry of Defense and other ministries on the issues of recruiting and teaching military personnel as well as the construction and purchase of military equipment, and this item also includes military assistance in the donor country's expenditures (**Human Development Report, 2007/353:2008),** while the Stockholm International Peace Research Institute defined military tunnels as "defense budget data minus the value of foreign aid" **(Asfour 7:1992).**

1.2 Economic motives for armament and military spending:

There are several motives for each country behind armaments, which may be political, regional, economic or social motives, and the economic motives of the arms race are important motives, because of the link between military spending and economic motives, which are the main factor of the process of economic development and growth, (Ziada, 51:2014) These factors include: (Muhammad, 2013: 91-92) (**Castillo &Others, 2001:51-57)**

(a) Protection of the national economy and the resources and natural resources of the State of strategic character.

(b) Protection of infrastructure, especially industrial pillars, which are the cornerstone of the process of economic development in the various economic sectors of the State.

(c) Alleviating the political pressures resulting from economic obstacles in the event that the country is exposed to this from any other country, as the State resorts to increasing the quantity and quality of armaments, enhancing its military and defense capacity and eliminating dependence on other States.

d) The imposition of economic hegemony through the imposition of military power, or economic influence, and therefore increasing military spending has become a defensive necessity.

(c) Increasing military spending and armaments of states may sometimes be in order to seize energy sources and resources and not for defensive purposes.

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1.3 The Economic Effects of Military Spending

Military spending affects the economy from two sides, positive and negative as shown below:

1.3.1 Positive effects of military expenditures

Encouraging domestic investment through economic stability, where military expenditures and increasing them makes it possible to build a strong army capable of countering external threats and imposing security stability **(Abdul Razzaq, 471:2018).**

The military sectors are considered one of the largest economic sectors, attracting a large part of research and development expenditures, and that the scientific progress that takes place in the military field can have an impact on local industries, meaning that civilian industries can benefit from the applied results of advanced military research **(Al-Mahboob, 1997: 142-145).**

The military institutions play a prominent role in the development of basic infrastructure and facilities, as they contribute to the process of establishing roads, bridges, airports and other projects that can benefit society as a whole **(Ismail, 2002468:).**

Most countries often tend to follow an expansionary policy during times of depression, including military spending, in order to move the economy according to the treasure theory, which leads to an increase in the incomes of individuals in military sectors that will go in two directions, the first affects consumer spending, which in turn will stimulate producers and then increase production, while the second through saving and then investment, which also increases production, which leads to the operation of disrupted resources in the country **(Najm and others, 539:2021)** .

(c) The increase in military spending, especially in the field of military manufacturing, leads to an increase in production and thus a rise in the revenue of the State's exports of military goods and equipment, which are the main source of foreign exchange for the country **(Mohammed, 104:2013).**

1.3.2 Negative effects of military tunnels:

(a) The channeling of productive resources towards military institutions leads to a decrease in the supply of available resources for civilian use necessary to satisfy the needs of military use that does not seek to satisfy such needs, as it leads to a decrease in consumption and productive investment and keeps national output at a lower level than if resources were added in productive sectors **(Ismail, 2002: 466).**

Military expenditures can contribute to balance-of-payments imbalances by directing part of the resources available to society to purchase advanced weapons and equipment from abroad, reducing the country's foreign exchange earnings and increasing the balance of payments deficit by increasing military imports compared to exports **(Haidar, 500:2018).**

The increase in military expenditures sometimes leads to a reduction in the process of growth and economic development, where the increase in military spending leads to the diversion of basic resources for economic development such as education, health and other services or the reduction of financial expenditures of these sectors, which negatively affects the development

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process, **(Hilal, 7:2015)** and shows the competing impact of demand for loans and hard currency and competition between the public and private sectors for borrowing, which crowds out the public sector and often leads to raising the interest rate.

d) The crowded impact of military spending, as military institutions work to seize investment resources away from the uses of private sectors, and higher military expenditures will generate inflationary pressures that will raise costs, and reduce the effectiveness of spending on private investments **(Al-Fares, 1993:240).**

The impact of financing military spending on saving and investment through the reallocation of budget items, the imposition of new taxes or the raising of applied tax rates that lead to a reduction in disposable income, which will lead to a reduction in savings and a higher interest rate and the reflection of this on investment **(Kadawi, 65-64:1997).**

1.4 Determinants of military spending)

Military spending is a political, economic and strategic decision, and that the decision-making process must be subject to various considerations that interact with each other, including economic, political and strategic that require an increase in expenditures **(Smith, 1989:364),** and can be summarized as follows:

1.4.1 Economic determinants: These are:

a) The availability of economic resources: GNP imposes a constraint on military spending, the more rich a state is in economic resources (material and financial) the more capable it is than others of military spending and vice versa **(Muhammad, 250:2016).**

b) Level of economic development: The high level of economic development in developing countries leads to structural changes in society such as the high proportion of urbanization or the unequal distribution of incomes, wealth and other problems that can occur between groups of society such as conflicts, which requires an increase in the volume of military spending **(Fadlallah, 59:2017),** as well as increasing the level of development increases public spending in various fields and in which the military is located.

c) Military industrialization: means the extent to which there are local military industries, in countries where there are military industries, the military institution finds itself under the pressure of ensuring sufficient continuous demand for the production of these industries, which makes military spending at high levels, on the one hand. On the other hand, at the beginning of the country's entry into the field of military manufacturing, the initial costs of the project may be low, but over time it will appear that the required needs exceed the initial estimates, which calls for increased military spending on these projects **(Demirtaş, 2006:501).**

d) Population size: There is a relationship between the population and the size of military spending, the larger the population, the greater the spending to protect its interests from the external threat, as well as the increase in the size of the labor force and unemployment, which encouraged their employment and reduced this level of unemployment in the military field **(Najm et al., 539:2021).**

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1.4.2 Political Determinants:

a) **Political stability:** One of the most important determinants of military spending is security requirements, there is a wisdom that prevailed in international relations that says "the strong is the one who takes and the able retains what he has" so the strengthening of the military institution has become one of the main priorities, not only in order to preserve the state, but also to preserve its independence and not be subject to blackmail and dependency, thus showing there is a relationship between political stability and military spending (Al-Faris, 108:1993) .

b) **The nature of the system of government:** Armies in Third World countries have an important role in controlling internal security through the development of material and moral means of repression and oppression, to preserve their gains and status, the army's control of the system of government is a key factor in increasing military spending (Ziada, 40:2014).

c) **Regional alliances:** Countries entering into alliances, whether political, economic or military, often have a high level of military spending compared to countries outside those alliances (Kadawi, 1997:50).

