MEASUREMENT AND ANALYSIS OF THE MILITARY EXPENDITURE SHOCK ON THE HUMAN DEVELOPMENT INDEX (HDI) IN IRAQ USING THE STRUCTURAL AUTOREGRESSIVE VECTOR (SVAR)

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Abstract:

The research deals with measuring and analyzing the impact of the shock of public military spending on the Human Development Index (HDI) with great interest, especially in the field of economic development and ways to direct public spending, especially in a country like Iraq, where the volume of military spending reached (9915278) million dinars in (2015). The reason for this rise is due to the terrorist organizations' acquisition of large parts of Iraq's governorates, which drained many financial, economic and human resources in order to confront terrorist organizations, which necessitated more spending on the military sector, and the research reached a set of conclusions, including the model used in search, That there is no co-integration relationship between the research variables according to the Johansen-Jsselius test, that is, there is no long-term relationship between military spending and the Human Development Index (HDI), and there are five slow periods (time lag) in the short term. The results of the structural autoregressive vector (SVAR) also showed that the military expenditure shock has a negative impact on the Human Development Index (HDI).

Introduction:

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

Research Importance:

The importance of the research lies in being an attempt to measure and analyze the impact of the increasing military spending in Iraq and its reflection on the Human Development Index HDI, as well as the country's continuing need to develop its military and security capabilities as a result of the difficult circumstances the country is going through that require more spending on the sector The military in exchange for the deterioration of the economic and security conditions due to the conditions witnessed by the wars and the crisis of the Corona virus.

Problem Search: Research Problem

There is a controversy between military spending and the Human Development Index) HDI (as to whether that effect is positive or negative, or that the effect will be positive on human development and its indicator if military spending is directed towards increasing the level of safety in the country, meaning creating a safe environment that improves educational and health reality Raising the standard of living in the country, and vice versa if military spending is directed to other purposes, such as spending on wars and others.

Research Hypothesis:

The research stems from the premise that military spending is a natural result of the insecurity in the country and the increase in the threat level, which has a negative impact on the Human Development Index (HDI) in Iraq in light of the current conditions during the research period.

Research Objectives:

The research aims to clarify the concept of military spending, its determinants and implications for the Human Development Index (HDI) in Iraq, as well as using standard methods to determine the level of this impact on the Human Development Index during the research period.

Research Method

In order to achieve the goal of the research and test its hypothesis, the researcher relied on the method of integrating the descriptive analytical method for studying and analyzing military spending and the Human Development Index, as well as the quantitative standard (experimental) approach based on economic measurement to measure the relationship between military spending and the Human Development Index (HDI) in Iraq during the research period.

The first topic: the theoretical framework for military spending and the guide to human development (HDI)

1.1 The concept of military spending

Military spending in many countries is one of the most important components of the state's balance sheet. It has become a basic need for all countries of the developed and developing world alike, to achieve stability for various political, economic and social aspects. Economic thought has been concerned with the issue of military spending for two reasons (Al-Faris, 1993: 31)

First: How to finance the military institution during periods of peace and war and in a manner that achieves the optimal use of available resources without imposing additional burdens on society.

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

The definition that came from the International Monetary Fund is one of the most prominent definitions of military spending, as it is defined as "the total spending, whether it falls under

the defense item, or in other items, dedicated to maintaining military forces, including military purchases of ammunition and equipment, as well as for military construction Mobilization, training, equipping, transportation, food, clothing, and housing for the military, in addition to treatment and other services(Kadawi,1997:39-40).

However, the status of foreign military aid received is somewhat unclear in the IMF definition and whether or not it is included in requests from countries to the IMF, and military pensions are excluded from the IMF definition as a transfer payment, though When the burden of defense spending is calculated , the country will bear the burden of military pensions, so it is preferable to define the United Nations and the Stockholm International Peace Research Institute, which differentiates between the three functional categories, which are (manpower and operational elements, investment in weapons and current assets, and future investment) (Lamb & Kallab, 1992:4)

The Human Development Report for the year (2007-2008) defined military spending as all expenditures of the Ministry of Defense and other ministries on issues of military recruitment and teaching, in addition to building and purchasing military equipment. This item also includes military aid in the expenditures of the donor country(Human Development Report, 2007/2008 (353: and the Stockholm International Peace Research Institute defined military spending as "the data of defense budgets minus the value of foreign aid (Asfour, 1992: 7).

