MEASURING THE LONG-TERM EQUILIBRIUM RELATIONSHIP BETWEEN PHYSICAL CAPITAL, SPENDING ON EDUCATION, AND ECONOMIC GROWTH IN JORDAN FOR THE PERIOD (1985-2020)

A.P.D. Mokheef Jassim Hammad, Tikrit University
T. Mohammed Salman Jassim, Al-Nahrain University
T. Jamal Hussein Ali, Tikrit University

ABSTRACT

Production management became an outlet for states; To achieve the desired goals, and given that the field of production has a wide scope to include several functions and techniques related to production in all its forms, and the productivity of production factors represents one of the methods used in evaluating the production process in any economic activity, there are several elements that contribute to production, and the most important of these elements is the element Work and the capital element, the importance of the research lies in the necessity of explaining the role of changes in physical capital and spending on education in changes in the gross domestic product and the important and clear effects these indicators generate on improving the productivity of capital elements, which in turn contributes to economic growth, The research aims to measure the annual changes of both physical capital and spending on education and their impact on changes in GDP. The statistical results concluded that physical capital and spending on education explain about (99%) of changes in GDP in Jordan, and the estimated model Significantly highly, where the value of the calculated amounted to (2695,173), so it is necessary to stand behind the increase in expenditure rates on education and increase the material capital in order to increase productivity and thus increase the GDP.

Keywords: Physical Capital, Human Capital, Economic Growth

INTRODUCTION

Production management has become an outlet for states; To achieve the desired goals, and given that the field of production has a wide scope to include several functions and techniques related to production in all its forms, and the productivity of production factors is one of the methods used in evaluating the production process in any economic activity, there are several elements that contribute to production, and the most important of these elements is the element Labor and the capital element, and productivity can be measured more easily than the rest of the other elements. On the other hand, there is the possibility of changing its productivity by making differences related to (adequacy, skill, and working hours, and production factors are the elements through which the production process is evaluated), It shows the extent to which each of these factors contributes to the production process over other factors, and work to increase the volume of production by using a mixture of production factors according to a systematic technical method, and trying to find a combination or relationship between inputs and outputs, not to mention that the change in production volume depends on the change of these factors. Factors, and accordingly this study came to estimate the productivity of the factors of production in the Jordanian economy by analyzing the changes in the factors of production and linking them with changes in the gross domestic product.

The Importance of the Research

The importance of the research lies in the necessity of explaining the role of changes in physical capital and spending on education in changes in the gross domestic product and the clear effects these indicators generate on improving the productivity of capital elements to increase economic growth.

Research Problem

Most of the developing countries, including Jordan, suffer from the problem of weak productivity of the factors of production, labor and capital, especially labor, which weakens the role of production in increasing the growth rates of GDP.

Research Hypothesis

The research is based on the hypothesis that the material capital and spending on education, which raises the capabilities of the labor element, and these as production factors have positive effects in increasing productivity and thus increasing the rates of GDP growth in Jordan.

Search Limits

- Spatial boundaries: The Hashemite Kingdom of Jordan.
- Temporal limits: The series in which the research was conducted is (1985-2020).

Research Objective

The Research Aims to Identify

1- Measuring the annual changes of physical capital and spending on education and their impact on changes in the gross domestic product.
2- Standing on the research hypothesis by measuring the effect of the factors of production, labor and capital, in increasing the growth rates of the gross domestic product.

RESEARCH METHODOLOGY

The research is based on quantitative in determining the relationship between physical capital, expenditure on education and GDP in Jordan.

Research Structure

For the purpose of achieving the goal of the research and reaching its hypothesis, the research was divided into two axes. Expenditure on education and GDP in Jordan and subjecting that relationship to statistical tests and economic analysis.

THE FIRST TOPIC
THEORETICAL FRAMEWORK FOR FACTORS OF PRODUCTION AND ECONOMIC GROWTH

The First Trend: The Concept of Spending on Education

At the outset, it is necessary to address the concept of human capital as the goal of spending on education is knowledge, skills, capabilities, capabilities, qualities and characteristics inherent in individuals and that are related and related to economic activity. To the extent that individuals can productively use everything they learn and what they possess related to economic activity, and it is an intangible asset within the capacity of the organization

and supports and enhances productivity, creativity and innovation processes, and the processes of employing employees to better operate, and it varies from one organization to another, as it may be abundant and abundant in an organization and may Witnesses a state of weakness and decline in another organisation,It is a form of the organization's capital, which is formed in it through multiple influences and through a variety of sources, and this includes the educational activities of the organization and takes multiple forms, including education, training, knowledge, skills, abilities, capabilities, qualities and other characteristics, which unite with each other in different forms depending on the nature of individuals and the scope of use. (Najjar, 2004) It is the set of assets that the individual brings with him, such as education, training in previous jobs, age, professional experience, and others. It is collectively and cumulatively called human capital.