1.4.3 Strategic Determinants: The following are represented by

a) **Expectations of threat and countering terrorism:** Military spending is greater in countries that are more threatening and the likelihood of anticipated wars (Mas'ad, 1990:359).

b) **Wars:** Wars are an important factor in determining the level of military spending because of the large military expenditures required by military institutions before and after the war, and the economists Peacock and Weizmann are among the first writers to emphasize the importance of this factor in determining the volume of military spending (Ismail, 2002139:).

c) **Regional conflicts and the arms race:** The arms race is one of the most important determinants of military tunnels, and in the phase of the international arms race it may need significant resources for this purpose, to obtain the most advanced and modern equipment (Fadlallah, 2017:61).

d) **Military aid:** Regardless of its form, whether it is weapons, equipment or expertise, it contributes to raising military allocations, as equipment and weapons need to be developed and maintained, leading to higher military spending (Kadawi, 1997:56).

1.5 The economic and social burden of military spending:

The burden of military spending can be measured by measuring the economic and social burden as follows:

1.5.1 Measuring the economic burden of military spending:

The economic burden of military spending is measured by several indicators including:

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a) **Index of the ratio of military expenditure to GDP:** This indicator is one of the best comprehensive and widespread indicators to measure the volume of military spending, because GDP is the best measure of the resources in society, and military expenditures are the best measure of the resources allocated to the military forces, and therefore it measures the size of the burden borne by the country (Ismail, 2002: (164), and the index of calculating military spending from GDP is the broadest and most used in international comparisons.

b) **Index of the proportion of military spending to public spending:** This indicator shows how important military spending is because it is a basic necessity that falls on the shoulders of the state, and the extent of government allocations to military expenditures, the more the state is in a good position, the higher the military expenditures (Mohammed, 32:2020).

c) **Military expenditure index as a percentage of national income:** This indicator uses national income instead of national output as a measure of the economic resources available in the country, and the national income gives a clear picture of the country's economic resources (Kadawi, 1997:436).

d) **Index of the ratio of military imports to total imports:** This indicator shows the share of the military sector from imports to those of the civilian sectors (Mohammed, 98:2013).

e) **Per capita Index of Military Expenditure:** This indicator expresses the amount of protection and security that an individual receives, meaning that it represents the amount of sacrifice from domestic consumption in order to obtain adequate security and defense services (Najm et al., 2021:544).

1.5.2: The social burden of military spending:

It is an indicator or measure to clarify how much is allocated to military spending compared to social costs, of which social welfare is one of its components represented by health, education and social security, as there are several considerations involved in the issue of measuring the social cost, and the main problem is the difficulty of measuring the opportunity cost of military tunnels, especially in times of peace **(Al-Fares,** 297-296: **1993),** and the social burden is calculated through the following indicators: **(Qasim and Numbness,104:2021)**

a) Calculate the ratio of military expenditures to GDP and compare them with the ratio of spending on education and health to GDP as well.
b) Calculate the share of military expenditures and compare the share of education, health and social welfare of the total public expenditure.

2.1 Section 2: The relationship between military spending and human development indicators in Iraq.

1.1.2 The relationship between military spending and health: The health sector is closely linked to the security aspect, because of the severe effects, whether positive or negative, on the economy in general and on the health sector in particular. Therefore, we will address the burden of crowding, the relationship between the two sectors and the proportion of public spending occupied by each sector during the research period.

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Table (1) Ratio of Military and Health Expenditure to Public Expenditure in Iraq for the Period (2004-2020)

Years	Ratio of Military to Public Expenditure %	Expenditure on health as a percentage of public expenditure %
2004	5.39	5.56
2005	8.64	5.57
2006	5.36	4.22
2007	6.28	4.58
2008	4.87	4.56
2009	6.88	5.07
2010	5.57	5.94
2011	4.71	6.59
2012	3.42	4.48
2013	5.40	4.61
2014	6.43	5.13
2015	14.08	5.36
2016	10.90	5.98
2017	10.60	5.29
2018	7.55	5.39
2019	6.79	4.88
2020	10.14	7.65

Source: Prepared by the researcher based on

- Military spending, World Bank data, Military spending of GDP, Iraq.
- Ministry of Finance, Economic Department, General Budget Tables.
- Central Bank of Iraq, Department of Statistics and Research, Annual Reports for Different Years (2004-2020).

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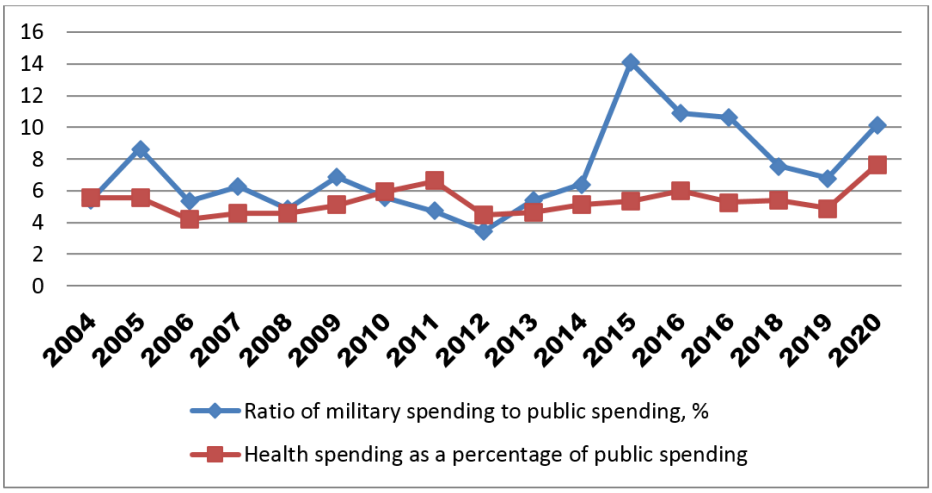
Figure 1: Ratio of military and health expenditure to public spending in Iraq for the period (2004-2020)



Source: Prepared by the researcher based on the data of Table (1)

It is clear from table (1) and Figure (1) that the percentage of competition between the military and health sector varied during the research period, as it was similar at the beginning of the period, the ratio of military spending to public spending (5.39%) in (2004) while the ratio of health spending to public spending was about (5.56%) for the same year, and then those percentages fluctuated up and down until 2015) to witness a significant increase in the ratio of military spending to public spending to reach (14.05). % for 2015, while the ratio of health to public spending rose slightly to constitute a percentage (36). 5%), where military spending accounted for a large percentage of public spending compared to what the health sector acquired, this increase in the allocations of the military sector was at the expense of the allocations of other sectors, including the health sector, leaving its impact on the health reality in that period, and then returned to decline, but the ratio of military spending to public spending remained higher than the ratios of health spending to public spending until the end of the research period, From the above, it can be said that the burden of competition between the military sector and the health sector is large, especially in periods when there is tension in the security situation, the results of the standard side have shown the validity of this, through the inverse relationship between military spending and the index of spending on health in the third section.