1.2 Economic motives for armament:

There are several motives for each country behind armament, they may be political, regional, economic or social motives, and the economic motives for the arms race are considered among the important motives, because of the link between military spending and economic motives, which are the main factor for the process of economic development and economic growth), (increase (51 : 2014 Among these factors are the following: (Muhammad, 2013: 91-92) (Casillo & Others, 2001: 51-57)

A. Protecting the national economy and the state's strategic natural resources and wealth.
B. Protecting the infrastructure, especially the industrial foundations, which are the cornerstone of the economic development process in the various economic sectors of the state.
C. Reducing the political pressures resulting from economic obstacles in the event that the country is exposed to that from any other country, as the state resorts to increasing armaments in quantity and quality, strengthening its military and defense capabilities, and getting rid of dependence on other countries.
D. Imposing economic hegemony through the imposition of military force, or economic influence. Therefore, increasing military spending has become a defensive necessity.
E. Increasing military spending and armaments for countries may sometimes be in order to seize energy and resources and not for defensive purposes.

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:

A. Encouraging local investment through economic stability, as military expenditures and their increase in the possibility of building a strong army capable of facing external threats and imposing security stability (Abdul Razzaq,2018: 471)

B. The military sectors are considered one of the largest economic sectors, as they attract a large part of research and development expenditures, and the scientific progress that occurs in the military field can be transferred to local industries, and this means that civilian industries can benefit from the applied results of advanced military research (The Beloved, 1997: 142-145) .

C. Military institutions play a prominent role in the development of basic infrastructure and facilities, as they contribute to the process of constructing roads, bridges, airports and other projects whose benefits can accrue to society as a whole)Ismail, 2002:468) .

D. Military spending supports effective demand, as most countries often tend to follow an expansionary policy in times of depression, including military spending, in order to move the economy according to the Keynesian theory, leading to an increase in the incomes of individuals in the military sectors, which will go in two directions. The first affects consumer spending, which in turn will stimulate Producers and then increase production, while the second is through saving and then investment, which also increases production, which leads to the operation of the idle resources in the country) Najm et al.,2021: 539) .

E. Increasing military spending, especially in the field of military industrialization, leads to an increase in production and thus a rise in the state's exports of military goods and equipment, which is the main source of foreign exchange for the country (Mohammed,2013: 104).

1.3.2 Negative effects of military spending:

A. Directing productive resources towards military institutions leads to a shortage in the supply of resources available 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 keeping the national product at a lower level than if added. Resources in productive sectors) Ismail, 2002: 466).

B. Military expenditures can contribute to an imbalance in the balance of payments by directing part of the resources available to society to buy weapons and advanced equipment from abroad, which leads to a reduction in the country's foreign exchange earnings and an increase in the balance of payments deficit by increasing military imports compared to exports)Haider,2018: 500).

C. Increasing military expenditures sometimes leads to a reduction in the process of growth and economic development, as the increase in military spending leads to the transfer of basic resources for economic development such as education, health and other services, or a reduction in financial expenditures for these sectors, which negatively affects the development process(Hilal,2015: 7) The crowding effect shows a demand for loans and hard currency and competition between the public and private sectors to borrow, which

crowds out the public sector and the private sector and often leads to an increase in the interest rate.

D. The crowding effect of military spending, as military institutions work to acquire investment resources away from the uses of private sectors, and the rise in military expenditures will generate inflationary pressures that will lead to raising costs, and reducing the effectiveness of spending on private investments(Al-Faris,1993: 240).

E. The effect of financing military spending on saving and investment through reallocating budget items, imposing new taxes or raising the applicable tax rates that lead to a reduction in disposable income, which will lead to a reduction in savings and an increase in the interest rate and its reflection on investment) Kadawi, 1997 (65-64:

1.4 Human Development Index (HDI):

Since the issuance of the first human development report in 1990 until now, the authors of this report have worked to find the best ways and methods to measure the level of human development at the regional and global levels alike, and they have come up with what is known as the Human Development Index) HDI), which consists of several indicators Some of them are economic, such as the average per capita share of gross domestic product, and others are social, such as education and health. Therefore, the human development index is a composite index of a set of economic and social indicators or measures. The human development index was developed to measure deprivation in various aspects of life for individuals and society. , whether it is social, represented by the life expectancy index at birth, and upper and lower limits have been set for this indicator. The upper limit is 85 years and the minimum is 25 years, as this indicator is related to the health aspect. The second indicator is related to the educational aspect, where it measures the level of education in the country. It consists of two indicators they are: the enrolment rate in primary, secondary and higher education, and the adult literacy rate. It has also set an upper and lower limit for this indicator, the minimum being zero percent. As for the upper limit, it is represented by (100%), and the third indicator is related to the income and standard of living of individuals, it is represented by the average per capita share of the gross domestic product. Also, upper and lower limits have been set for this indicator, which is a minimum of 100 dollars and an upper limit of 40,000 dollars. All of these three previous indicators are expressed in the Human Development Index (HDI)) Qudah, 2006: 26-25), and the previous indicators and their values can be clarified through Table (1).