The human view of the concept of spending on education has varied and varied, and this diversity and variance is due to many reasons, including the extent of the strength or weakness of the countries' economies, as well as the citizen's own view and appreciation of the value of education. And there is a difference and disparity in the concept of spending, and this difference emerged about its concept due to the difference in its nature and function and the role of those who deal with this concept, whether that is from politicians, economists or education experts. Hardship is what it costs on hardship, what it costs in terms of a matter in a vice, meaning by spending in education: current expenses on education, and all that is spent on education as an investment project. The institutional level is the total expenditures of the institution from the appropriations allocated to it to obtain the economic resources necessary to perform the service.

He defined it (Morsi, 1993) that expenditure is the current expenditure on education as well as what is spent on education as an investment project.

And (Adam, 2016) defined it as the total expenditures of the institution from the appropriations allocated to it to obtain the economic resources necessary to perform the service.

And (Falih, 2006) defined it as spending, where he defines it as the total value of all the resources available for education, whether by the state or by other institutions or by individuals, whether it is matched by actual spending or not.

It is concluded from this that all definitions have a holistic view of the concept of spending on education, as it included all material expenditure banks, as well as everything related to human aspects and their educational effort, as it is known that the higher the percentage of spending and it was appropriately directed, the reflected in the improvement of education.

Factors Affecting Expenditure on Education

There are a number of factors that affect the size and value of educational costs, including:

1. Social demand for education: The number of students who seek to enroll in educational institutes, and those who work to remain in it and continue in education, reflect the social demand for education in society. Perhaps the increase in social demand for education makes it necessary to increase the financial allocations for education to accommodate this increasing demand. The statistics of the World Bank indicate that the proportion of those enrolled in education is much higher in developed countries than in developing countries.

2. The burdens of the educational system: Education in Arab countries faces a number of problems related to buildings, equipment, teachers, curriculum, and so on. It is natural that Arab countries, with the increase in educational burdens, face problems in these educational elements, and statistics indicate that 38% of educational buildings are unfit for use, and the educational system in Arab countries faces the problem of students dropping out, in addition to the high prices of educational services, and the increase in inflation rates. Economic activity that increases prices and increases the volume of unproductive labor.

3. Salaries of teachers and workers: Wages and financial incentives for teachers and workers in educational institutions occupy the largest proportion of the ministry's budget, and perhaps the increase in wages and salaries for manpower in the educational system in Arab countries means an increase in the cost of the student and the total cost of education.

4. The level of educational technology used: it greatly affects the level of technology used in education, as the educational process depends on many modern devices and machines such as: electronic computers,

video equipment, display and other devices that require a special budget. Education financing statistics in Arab countries indicate that the percentage of the education budget from public spending has tended to increase with the beginning of the policy of introducing computers into education since the beginning of the nineties of the last century.

5. Impact of prices and standard of living: This factor is one of the important and influencing factors in the volume of educational costs, as the international price rate changes day after day, and this results in an increase in the prices of materials, equipment and wages necessary for the educational process, and the rise in prices results in an increase in the prices of constructing or renting educational buildings. Accordingly, the general average of prices is primarily responsible for the increase in educational costs in Arab countries and developing and developed countries alike.

Importance of Studying Education Expenses

The importance of studying education expenditures stems from the following points:

1. The study of education benefits the educational plan, as it is possible to estimate the cost of education to determine the capabilities necessary for the plan during a certain period of time.
2. Calculating the cost of the educational stage contributes to the study of the role of this stage in economic growth, as accounting for educational costs has become a science that serves the institutional goals of education after it was limited to application in industrial activities only.
3. Educational cost analysis helps in comparing different educational activities in the light of cost-benefit analysis, and in choosing the appropriate activity from among several educational activities in light of the accounting view.
4. The study of educational cost is useful in setting organizational procedures for controlling and controlling financial inputs, and controlling and controlling educational services, which keeps the educational institution away from extravagance, loss and neglect that increases the burdens of the capital used. It can also be useful in rationalizing spending on various activities. Scientific cost preserves public money, and protects funds from waste.
5. Studying the real educational cost and comparing it with the planned cost is useful in discovering financial deviations - if any - and by analysing these financial deviations and determining their nature and thus correcting them, the institution avoids many administrative and financial problems before or at the time of their occurrence.
6. The study of educational cost is a basis for evaluating the effectiveness and efficiency of the educational institution and the extent of achieving its objectives, which provides valuable information for making the appropriate educational decision on sound accounting and administrative bases (Al-Buhairi, 2014).