2.1.2 The relationship between military spending and education : There is a close relationship between the military side and the educational aspect, because of the great importance of security on the educational reality, increasing military spending in order to impose security that works to increase the well-being of individuals and then the rise of all indicators of education, and vice versa if military tunnels and an increase are directed towards wars and others, so we will proceed to measure the burden of crowding between the two sectors and what each sector acquires in relation to public spending:

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Table (2) Ratio of military and expenditure on education to public expenditure in Iraq during the period (2004-2020)

Years	Ratio of Military to Public Expenditure %	Ratio of expenditure on education to public expenditure %
2004	5.39	5.61
2005	8.64	5.58
2006	5.36	5.28
2007	6.28	6.99
2008	4.87	8.32
2009	6.88	9.48
2010	5.57	9.44
2011	4.71	11.81
2012	3.42	8.15
2013	5.40	8.20
2014	6.43	8.63
2015	14.08	12.76
2016	10.90	14.43
2017	10.60	13.74
2018	7.55	14.65
2019	6.79	11.13
2020	10.14	15.56

Source: Prepared by the researcher based on

- Military spending, World Bank data, military spending of GDP, Iraq.
- Ministry of Finance, Economic Department, General Budget Tables.
- Ministry of Planning, Central Bureau of Statistics, Directorate of National Accounts.
- Central Bank of Iraq, Department of Statistics and Research, Annual Reports for Different Years (2004-2020).
- Percentages and rates have changed from the researcher's work.

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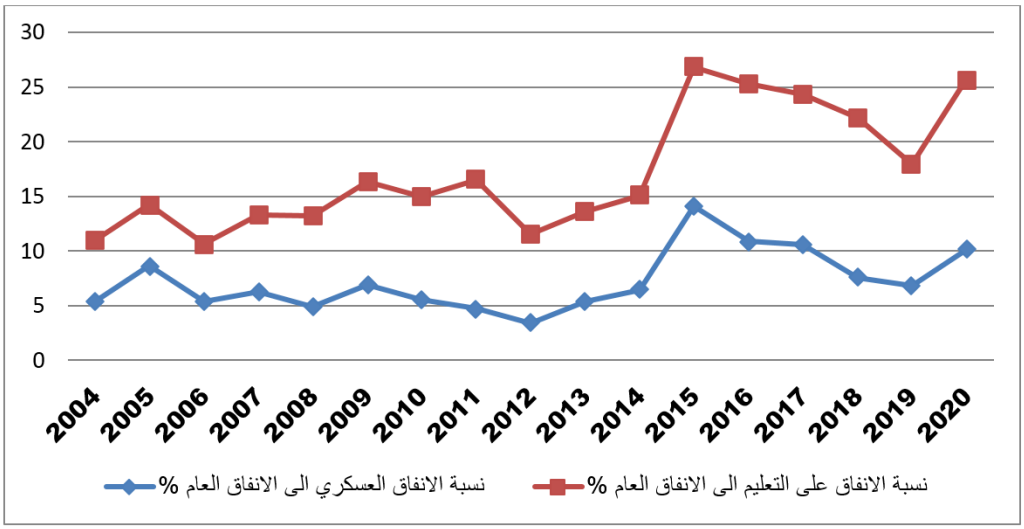
Figure 2: Ratio of military and education expenditure to public expenditure in Iraq during the period (2004-2020)



Source: Prepared by the researcher based on the data of Table (2).

Between Table 2 and Figure 2, the ratio of military and educational spending to public expenditure, we may note that the allocations of the educational sector were greater than those of the military sector during the research period, after the ratio of military expenditure to public spending (5.39%) in (2004) increased to (8.64%) in (2005), while the ratio of spending on education to public spending from (5.61%) in (2004) decreased slightly to (5.58). In 2005, we note that the percentage of spending on education is greater than the percentage of military spending, then the ratio of military spending to public spending began to decrease as a result of the improvement of security conditions after (2006) as it reached (5.35%), which reflected its impact on the educational reality, and then began to fluctuate high and low until 2015) to witness a high rate of increase in military spending reached (14.1) %) and then return to decline and rise to reach (10.01%) in 2020), while the percentage of spending on education has witnessed a significant increase from (5.28%) in (2006) increased to (9.48%) in (2009) and then to (11.81%) in (2011)) and continued to rise until (2020) reaching (15.56%), we note that the rate of competition between the two sectors was low, which suggests that the government was of great interest in the educational sector.

2.1.3 Military expenditure and average per capita national income:

Through table (3) and Figure (3) below, we see the relationship between military spending in the average per capita national income, at the beginning of the period the rate of change between military spending and the average per capita income was close, as we note the increase in military spending from (1731369 million dinars in (2004) to (2278131) in (2005) to record a rate of change in capacity (31.58%), while the average per capita national income after it was ((1728962 dinars in 2004 rose to 2352977 dinars in 2005 to record a rate of change in capacity (36.09%), while the average per capita income recorded the highest positive rate of change in

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(2008) (43.17%), while military spending has been fluctuating high and low as a result of the security conditions experienced by the country during the research period, to record the highest positive rate of change in two years (2013).) and (2015) where it reached 86.93%) and (84.69%), as a result of the security conditions experienced by the country, which reflected its impact on the average per capita income as it reached a negative rate of change of about (25.53%) for the year (2015).

Table (3) the rate of change of military expenditure and the average per capita national income in Iraq

Years	Military spending (million dinars)	Average per capita national income (JOD)	Annual rate of change of military spending%	Annual rate of change of average per capita national income%
2004	1731369	1728962	-	-
2005	2278131	2352977	31.58	36.09
2006	2078409	2965298	)8.77)	26.02
2007	2452028	3372433	17.98	13.73
2008	2895036	4828381	18.07	43.17
2009	3616360	3803294	24.92	(21.23)
2010	3582550	4520140	(0.93)	18.85
2011	3282105	5809735	(8.39)	28.53
2012	3089163	6737454	(5.88)	15.97
2013	5774676	7098698	86.93	5.36
2014	5368542	6822481	(7.03)	(3.89)
2015	9915278	5080806	84.69	(25.53)
2016	7312624	5153492	(26.25)	1.43
2017	8000073	5544451	9.40	7.59
2018	6105454	6491970	(23.68)	17.09
2019	7584551	6467657	24.23	(0.37)
2020	7712603	5146086	1.69	)20.43)

Source: Prepared by the researcher based on

- Military spending, World Bank data, Military spending of GDP, Iraq.
- Ministry of Finance, Economic Department, General Budget Tables (different years).
- Ministry of Planning, Central Bureau of Statistics, Directorate of National Accounts.
- The average per capita share and the annual rate of change were calculated by the researcher.
- The values in parentheses mean negative values.