Table (1) the upper and lower limits of the indicators of the Human Development Index

minimum	the highest rate	pointer
25 years	85 years	Life expectancy at birth
0 %	100 %	Literacy rate
0 %	100 %	Enrollment rate in basic and secondary education
100	40,000	Average per capita GDP (dollars(

Source: Prepared by the researcher based on the information provided in the previous paragraph.
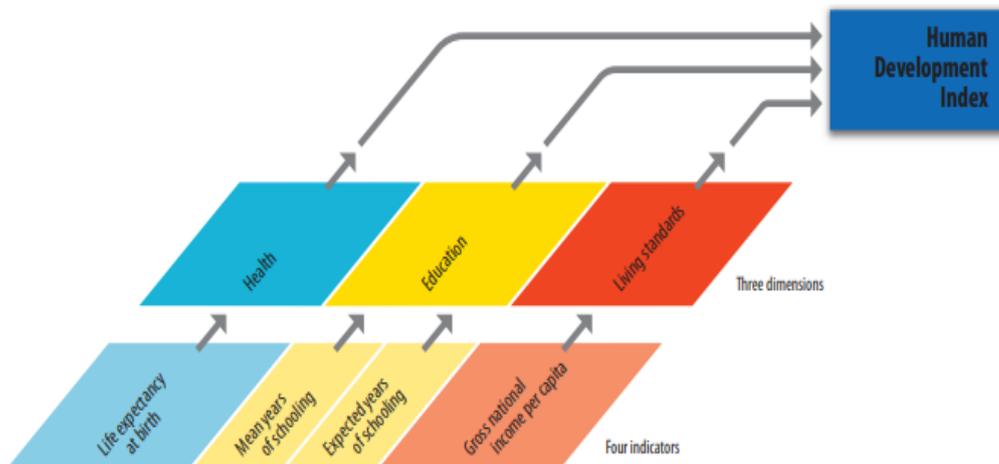
1.4.1 Calculating the Human Development Index:

The Human Development Index consists of three indicators: the health indicator, the education indicator, and the income indicator. Here are the mathematical formulas for these indicators.

(Human Development Index HDI) = 1/3(Health Index) + 1/3(Education Index) + 1/3(Income Index)

And by evaluating the Human Development Index, setting the values of those indicators and performing the mathematical operations for them, we get the value of the Human Development Index (HDI), which ranges between zero and the correct one (Todaro and Smith, 2012:48-49).

Figure (1) shows the indicators of the Human Development Index

Source: Prepared by the researcher based on: United Nations Development Program, Human Development Report 2010, 13

1.4.2 Levels of the Human Development Index:

There are four levels of the Human Development Index, according to which countries are classified according to the Human Development Report 2020 There is a very high development in which the value of the index is more than (0.804) or more, and there is a high human development in which the value of the index ranges between) 0.803) to (0.703), and there is a medium human development in which the value of the index ranges between(0.702) to (0.554), There is low development in which the value of the index is less than) 0.553),(Human Development Report, 16:2020).

Table (2) minimum and maximum levels of the human development index

the highest rate	minimum	Directory level
1	0.804	Very high human development
0.803	0.703	high human development
0.702	0.554	average human development
0.553	0	low human development

Source: Prepared by the researcher based on the United Nations Development Program, Human Development Report 2020, an overview, Human Development Evidence, 16.

The second topic: Military spending and the guide to human development in Iraq.

2.1 The reality of military spending in Iraq:

The reality of military spending in Iraq (2003) Iraq fought many wars in order to restore its sovereignty and take possession of its lands, which led to the depletion of large economic resources to support its military position, which led to the interest of governments in this sector and the allocation of a large part of public budgets to all institutions of a security nature And the military, as well as the external threats to countries that push to prepare armies and buy weapons and military equipment in addition to paying the salaries of members of the armed forces and others in order to secure and fortify the country from external aggression, and maintaining national security requires an increase in spending on armies and armament and the like. Because security is of great importance, and this importance was addressed by most of the intellectual schools, and the classical school was the first to emphasize this type of spending.

During the post-2003 era, there was an increase in military spending, while the year) 2004 (recorded (1731369) million dinars with a relative importance of (5.39%) for the same year, and this increase in military spending during that period was attributed to spending on Reorganization and restructuring of the Iraqi army after the US occupation in (2003) of armament, recruitment and others.... As for the years (2010-2012), military spending witnessed a noticeable decrease, and this decrease was attributed to the improvement and security stability that Iraq witnessed during that period, but during the years (2013-2015) military spending witnessed a significant increase to reach) 5774676(million dinars in (2013(,with a change rate of %) 86.93(and a relative importance of %) 5.40, (while this increase in military spending is attributed to the poor security conditions and the acquisition of Terrorist gangs (ISIS) spread in many areas of the country, but during the period (2016-2020), they witnessed a fluctuation in the values of military spending depending on the security situation and the accompanying liberation and restructuring of the army and others..., to record an amount of) 7712603(million dinars and a rate of change of %)1.69(and with a relative importance of %) 10.14(in the year (2020), and the figure below shows the percentages of change in military spending to public spending and the human development index:

Figure (2) Annual change rate of military and public spending and the Human Development Index) HDI (in Iraq for the period (2004-2020)
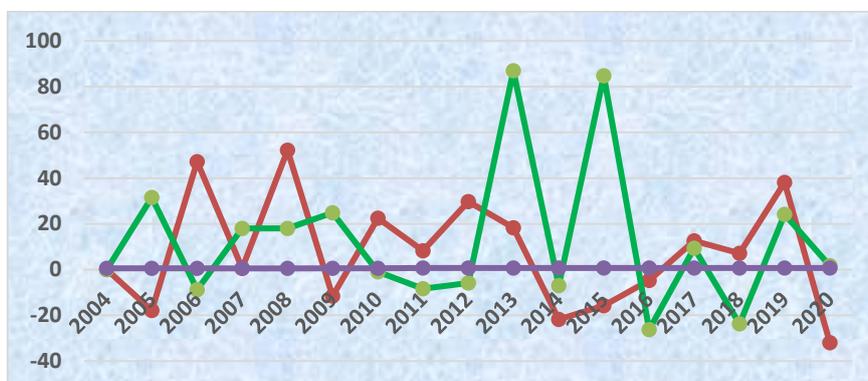
O: The rate of change in public spending
O: Military spending change rate
O: HDI

2.2 Values of the Human Development index and its basic components

The Human Development Index consists of three main indicators, including: the life expectancy indicator at birth, which reflects the health dimension in the values of the guide, and the education indicator, which consists of two indicators: the enrolment rate in basic and secondary education and the literacy rate, which express the education dimension in the values of the index and the average indicator. Per capita GDP, which reflects the economic and livelihood reality in the values of the Human Development Index, and Iraq is classified within the group of countries with medium development, in which the value of the index ranges between) 0.702 (and) 0.554 (according to the classifications contained in the report of the Human Development Index for the year) 2020 (, and the values of the Human Development Index in Iraq and its basic components can be clarified through the following table:

Table (3) Values of the Human Development Index in Iraq for the period (2004-2020)

Human Development Index values	the years	Human Development Index values	the years
0.657	2013	0.521	2004
0.654	2014	0.552	2005
0.649	2015	0.515	2006
0.668	2016	0.512	2007
0.685	2017	0.512	2008
0.689	2018	0.565	2009
0.692	2019	0.567	2010
0.674	2020	0.648	2011
		0.654	2012

Source: From the researcher's work based on the United Nations Development Program, Human Development Reports for the period (2004-2020)

The evolution of the Human Development Index can be illustrated by the following figure:

Figure (3) Values of the Human Development Index in Iraq for the period (2004-2020)
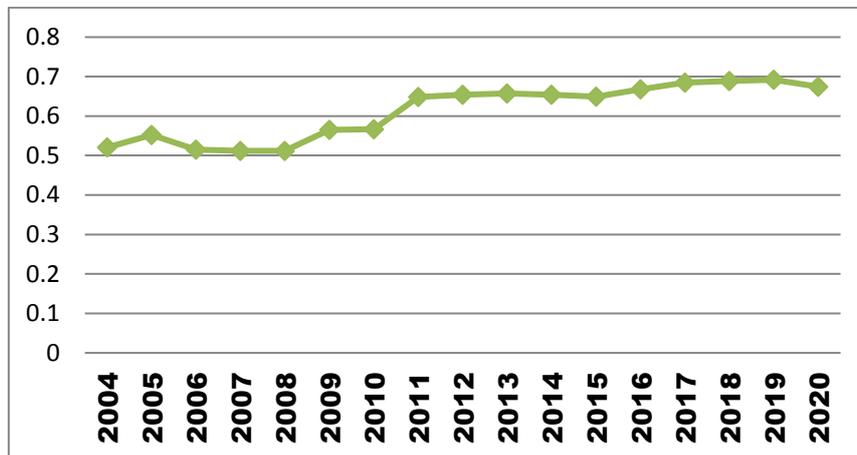
Source: Prepared by the researcher based on the data in Table (3).

It is clear from Table (3) and Figure (3) that there is a noticeable improvement in the value of the Human Development Index during the research period, and this improvement is the result of the improvement of all components of the Human Development Index.

The third topic: the results of measuring and analyzing the relationship between military spending and the Human Development Index (HDI)

3.1 Model Description

The standard model represents the sum of the economic relations between the variables of the study, and this stage is considered one of the most important and difficult stages for building the standard model, because it requires determining the variables contained in the model. During which the parameters of the study are measured and then interpreted and presented as an economic problem in a standard framework.

A set of variables indicated in the analytical aspect of the study was relied upon in order to determine the interrelationships between them, and) Eviews (12 program will be used to measure whether there is a relationship between military spending and the Human Development Index) HDI), as the study model was described based on the theoretical aspect. Through the following equation:

$$MS = f (HDI)$$

As (MS) represents the independent variable military spending, (HDI) represents the values of the Human Development Index, which expresses the three indicators (education, health and standard of living) the dependent variable.