The Second Trend: The Concept of Physical Capital

Physical capital consists of tangible, man-made things that you buy or invest and use to produce goods, one of what economists call the three main factors of production. The computer owned by the company is part of its actual capital. In economic theory, physical capital represents one of the three factors of production. Physical capital consists of tangible, man-made things that you buy or invest and use to produce goods. Physical capital items, such as manufacturing equipment, also fall into the category of fixed capital, which means that they are reusable, and are not consumed during the production process. Explanation of physical capital: In neoclassical economic theory, the factors of production are the inputs required to engage in production Goods or services in pursuit of profit. Economists generally agree that there are three main factors of production: land, natural resources, real estate, and these factors include land or property on which factories, shipping facilities, or warehouses are built; natural resources that come out of the earth; Like the corn needed to make tortilla chips or the iron ore used to make steel, they also fall into this category. Human capital this factor includes labor and other resources that humans can provide education, experience, or unique skills that contribute to the production process, capital Physical, sometimes referred to as "capital" and this factor includes man-made items or products that make the manufacturing process possible or enable it to run smoothly. Some types of physical capital are directly involved in production, such as welding equipment that integrates parts of a car onto the factory floor. Others participate indirectly, such as computers and printers in the executive headquarters (https://e3arabi.com/?p=25645).

The Third Trend: Economic Growth

A statement of the nature of economic growth, as it refers to the rate of increase in the real gross national product over a long period of time, as it is the accelerated increase in the gross national product for a long period without causing significant and tangible changes in the economic, social and political aspects (Al-Quraishi, 2007). Real national product or per capita income from it during a certain period of time, and economic growth has been defined as the increase in the value of goods and services produced by the national economy, and economic growth is measured as the percentage increase in real domestic product. It also means how countries can advance economically and the growth elements consist of (capital accumulation, labor, technological development) (Al-Quraishi, 2010). Per capita real income corresponding to the increase in national income. When interpreting this definition, it can be said that the increase in total national income must exceed the increase in population, meaning that the population growth is less than the growth of national income. Economic growth requires a proportional increase in two components (population and resources) so that an increase in The proportion of resources is always greater than the proportion of the population (Walid, 2015),Gross Domestic Product (GDP), which is the market value of all final goods and services locally (within a country) that are produced within the country during a specific period of time and is the most widely used g Measure the size of a country's economy and helps measure an indicator of an individual's standard of living within the country. As a measure of the economy's performance, if the gross domestic product increases, the size of the overall economy increases, and thus the size of the total income increases and is offset by the increase in per capita income. The continuous increase in the gross national product over a long period of time is considered an indicator of economic growth. When measuring the gross national product over time, it is possible to distinguish between the levels of real national income on the one hand and its growth rate on the other hand. The real one expresses an absolute value that represents the state's strength in the economy, which constitutes a weight in supporting its military power or its negotiating ability in its international relations with the rest of the world (Al-Qutaifi, 1999).

THE SECOND TOPIC
ANALYZE THE RESULTS OF THE STANDARD MODEL AND STATISTICAL TESTS

First: The Study Sample: Tables (1) (2) (3)

Table 1 GROSS DOMESTIC PRODUCT IN JORDAN DURING THE PERIOD (1985-2020)			
The year	Gross domestic product at market prices/million	The year	Gross domestic product at market prices/million
1985	1970.5	2004	8090.7
1986	2240.5	2005	8925.4
1987	2286.7	2006	10675.4
1988	2349.5	2007	12131.4
1989	2425.4	2008	15593.4
1990	2760.9	2009	16912.2
1991	2958	2010	18762
1992	3610.5	2011	20476.6
1993	3884.2	2012	21965.5
1994	4357.4	2013	23851.6
1995	4714.7	2014	25437.1
1996	4911.3	2015	26925.1

1997	5137.4	2016	27829.6
1998	5609.9	2017	28903.4
1999	5778.1	2018	30481.8
2000	5998.6	2019	31597
2001	6363.7	2020	31025.3
2002	6794		
2003	7228.8		