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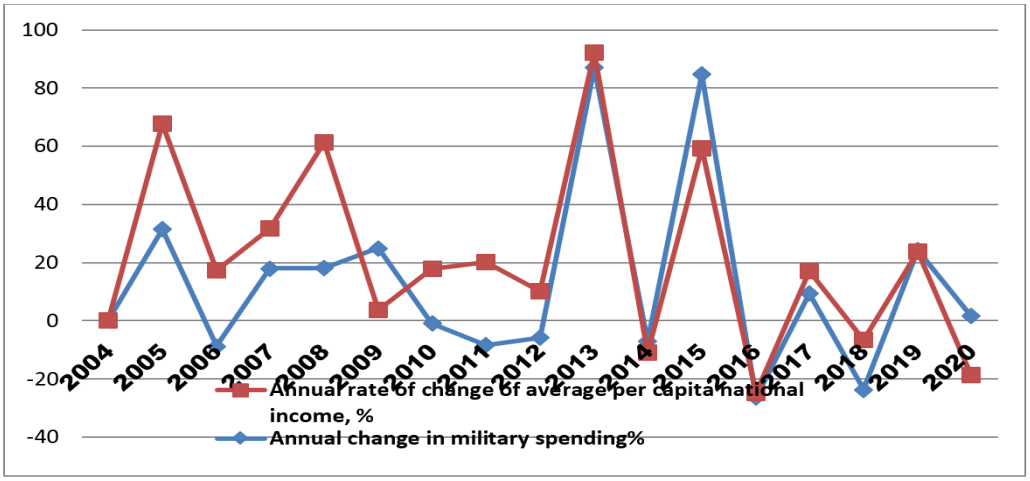
Figure 3: The rate of change in military expenditure and the average per capita national income in Iraq



Source: Prepared by the researcher based on table data (3)

Third Section: Results of Measuring and Analyzing the Relationship between Military Spending and Human Development Indicators

3.1 Model Characterization

The standard model represents the sum of the economic relations between the variables of the study, and this stage is one of the most important and difficult stages of building the standard model because it requires the identification of the variables contained in the model, and the description of the model is based on a mathematical content in which the relationships of the economic variables of the research sample are reformulated in the form of standard models through which the parameters of the study can be measured and then interpreted and presented as an economic problem in a standard framework.

A set of variables shown in the analytical aspect of the study was relied upon in order to determine the interrelationships between them, and the program (12Eviews) will be used to measure that there was a relationship between military spending and some human development variables (expenditure on education, health and average per capita national income), as the study model was characterized based on the theoretical aspect through the following equation:

MS = f(APCI,SE,SN)

The MS represents military spending, the APCI represents the average per capita per capita income which represents the standard of living in the country, the SE represents expenditure on education and the EN represents expenditure on health Table 4 shows the variables used in the estimated standard model and their codes and type.

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Table (4) Study variables and symbols used

Pronounced like t	Name of the variable in Arabic	Name of the variable in English	Icon	its type
1	Military Tunnels	Msitary Spending	MS	independent
2	Spending on education	Spending on Education	SE	adherent
3	Spending on health	Spending on newspapers	SN	
4	Average per capita income	Average per capita income	APCI	

Source: Prepared by the researcher

3.2 Sleep Test Results

There are many tests through which the problem of the root of the unit was detected, the stability of the time series of economic variables was determined and the order of their integration was determined, the most important of these tests is the Philips Peron test (PP) and the Dickie Fuller Extended Test (ADF), that all the parameters used within this test are based on two hypotheses through which the presence or absence of the root of the unit is determined, Which means that the time series do not suffer from a false regression and therefore the stability of the time series which leads to the accuracy of the results obtained, if the probability value (Prob > 0.05) is accepted the null hypothesis that states the existence of the root of the unit (H0:B=0) in the sense of the instability of the time series, and if the probability value (Prob < 0.05) is accepted the alternative hypothesis that states that the root of the unit does not exist (H0: B > 0) meaning the stability of time series, unit root tests of time series data for search variables can be verified through the following methods:

3.2.1: Phelps Peron test results

Table (5) shows the results of the PP test for the search variables and the data shows that the probability value calculated within the outputs of the standard program (12Eviews) was greater than (0.05) which indicates that the time series data is unstable at the original level (At level) and suffers from the problem of the root of the unit for all variables, i.e. accepting the null hypothesis that emphasizes the existence of the unit root problem and the instability of the time series data of the study variables.

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Table (5) Phelps Peron test results at the original level

At Level		MS	APCI	SN	SE
With Constant	t-Statistic	-1.8161	-3.2881	-0.7528	-1.3687
	Prob.	0.3665	0.0237	0.8192	0.5854
		n0	n0	n0	n0
With Constant & Trend	t-Statistic	-2.5155	-1.5526	-1.4412	-0.8758
	Prob.	0.3191	0.7899	0.8293	0.9471
		n0	n0	n0	n0
Without Constant & Trend	t-Statistic	3.3999	1.2227	1.5051	2.0049
	Prob.	0.9996	0.9401	0.9645	0.9875
		n0	n0	n0	n0

Source: Preparation of the researcher based on the outputs of the standard program (2Eviews1)

To address the problem of the root of the unit, the first difference of time series data is taken, through (6) it turns out that the probability value has become less than (0.05), and thus the null hypothesis that states the existence of the unit root problem can not be accepted and the alternative hypothesis that states that there is no unit root problem as the time series data of the variables are stable and integrated from the first rank (1)1.