Table (4) Study variables and used symbols

its type	his code	variable name in english	The variable name is in Arabic	T
independent	MS	Msitary Spending	military spending	1
Follow	HDI	Human Development Index	human development guide	2

Source: Prepared by the researcher

3.2 Silence test results

3.2.1 Phelps-Beron test results

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

Table (5) the results of the Philips-Beron test at the original level

At Level		HDI	MS
With Constant	t-Statistic	-1.3916	-1.8161
	Prob.	0.5744	0.3665
		n0	n0
With Constant & Trend	t-Statistic	-1.5558	-2.5155
	Prob.	0.7887	0.3191
		n0	n0
Without Constant & Trend	t-Statistic	1.2801	3.3999
	Prob.	0.9459	0.9996
		n0	n0

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

To address the unit root problem, the first difference (First Difference) of the time series data is taken, through (6) it appears that the probabilistic value has become less than (0.05), and thus the null hypothesis that states the existence of the unit root problem cannot be accepted and the alternative hypothesis that It states that there is no unit root problem, since the time series data for variables are stable and integrated of the first order (1).

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

At First Difference		d(HDI)	d(MS)
With Constant	t-Statistic	-3.6299	-5.4385
	Prob.	0.0106	0.0001
		**	***
With Constant & Trend	t-Statistic	-3.5627	-5.4328
	Prob.	0.0495	0.0006
		**	***
Without Constant & Trend	t-Statistic	-3.7421	-4.3354
	Prob.	0.0005	0.0001
		***	***

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

3.2.2 Dickey Fuller Extended Test Results

To make surer of the stability of the time series under study, we use a second important test, which is the expanded Dickey-Fuller test, and its results are as in the two tables below:

Table (7) Expanded Dickey-Fuller Test Results at Original Level

At Level		HDI	MS
With Constant	t-Statistic	-1.0614	-0.9606
	Prob.	0.7176	0.7541
		n0	n0
With Constant & Trend	t-Statistic	-2.2223	-2.5454
	Prob.	0.4609	0.3059
		n0	n0
Without Constant & Trend	t-Statistic	0.452	1.0169
	Prob.	0.806	0.9146
		n0	n0

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

From the above table, we note that all data for the study variables are not stable at the original level, for time series data.

Table (8) Results of the expanded Dickey-Fuller test at the first difference

At First Difference		d(HDI)	d(MS)
With Constant	t-Statistic	-2.0238	-2.5673
	Prob.	0.2756	0.1107
		***	**
With Constant & Trend	t-Statistic	-2.1152	-2.5227
	Prob.	0.517	0.3157
		**	**
Without Constant & Trend	t-Statistic	-2.1411	-2.3651
	Prob.	0.0331	0.0197
		**	**

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

After taking the first difference) First Difference (of the time series data, it was found that the problem has been addressed and that the time series of the variables are stable and there is no unit root at the first difference. After obtaining the stability of the time series of the model variables represented by military expenditure and the Human Development Index) HDI(in logarithmic format, using the Phelps-Perron test)PP(and the Dickey Fuller test)ADF(and identify the degree of integration of these series for the variables used, as the series are integrated of the first order (1) 1 at the level of significance (5%), meaning that the variables are stable at the first difference, which means the possibility of applying co-integration tests.

3.2.3 Results of the Johansson-Jeselius Cointegration Test

After obtaining the stability of the time series of the model variables and identifying the degree of integration of the variables used and knowing their integration of the first order (1), so we can test the co-integration through the Johansen & Juselius test to test the existence of a long-term equilibrium relationship between the model variables, which It is required that the time series data be integrated of the same order. If the test results show that there is no co-integration between the model variables, the proposed model for estimation is (VAR) and (SVAR). Through Table (9) it can be seen that the results of the Johansen-Jeselius test, which includes the impact test) F-statistic(for the relationship between military spending and the (HDI) index, and the results showed that the value of the F test reached (1.304), which is less than the upper limits at the level of morale %, and based on this, we reject the alternative hypothesis that confirms the existence of joint integration, and accept the null hypothesis that states that there is no joint integration, and it is inferred from this test that there is no long-term equilibrium relationship between military spending and the Human Development Index (HDI), so we will go to a model Autoregressive vector (VAR) and structural vector (SVAR).

Table (9) results of the Johansen-Jeselius cointegration test

F-Bounds Test	Null Hypothesis: No levels relationship			
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	1.304036	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.50%	4.18	4.79
		1%	4.94	5.58

Source: Prepared by the researcher based on the outputs of the standard program) Eviews12)

3.3 Autoregressive Vector Model Estimation (VAR)

3.3.1 Optimum deceleration test

Several criteria can be used to determine the optimal deceleration period that can be adopted in estimating the model, and these criteria are: the LR criterion, the final prediction error criterion) FPE (the Akaik criterion AIC, the Schwarz information criterion SC, the Hanan and Queen HQ criterion, and the optimal deceleration period is determined based on the lowest value For most of the above criteria.