Table (6) Philips Peron test results at the first difference

At First Difference		d(MS)	d(APCI)	d(SN)	d(SE)
With Constant	t-Statistic	-5.4385	-2.3867	-3.9312	-3.6065
	Prob.	0.0001	0.0532	0.005	0.0112
		***	**	***	**
With Constant & Trend	t-Statistic	-5.4328	-2.7377	-5.1176	-7.5273
	Prob.	0.0006	0.0023	0.0012	0
		***	***	***	***
Without Constant & Trend	t-Statistic	-4.3354	-2.5643	-3.5934	-3.144
	Prob.	0.0001	0.0121	0.0008	0.0027
		***	**	***	***

Source: Preparation of the researcher based on the outputs of the standard program (2Eviews1)

3.2.2 Results of the Extended Dicky Fuller Test

To make sure that the time series under study are more stable, we use a second important test, the Dicky Fuller Expanded Test, the results of which were as in the following two tables:

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Table (7) Results of the Extended Dickie Fuller Test at the Original Level

At Level		MS	APCI	SN	SE
With Constant	t-Statistic	-0.9606	-2.8585	-3.5375	-4.8064
	Prob.	0.7541	0.0619	0.0143	0.0006
		n0	n0	n0	n0
With Constant & Trend	t-Statistic	-2.5454	-1.4089	-4.3122	-1.9196
	Prob.	0.3059	0.8383	0.0103	0.6187
		n0	n0	n0	n0
Without Constant & Trend	t-Statistic	1.0169	0.8212	1.3254	0.6728
	Prob.	0.9146	0.8841	0.9495	0.8554
		n0	n0	n0	n0

Source: Preparation of the researcher based on the outputs of the standard program (2Eviews1)

From the table above we note that all the data of the study variables are unstable at the original level of time series data, so that the probability values calculated within the Dickie Fuller test, which is based on the same hypotheses on which the PP test is based, were greater than (0.05) and thus accept the null hypothesis (H:B=0) which states the instability of the series and the existence of the unit root problem for the time series data at its original level for most variables, Whether or not the fixed limit, the fixed limit and the general trend are united, and to address this problem, the first difference of time series data is taken, and it turns out that the problem has been addressed and that the time series of variables are stable and there is no unit root at the first difference, so that the probability values have become (Prob < 0.05) and thus accept the alternative hypothesis that states that there is no unit root as the time series data of the variables are stable and integrated from the first rank (1)1.

Table (8) Results of the Dickie Fuller Extended Test at the First Difference

At First Difference		d(MS)	d(APCI)	d(SN)	d(SE)
With Constant	t-Statistic	-2.5673	-3.6086	-1.7619	-1.411
	Prob.	0.1107	0.0114	0.3907	0.5626
		**	**	***	**
With Constant & Trend	t-Statistic	-2.5227	-4.6648	-2.2428	-2.9918
	Prob.	0.3157	0.0053	0.4493	0.152
		**	***	**	***
Without Constant & Trend	t-Statistic	-2.3651	-3.5664	-1.1041	-1.2402
	Prob.	0.0197	0.0008	0.2378	0.1922
		**	***	***	**

Source: Preparation of the researcher based on the outputs of the standard program (2Eviews1)

After obtaining the stability of the time series of model variables, which are represented by military spending, spending on education, health and average per capita income, using the

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Phelps Peron test (PP) and the Dickie Fulller test (ADF) and know the degree of integration of these series for the variables used, as the chains are integrated from the first rank (1)1 at a significant level (5%), that is, the variables are stable at the first difference, which means the possibility of applying joint integration tests.

3.3 Johansen-Jesilius Joint Integration Test Results

After obtaining the stability of the time series of model variables and recognizing the degree of integration of the variables used and knowing their integration from the first order (1)1, so we can test the joint integration by testing Johansen & Juselius to test the existence of a long-term equilibrium relationship between the model variables in which the time series data is required to be integrated of the same order, if the test results show that there is no common integration between the model variables, The proposed model for estimation is VAR and SVAR.

The data of Table (8) show the results of the Johansen-Jesilius test, which includes the F-statistic test of the relationship between military expenditure and the expenditure index on education, health and average per capita income, and shows that the value of F was (1.5200), which is smaller than the upper limits at the level of morale 1%, that is, it is insignificant, and accordingly rejects the alternative hypothesis that confirms the existence of joint integration, The null hypothesis that states that there is no common integration is accepted, and this test indicates that there is no long-term equilibrium relationship between military spending, spending on education, health, and average per capita income, i.e. they diverge from each other in the long run, so we will adopt the model of the self-regression vector (VAR) structural self-regression vector and (SVAR) to measure the impact of the shock of military spending on human development indicators.

Table (9) Results of the Joint Integration Test according to the Johansen-Jesilius Military Expenditure Test Human Development Indicators

F-Bounds Test	Null Hypothesis: No levels relationship			
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	1.520009	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.50%	3.15	4.08
		1%	3.65	4.66

Source: Researcher preparation based on the outputs of the standard program (2Eviews1)

3.4 Estimation of the VAR self-regression vector model

3.4.1 Optimal slowdown duration test

Several criteria can be used to determine the optimal slowdown duration that can be adopted in estimating the model, including: the LR maximum probability ratio standard, the FPE final prediction error standard, the AIC standard, the Schwarz SC information standard, the Hanan

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and Queen HQ standard , and the optimal delay duration is determined based on the lowest value of most of the above criteria.

Table 10 Results of the tests of the proverbial slowdown periods of the military spending model and human development indicators

VAR Lag Order Selection Criteria						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	**588.3396**	**NA**	**7.65E-14**	**-1.88E+01**	**-18.7124**	**-18.7958**
1	**647.2421**	**108.3045**	**1.92E-14**	**-2.02E+01**	**-19.54744**	**-19.9642**
2	**649.0134**	**3.028389**	**3.06E-14**	**-1.98E+01**	**-18.5395**	**-19.2897**
3	**651.9873**	**4.700708**	**4.74E-14**	**-1.94E+01**	**-17.5704**	**-18.654**
4	**704.3146**	**75.95891**	**1.52E-14**	**-2.05E+01**	**-18.1933**	**-19.6103**
5	**96.5837***	**95.58175***	**2.60e-15***	**-22.34141***	**-19.4595***	**-21.20989***
*** indicates lag order selected by the criterion**				**AIC: Akaike information criterion**		
LR: sequential modified LR test statistic (each test at 5% level)				**SC: Schwarz information criterion**		
FPE: Final prediction error				**HQ: Hannan-Quinn information criterion**		

Source: Researcher preparation based on the outputs of the standard program (2Eviews1)

* Indicates the optimal sluggishness duration for all tests at a significant level (5%)

Through Table (10) it is noted that the optimal slowdown duration and based on the values of the criteria indicated in the table, the lowest values were recorded at the fifth slowdown period as well, through which the optimal description of the various interactions among the model variables can be provided, so that each of the variables included in the model is explained by its slowing value for five time periods, as well as the duration of the slowdown of other variables.

3.4.2 Results of the estimation of the self-regression vector (VAR)

After making sure that there is no common integration relationship between military spending and showing the human development indicators under study, so we will go to estimate the model of the self-regression vector to measure the interrelationship of military spending and human development indicators (spending on education, health and average per capita income) in the following table:

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Table 11 Results of the Estimate of the Vector Model (VAR) of the Shock of Military Expenditure on Human Development Indicators (Average Per Capita Income and Expenditure on Education and Health)

Vector Auto regression Estimates				
Sample (adjusted): 2005Q3 2020Q4				
Included observations: 62 after adjustments				
Standard errors in ( ) & t-statistics in [ ]				
	D(MS)	D(APCI)	D(SE)	D(SN)
D(MS(-1))	0.759371	-0.06454	0.053633	-0.02902
	-0.14135	-0.1213	-0.11627	-0.0911
	[5.37226]	[-0.53205]	[0.50128]	[-0.31854]
D(MS(-2))	0.007329	0.036246	0.001473	-0.00845
	-0.10553	-0.09055	-0.0868	-0.06801
	[0.06945]	[0.40027]	[0.01697]	[-0.12421]
D(MS(-3))	0.010544	0.002404	-0.0052	-0.00445
	-0.10623	-0.09116	-0.08738	-0.06847
	[0.09926]	[0.02637]	[-0.05949]	[-0.06505]
D(MS(-4))	-0.71071	0.033751	-0.00661	-0.04859
	-0.10476	-0.0899	-0.08617	-0.06752
	[-6.78418]	[0.37544]	[-0.07675]	[-0.71959]
D(MS(-5))	0.58395	-0.09119	0.056589	0.034497
	-0.11813	-0.10137	-0.09717	-0.07614
	[4.94309]	[-0.89957]	[0.58236]	[0.51309]
D(APCI(-1))	-0.02711	0.662761	0.136689	0.055818
	-0.28007	-0.24034	-0.23037	-0.18051
	[-0.09678]	[2.75764]	[0.59334]	[0.30923]
D(APCI(-2))	-0.0974	0.221229	0.014033	-0.02146
	-0.3068	-0.26327	-0.25236	-0.19774
	[-0.31747]	[0.84030]	[0.05561]	[-0.10854]
D(APCI(-3))	-0.00512	0.041002	-0.01912	-0.01536
	-0.31176	-0.26753	-0.25644	-0.20093
	[-0.01642]	[0.15326]	[-0.07455]	[-0.07644]
D(APCI(-4))	0.869024	-0.51432	0.061964	-0.08539
	-0.30624	-0.26279	-0.2519	-0.19737
	[2.83772]	[-2. 05714]	[0.24599]	[-0.43263]
D(APCI(-5))	-0.56845	0.323551	0.035258	0.181745
	-0.26104	-0.224	-0.21472	-0.16824
	[-2.17764]	[1.44441]	[0.16421]	[1.08028]
D(SE(-1))	0.24928	0.125567	0.764391	0.063103
	-0.31294	-0.26854	-0.25741	-0.20169
	[0.79658]	[0.46760]	[2.96958]	[0.31287]
D(SE(-2))	-0.09309	0.086958	0.17754	0.064307
	-0.31171	-0.26748	-0.2564	-0.2009
	[-0.29863]	[0.32509]	[0.69244]	[0.32010]
D(SE(-3))	-0.02449	0.033907	0.069037	0.036489
	-0.31434	-0.26975	-0.25856	-0.2026
	[-0.07791]	[0.12570]	[0.26700]	[0.18011]
D(SE(-4))	-0.75011	-0.60174	-1.29944	-1.03287

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	-0.31197	-0.26771	-0.25661	-0.20107
	[-2.40442]	[-2.24774]	[-5.06384]	[-5.13697]
D(SE(-5))	0.92637	0.528821	1.079305	0.978816
	-0.28094	-0.24108	-0.23109	-0.18107
	[3.29734]	[2.19351]	[4.67046]	[5.40574]
D(SN(-1))	-0.07407	-0.06431	-0.14465	0.685489
	-0.33351	-0.28619	-0.27433	-0.21495
	[-0.22210]	[-0.22471]	[-0.52728]	[3.18912]
D(SN(-2))	0.113742	-1.74E-01	-0.08799	0.021388
	-0.33968	-0.29149	-0.2794	-0.21892
	[0.33485]	[-0.59836]	[-0.31493]	[0.09770]
D(SN(-3))	0.017325	-0.04289	-0.02419	-0.0016
	-0.34309	-0.29442	-0.28221	-0.22113
	[0.05050]	[-0.14568]	[-0.08573]	[-0.00722]
D(SN(-4))	-0.30993	0.417409	0.641354	0.165788
	-0.33826	-0.29026	-0.27823	-0.21801
	[-0.91625]	[1.43803]	[2.30509]	[0.76047]
D(SN(-5))	-0.04637	-0.42648	-0.69894	-0.40627
	-0.30464	-0.26142	-0.25058	-0.19634
	[-0.15221]	[-1.63144]	[-2.78929]	[-2.06921]
C	-9.88E-05	1.45E-03	0.003308	0.003193
	-0.00428	-0.00367	-0.00352	-0.00276
	[-0.02311]	[0.39541]	[0.93996]	[1.15821]
R-squared	0.842036	0.684849	0.691951	0.7946
Adj. R-squared	0.76498	0.531116	0.541683	0.694405
Sum sq. resids	0.019165	0.014113	0.012967	0.007961
S.E. equation	0.021621	0.018553	0.017784	0.013934
F-statistic	10.92761	4.454812	4.604778	7.930523
Log likelihood	162.5613	172.048	174.6726	189.7964
Akaike AIC	-4.56649	-4.87252	-4.95718	-5.44504
Schwarz SC	-3.84601	-4.15+203	-4.2367	-4.72456
Mean dependent	0.008279	0.004756	0.014498	0.009609
S.D. dependent	0.044598	0.027095	0.026269	0.025207
Determinant resid covariance (dof adj.)	8.11E-16	Akaike information criterion		-22.3414
Determinant resid covariance	1.55E-16	Schwarz criterion		-19.4595
Log likelihood	776.5837	Number of coefficients		84

Source: Preparation of the researcher based on the outputs of the standard program (Eviews10)

The data of Table (11) showed that there are four equations shown in the form of columns, showing from the military expenditure equation that the estimated parameter of military spending is significant in the first slowdown period (MS(-1)) as the calculated value of (t) (5.372), and its insignificance in the period of second and third slowdown, while in the period of the fourth and fifth slowdown, the parameter of military expenditure was significant as the value of (t) calculated (4.943) at the fifth slowdown period (MS(-5)) At a level of significance (5%), and its insignificance to the variable of average per capita income and spending on education and spending on health during those periods, as there is a direct relationship at the

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period of the first slowdown (MS(-1)), as the increase in military spending by (1%) leads to an increase of (0.759%), and also at the fifth slowdown period there is a direct relationship (MS(-5)), as an increase of (1%) leads to an increase in military spending by (0.583%) This is the result of the security situation in the country.