Table (10) results of tests of the optimum deceleration periods of the military spending model and the HDI index

VAR Lag Order Selection Criteria					
Lag	LogL	LR	FPE	AIC	SC	HQ
0	300.7637	NA	1.91E-07	-9.79553	-9.72632	-9.76841
1	315.3786	27.79233	1.35E-07	-10.1436	-9.93593	-10.0622
2	315.5862	0.38123	1.53E-07	-10.0192	-9.67318	-9.8836
3	317.3663	3.151531	1.65E-07	-9.94644	-9.46197	-9.75657
4	353.5494	61.68928	5.74E-08	-11.0016	-10.3787	-10.7575
5	374.7545	34.76242*	3.28e-08*	-11.56572*	-10.80442*	-11.26736*
* 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: Prepared by the researcher based on the outputs of the standard program (Eviews12)

* Indicates the optimal deceleration period for all tests at the level of significance (5%)

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

3.3.2 The results of the estimation of the autoregressive vector (VAR).

After making sure that there is no co-integration relationship between military spending and each of the)HDI(and other human development indicators under study, we go to estimate the autoregressive vector model to measure the shock of military spending in each of the Human Development Index) HDI(in the table below :

Table (11) Results of Vector Model Estimation (VAR)

Vector Auto regression Estimates		
Sample (adjusted): 2005Q4 2020Q4		
Included observations: 61 after adjustments		
Standard errors in ( ) & t-statistics in [ ]		
	D(MS)	D(HDI)
D(MS(-1))	0.612721	-0.07499
	-0.14556	-0.03876
	[4.20935]	[-**3.99733**]
D(MS(-2))	0.109906	-0.0102
	-0.1484	-0.03952
	[0.74060]	[-0.25805]
D(MS(-3))	0.018216	-0.00118
	-0.08364	-0.02227
	[0.21781]	[-0.05311]
D(MS(-4))	-0.85507	0.006857

	-0.08363	-0.02227
	[-10.2240]	[0.30790]
D(MS(-5))	0.511244	-0.00704
	-0.14894	-0.03966
	[3.43251]	[-0.17745]
D(HDI(-1))	-0.06636	0.687009
	-0.54693	-0.14564
	[-0.12133]	[4.71723]
D(HDI(-2))	-0.08465	0.135313
	-0.59992	-0.15975
	[-0.14110]	[0.84705]
D(HDI(-3))	-0.02296	0.03835
	-0.44424	-0.11829
	[-0.05168]	[0.32420]
D(HDI(-4))	-0.69272	-0.76596
	-0.44441	-0.11834
	[-1.55875]	[-6.47269]
D(HDI(-5))	0.387677	0.501051
	-0.62183	-0.16558
	[0.62345]	[3.02603]
C	0.005229	0.000793
	-0.00442	-0.00118
	[1.18401]	[0.67462]
R-squared	0.762359	0.627729
Adj. R-squared	0.702949	0.534661
Sum sq. resids	0.028832	0.002044
S.E. equation	0.024508	0.006526
F-statistic	12.83211	6.744859
Log likelihood	146.9881	227.7034
Akaike AIC	-4.39305	-7.03946
Schwarz SC	-3.94319	-6.5896
Mean dependent	0.008252	0.001785
S.D. dependent	0.044967	0.009567
Determinant resid covariance (dof adj.)		2.54E-08
Determinant resid covariance		1.57E-08
Log likely		374.9021
Akaike information criterion		-11.4394
Schwarz criterion		-10.5397

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

We note from the results of the above table (11) that there are two equations illustrated in the form of columns. It is clear from the military spending equation that the military spending parameter is significant at the first slowdown period, as the value of the military spending parameter with one time lag was 0.6127 = (MS(-1) that is, that An increase in military spending by (1%) leads to an increase in it by%) 0.6127), and the calculated value of) 4.209= t(showed the significance of the estimated parameter at the level of significance (5%), as well as significant at the fourth and fifth slowdown period and its insignificance at the second slowdown period. And third, the parameter of the military expenditure index in relation to the

Human Development Index)HDI(was significant for the same period of the first slowdown, and the value of the regression parameter was) -0.07499 (with a negative sign indicating the inverse relationship of military spending in the Human Development Index)HDI(, that is, the increase in military spending By (1%) leads to a decrease in the index by (0.07499 %) , and the parameter was significant through the value (3.997 = t) calculated at the level of significance (5%), while in the fifth slowdown period (MS (-5)) , the change of Military spending by (1%) leads to a decrease in the value of the) HDI(index by (0.007 1%), and the value of (t = 3.43251)was at a significant level (5%(.