As for the average per capita income parameter, it was significant at the first and fourth slowdown periods, the value of (t) calculated at the first slowdown period (APCI(-1)) was a ratio (t = 2.75764) at a significant level (5%), where the value of the regression parameter for the same slowdown period was 0.662761), i.e. the increase in average per capita income by (1%) leads to an increase of (0.662%), while the average per capita income parameter for military spending It was significant at the fourth and fifth slowdown periods, while the relationship of average per capita income in military spending was inverse in all periods of slowdown except for the fourth period and was direct, in the first slowdown period (APCI(-1))=-0.02711, i.e. the increase in average per capita income by (1%) leads to a decrease in military spending by (0.027%), while the relationship was direct in the fourth period 0.869024 = (APCI(-4)) That is, increasing average per capita income by (1%) leads to an increase in military spending by (0.869%).

While the teacher of spending on education was significant in the period of the first, fourth and fifth slowdowns, the teacher of decline to spend on education at the first slowdown period was 0.764391=(SE(-1)) with a positive signal, which indicates the direct relationship, i.e. increasing spending on education by (1%) leads to an increase of (0.764%), while the teacher of spending on education for military spending was significant in the period except for the fourth slowdown. The fifth is insignificant in the other periods, where its relationship was direct in military spending in the first and fifth periods and inverse in the second, third and fourth period, in the first slowdown period (SE(-1))=0.24928 the increase in spending on education by (1%) leads to an increase in military spending by (0.249%), while at the fifth slowdown period (SE(-5))= 0.92637, i.e. increasing spending on education by (1%) leads to an increase in military spending by (0.926%).

As for the health expenditure parameter, it is significant at the first and fifth slowdown periods, where the calculated value of (t) was (3.18912) at the first slowdown period at a significant level (5%), if the value of the regression parameter for spending on health for the same slowdown period (0.685489) and with a positive signal, which indicates the direct relationship of spending on health, that is, the increase in spending by (1%) leads to an increase of (0.685%), While the health expenditure parameter for military spending was insignificant in all periods of slowdown, while the relationship between health expenditure and military spending was inverse to the first and fifth slowdown periods, in the first slowdown period (SN(-1))=-0.07407, i.e. increasing health spending by (1%) leads to a decrease in military spending by (0.074%), while at the fifth slowdown period -0.04637=(SN(-5)) Increasing spending on health by (1%) leads to a decrease in military spending by 0.046%).

The high values of the R-squared coefficients of the model equations indicate that the explanatory variables explain a large part of the change in the dependent variable, while the statistic of the test (F), whose tabular value exceeds at a significant level (5%), indicates the

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significance of the self-regression model (VAR) used, which confirms the high explanatory ability of the model equations, as well as the low values of the standard error to estimate the equations of the model, The lower values of the Akaki standard (AIC) and the Schwarz standard (SC) that express the accuracy of the model used.

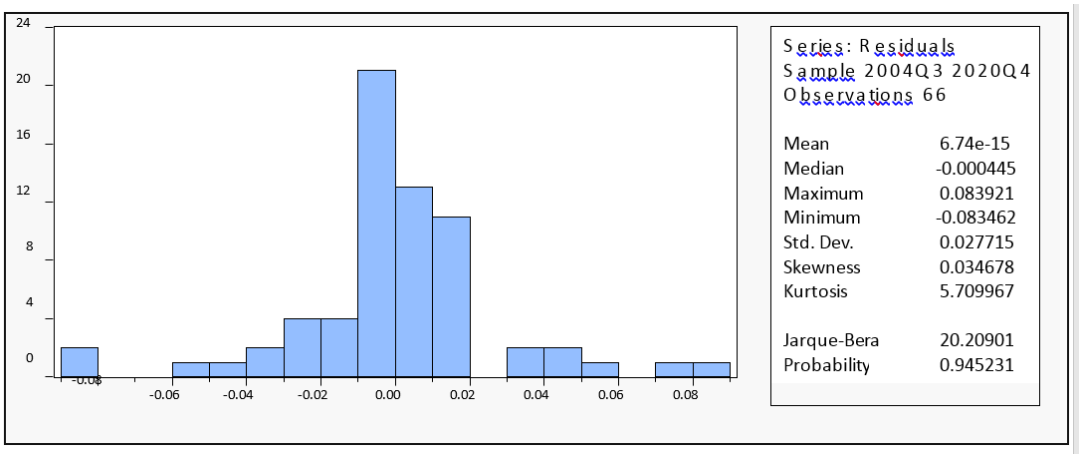
3.4.3: Results of Model Characterization Tests (VAR)

3.4.3.1: Test the normal distribution of the remnants of the model (VAR)

Figure 3.1 shows the results of the normal distribution test of the remnants of the VAR model where the Jark-Bira test (JB) was applied to test the normal distribution of the remnants of the polymorphic model (VAR).

Figure 4 shows the results of the test of the normal distribution of the remnants of the VAR model, it is noted through the data of the figure that the value of (JB) amounted to (20.2090) and based on the value of (Probability) of (0.945231) which is greater than (5%), which means that it is insignificant, which means accepting the null hypothesis and rejecting the alternative hypothesis and that the model does not suffer from the problem of normal distribution of residues, and this is desirable statistically.

Figure 4: Testing the normal distribution of the remnants of the VAR model of the Military Expenditure Index and Human Development Indicators (expenditure on education, health, average per capita income)



Source: Preparation of the researcher based on the outputs of the standard program (Eviews12)

3.4.3.2: Model stability test

When the VAR model is unstable makes some of the extracted results inaccurate, so you must make sure that the estimated results of this model are correct and ensure the stability of the model as the inverse roots test is tested, through Figure (5) it is clear that all the inverted roots fall within the circle of the unit with a value smaller than the correct one, whether for the military expenditure model and the Human Development Index or military spending with spending on education, health and average per capita income, It follows from this that the

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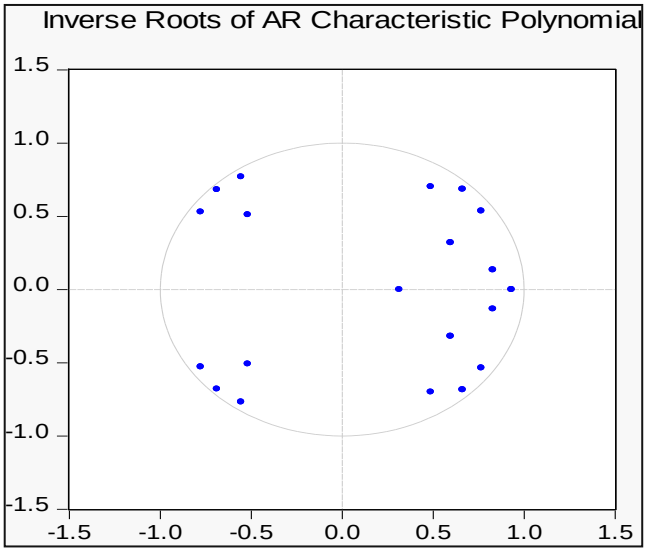
estimated model (VAR) meets the conditions of stability, that is, the estimated model is dynamically stable and this confirms that the model does not suffer from instability of variance.

Figure 5: Results of the Dynamic Stability Test of the VAR Model



Source: Preparation of the researcher based on the outputs of the standard program (2Eviews1)

3.5 Estimation of the SVAR Self-Regression Model

The structural self-regression model diagnoses the response to real shocks that occur in the study variables, after estimating the VAR model and testing its results in the paragraphs and the previous table that show the validity of its use in measuring the response to shocks in variables using the SVAR model and as in the table below:

Table (12) Results of the SVAR Structural Self-Regression Model for the Military Expenditure Index and Human Development Indicators (Expenditure on Education, Health, and Average Per Capita Income)

Structural VAR Estimates				
Sample (adjusted): 2005Q2 2020Q4				
Included observations: 63 after adjustments				
Estimation method: Maximum likelihood via Newton-Raphson (analytic derivatives)				
Convergence achieved after 11 iterations				
Structural VAR is just-identified				
Model: Ae = Bu where E[uu']=I				
A =				
1	0	0	0	
C(1)	1	0	0	
C(2)	C(4)	1	0	
C(3)	C(5)	C(6)	1	
B =				

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C(7)	0	0	0	
0	C(8)	0	0	
0	0	C(9)	0	
0	0	0	C(10)	
	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	0.302163	0.079316	3.80962	0.0001
C(2)	-0.18177	0.067536	-2.69141	0.0071
C(3)	-0.16682	0.047871	-3.48473	0.0005
C(4)	-0.86464	0.096714	-8.94017	0
C(5)	-0.27751	0.097787	-2.83792	0.0045
C(6)	-0.6538	0.084574	-7.73055	0
C(7)	0.029466	0.002625	11.22497	0
C(8)	0.01855	0.001653	11.22497	0
C(9)	0.01424	0.001269	11.22497	0
C(10)	0.009559	0.000852	11.22497	0
Log likelihood	676.4973			
Estimated A matrix:				
1	0	0	0	
0.302163	1	0	0	
-0.18177	-0.86464	1	0	
-0.16682	-0.27751	-0.6538	1	
Estimated B matrix:				
0.029466	0	0	0	
0	0.01855	0	0	
0	0	0.01424	0	
0	0	0	0.009559	
Estimated S matrix:				
0.029466	0	0	0	
-0.0089	0.01855	0	0	
-0.00234	0.016039	0.01424	0	
0.000913	0.015634	0.00931	0.009559	
Estimated F matrix:				
0.020618	-0.00086	-0.00253	-0.0055	
-0.01877	0.044526	-0.00935	-0.0212	
-0.00472	0.03315	0.025722	-0.0099	
0.004821	0.008942	0.018983	0.018757	

Source: Preparation of the researcher based on the outputs of the standard program (2Eviews1)

We note from table (12) above and from the parameters of matrix (A) that when a shock occurs in military spending this will lead to a positive effect on the index of average per capita income, since when a structural shock occurs in military spending by (1%), the index of average per capita income will increase by (0.3021%), which is significant at a significant level (Prob.≤ 0.05), and this increase is due to the fact that the bulk of military spending goes to salaries and wages of members of the armed forces, which constitute a significant percentage of what is not a small percentage of what It leads to an increase in average per capita income, but when a structural shock occurs in military spending by (1%), the index of spending on education will decrease by (0.1817%), which is significant at a significant level (Prob.≤ 0.05), while when a

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structural shock occurs in military spending by (1%), the index of spending on health will decrease by (0.1668%), which is significant at a significant level ((Prob.≤ 0.05). , This decrease in spending on education and health is due to the fact that when there is a shock in military spending, the bulk of allocations and tunnels go to the military side, which negatively affects educational and health spending, while the slowdown in military spending is shown by matrix (B), when a structural shock occurs in military spending by (1%), military spending in the following period increases by (0.0294%), and when a structural shock occurs in the index of average per capita income by (1%), the index will increase in the next period by (0.01855%, but when a structural shock occurs in the education spending index by (1%), the index will increase in the next period by (0.01424%), when a structural shock occurs in the health spending index by (1%), the index will increase in the next period by (0.009559%), which is significant at a significant level (Prob.≤ 0.05), as we can see from the probability value of (Chi-square).) It is larger than (5%) and this indicates that the model is correct and does not suffer from characterization problems.

CONCLUSIONS AND RECOMMENDATIONS

First: Conclusions: The research reached a set of conclusions represented by the following:

1. There is a general trend of increasing military spending in Iraq during the period of the research, and that the increase in military spending came due to the deterioration of the security conditions and the expansion of the government in increasing the numbers of security forces, salaries, weapons and military equipment.
2. It was clear from the standard model used in the research that there is no common integration relationship between the research variables according to the Johansen-Jesselius test, that is, there is no long-term relationship between military spending and some human development indicators (expenditure on education, health and average per capita income).
3. The results of the self-regression vector (VAR) showed an inverse relationship between military spending and the average per capita income index and a direct with spending on education and health at the fifth slow period, i.e. the increase in military spending by (1%) leads to a decrease in the value of the average per capita income index by (0.0911%) and an increase in the value of the indicators of spending on education and health by (0.0565%) and (0.0344%) respectively.
4. The results of the structural self-regression (SVAR) of the military spending shock showed a positive impact on the average per capita income index, as when a structural shock occurs in military spending by (1%), the average per capita income index will increase by (0.3021%), which is significant at a significant level (Prob.≤ 0.05), and a negative impact on the expenditure index on education and health, as when a structural shock occurs in military spending by (1%), the index of spending on education will decrease by (0.1817%), When a structural shock occurs in military spending by (1%), the health expenditure index will decrease by (0.1668%).

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Second: Recommendations

1. The need to plan tunnels on the military side of the size that secures its needs in the formation of a strong army capable of security from internal and external threats and that works to raise the efficiency of the educational and health reality and the standard of living in the country.
2. Supporting research and development projects in this sector, especially the military manufacturing sector, because of the job opportunities provided by this sector at all levels, as well as reducing the depletion of foreign currency by reducing imports of military equipment and ammunition.
3. There should be as transparent as possible about the files of arms and arms deals so that researchers and interested parties can know the size of the country's military spending and obtain data and information for the purposes of the study.
4. Optimal planning and not overspending in the long term, the standard model did not show if there is a relationship between the research variables, so optimal spending must be planned under the current economic conditions.

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