As for the parameter of the Human Development Index) HDI(was also significant at the first, fourth and fifth slowdown periods, as the value of the regression parameter for the) HDI(at the first slowdown period was 0.687009 = (HDI(-1)) , meaning that the increase in the value of the HDI is By (1%) leads to an increase in)HDI (by (0.687%), and the parameter was significant through the value of (4.717 = t) calculated at the level of significance (5%(.

Also, at the fifth slowdown period = (HDI (-5)), as the value of the regression parameter of the (HDI) index is (0.501051), meaning that an increase in the value of the) HDI) index by (1%) leads to an increase of it by (0.501%), while the parameter The Human Development Index) HDI (for military expenditures is not significant during those periods. The relationship was inverse in the duration of the first four slowdowns and direct at the fifth slowdown period. When the first slowdown period, the value of the regression parameter was -0.06636 = (HDI(-1)) with a sign Negative evidence indicates the inverse relationship of the Human Development Index) HDI(in military spending, meaning that an increase in the value of(HDI) by (1%) leads to a decrease in military spending by (0.066%), while at the period of the fifth slowdown, the value of the regression parameter reached = 0.387677 (HDI (-5)) with a positive sign indicates the direct relationship between the)HDI (index and military spending, meaning that an increase in the value of the) HDI) index by (1%) leads to an increase in military spending by (0.387%).
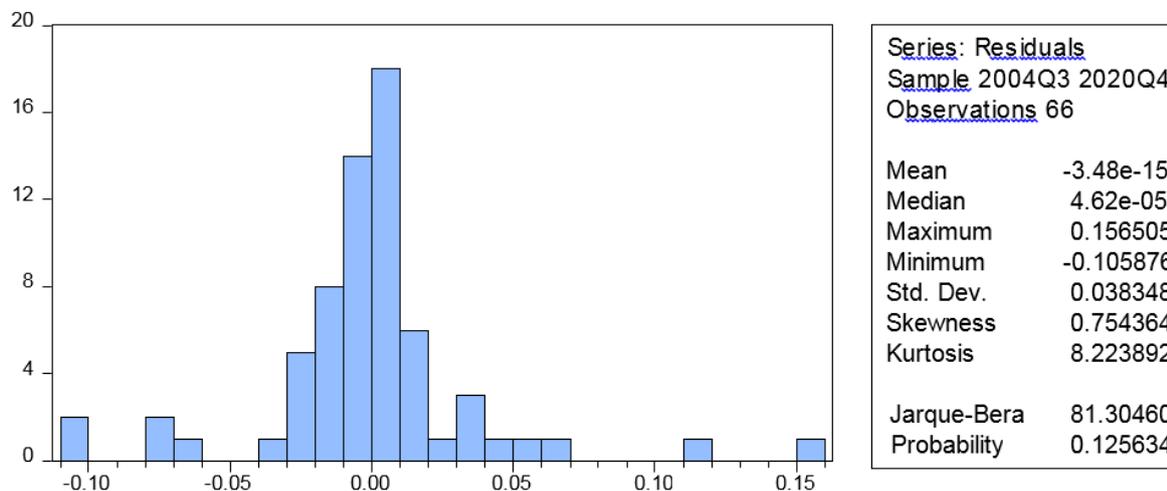
The value of the coefficient of determination of the estimated model reached (R^2=0.762), meaning that the military expenditure parameter explains 76% of the change in the human development index) HDI) in Iraq.

3.4 The results of the characterization tests for the (VAR) model.

3.4.1Test the normal distribution of residuals of the (VAR) model

Figure (4) shows the results of the normal distribution residuals test for the (VAR) model, as the Jark-Bira (JB) test was applied to test the normal distribution of residuals of the multiple equations model (VAR).

Figure (4) Normal distribution test for residuals of the (VAR) model

| Series: Residuals	
Sample 2004Q3 2020Q4	
Observations 66	
Mean	-3.48e-15
Median	4.62e-05
Maximum	0.156505
Minimum	-0.105876
Std. Dev.	0.038348
Skewness	0.754364
Kurtosis	8.223892
Jarque-Bera	81.30460
Probability	0.125634

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

This test is conducted based on the significance of the value of the Jarque-Bera test , which states that the null hypothesis is accepted, meaning that the residuals are distributed normally, in contrast to the alternative hypothesis which states that the residuals are not distributed normally)Khalaf,2015: 125) . Through the data of Figure (5), the value of) JB) reached (81.3046) and based on the value of) Probability) of (0.125634) which is greater than (5%), meaning that it is not significant, and this means accepting the null hypothesis and rejecting the alternative hypothesis and that the model does not suffer from a problem The normal distribution of residuals.

3.4.2 Model stability test

When the) VAR) model is unstable, it makes some of the extracted results inaccurate, so it is necessary to ensure the correctness of the estimated results for this model and to ensure the stability of the model where the Inverse Roots Test is tested , through Figure (5) it becomes clear that all the inverse roots It is located within the unit circle with a value smaller than the correct one for both the military spending model and the human development index, and it is inferred from this that the estimated model)VAR(meets the conditions of stability , meaning that the estimated model is dynamically stable, and this confirms that the model does not suffer from instability of variance.

Figure (5) the results of the dynamic stability test for the (VAR) model

Inverse Roots of AR Characteristic Polynomial
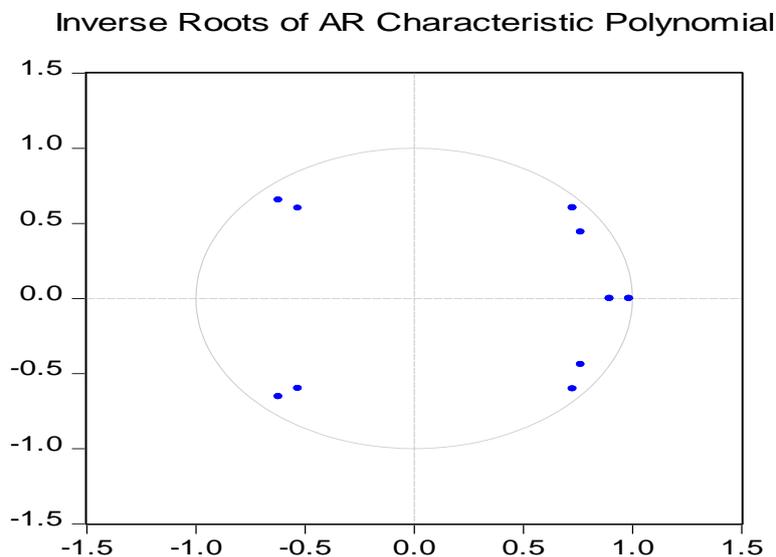
Source: Prepared by the researcher based on the outputs of the standard program (Eviews12)

3.5 Structural Autoregressive Model Estimation SVAR

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

Table (12) results of the structural autoregressive model SVAR

Structural VAR Estimates				
Sample (adjusted): 2005Q4 2020Q4				
Included observations: 61 after adjustments				
Convergence achieved after 12 iterations				
Structural VAR is just-identified				
Model: Ae = Bu where E[uu']=I				
A =				
1	0			
C(1)	1			
B =				
C(2)	0			
0	C(3)			
	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	-0.022088	0.033976	-0.650098	0.0172
C(2)	0.024508	0.002219	11.04536	0
C(3)	0.006504	0.000589	11.04536	0
Log likelihood	360.2821			
LR test for over-identification:				
Chi-square(1)	0.247865		Probability	0.624
Estimated A matrix:			Estimated S matrix:	
1	0		0.024508	0
-0.022088	1		-0.00054	0.006504
Estimated B matrix:			Estimated F matrix:	
0.024508	0		0.04863	-0.01505
0	0.006504		-0.00431	0.017806

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

We note from the above table (12) and from the parameters of the matrix (A) that when a shock occurs in military spending, this will lead to a negative impact on the human development index in Iraq (HDI), as when a structural shock occurs in military spending by (1%), the index Human development will decrease by %)0.022), which is significant at a level of significance (Prob. ≤ 0.05). As for the slowdown in military spending, it is indicated by the matrix) B(When a structural shock occurs in military spending by (1%), military spending in the following period increases by %)0.0245(, and when a structural shock occurs in the Sustainable Human Development Index) HDI(by (1%), the indicator will increase in the following period by%) 0.0065(, which is significant at a significant level (Prob.≤ 0.05) , as we note from the probability value (Chi-square) It is greater 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, as follows:

1) There is a general trend of an increase in military spending in Iraq during the research period, and that the increase in military spending came due to the deteriorating security conditions and the government's expansion in increasing the number of security forces, salaries, weapons and military equipment.

2) It became clear through the standard model used in the research that there is no co-integration relationship between the research variables according to the Johansen-Jsselius test, that is, there is no long-term relationship between military spending and the Human Development Index (HDI).

3) The results of the autoregressive vector (VAR) showed an inverse relationship between military spending and the human development index (HDI), meaning that an increase in military spending by (1%) leads to a decrease in the indicator by (0.0071%), at the fifth slowdown period.

4) The results of the structural autoregressive vector (SVAR) of the military spending shock showed a negative impact on the Human Development Index) HDI, (as when a structural shock occurs in military spending by (1%), the human development index will decrease by (0.022%).

Second: Recommendations

1) The necessity of planning the tunnels on the military side to a size that secures its needs in forming a strong army capable of protecting security from internal and external threats.

2) Supporting research and development projects in this sector, especially the military manufacturing sector, because this sector provides job opportunities at all levels, as well as limiting the depletion of foreign currency by reducing imports of military equipment and ammunition.

3) The need for there to be as transparent as possible about the files of arms and armaments deals so that researchers and those interested can know the size of the country's military spending and obtain data and information for the purposes of the study.

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