Source: Central Bank of Jordan https://www.cbj.gov.jo/Pages/viewpage.aspx?pageID=40

Table 2 PHYSICAL CAPITAL IN JORDAN DURING THE PERIOD (1985-2020)			
The year	Physical capital	The year	Physical capital
1985	5,789.26	2005	29,250.48
1986	6,944.75	2006	32,294.11
1987	7,387.27	2007	35,315.25
1988	7,901.48	2008	38,987.15
1989	8,433.67	2009	43,648.75
1990	8,994.79	2010	48,096.65
1991	9,842.38	2011	52,883.65
1992	10,579.40	2012	57,637.65
1993	11,786.29	2013	62,737.35
1994	13,207.04	2014	67,722.33
1995	14,656.15	2015	73,229.73
1996	16,208.12	2016	78,828.13
1997	17,705.41	2017	84,220.73
1998	19,025.24	2018	84,589.30
1999	20,247.52	2019	90,123.56
2000	21,492.04	2020	95,678.67
2001	22,831.52		
2003	25,532.97		
2004	27,037.32		

Source: Central Bank of Jordan https://www.cbj.gov.jo/Pages/viewpage.aspx?pageID=40

Table 3 EXPENDITURE ON EDUCATION IN JORDAN DURING THE PERIOD (1985-2020)			
The year	Spending on education	The year	Spending on education
1985	66.86	2004	298.84
1986	75.89	2005	339.22
1987	43.52	2006	386.67
1988	92.2	2007	447.91
1989	20.43	2008	549.91
1990	109.91	2009	580.2
1991	155.54	2010	639.7
1992	120.53	2011	754.44
1993	142.15	2012	816.93
1994	162.37	2013	925.6
1995	187.9	2014	985.63
1996	206.07	2015	1,017.17

1997	215.78	2016	1,019.55
1998	217.38	2017	982.63
1999	218.29	2018	1,143.78
2000	228.72	2019	1,209.90
2001	241.99	2020	1,311.20
2002	263.01		
2003	281.83		

Source: Central Bank of Jordan, https://www.cbj.gov.jo/Pages/viewpage.aspx?pageID=40

Second: - Determine the Variables Included in the Model

1. There Will Be Two Types Of Variables
A- Dependent variables: Gross domestic product in Jordan**.**
b-Independent variables**:**
-1. The physical capital in Jordan**.**
-2. Spending on education in Jordan**.**

2. The Symbols Of The Variables Included In The Research
Y=GDP in Jordan**.**
X1=physical capital in Jordan**.**
X2=spending on education in Jordan**.**

Fourth: The Tests Used In the Research.

In Order To Choose the Best Formulas, the Following Tests Will Be Used

1. The Stationarity Test: It is one of the tests that have importance in the subject of the variables' stability and the accuracy of the results of the analysis, as it is the subjection of the variables included in the study to any analytical study concerning the nature of those variables, as the stability of the time series is it stable or not, based on the assumption The null (Ho) is that the time series is not static. As for the hypothesis of the alternative (H1), it states that the series are static and stable. The modified Dickey test was adopted, according to the (SIC) Schwatrtz Information Criterion standard for the ADF test, Through this test, a comparison is made between the calculated value and the tabular value, and according to the conditions of this test, if the calculated value is greater than the tabular value, this means that the time series is stable and does not include the unit root, or through the significance of the t-test at the level (5%).), but if the opposite turns out, then this means that the time series is unstable and includes the unit root (Hamad, 2015).
2. Cointegration Test: Cointegration is defined as a match between two or more time series so that fluctuations in one of them cancel the fluctuations in the other series. In the long run, which requires that these variables be unstable in their level, but enjoy a degree of stability when taking the first or second difference, and according to this test, the variable can be static if the degree of integration is equal to (0)1, and there are two tests to determine the number of vectors Co-integration: The Trace Test and the Maximal Eigen Value test (Hamad, 2015).
3. The equation of multiple linear regression (Rahi, 2013):
    $Y=Bo+B1X1 +B2X2……. +BnXn +e$

Bo: constant term of the function or parameter of the intersection of the regression line with the vertical axis represented by GDP.

Bi: partial regression coefficients or partial slope.

e: random error, which is the difference between the real value of (y) and the estimated value. It is known as the residual and its general law:

$e=y-y^{\wedge}$

The value of (Bo) represents the value of (y) when the value of (X1) & (0.0=(X2).

4-F-test: This test is used in order to know the significance of the assumed linear relationship between the independent variables (X1.X2....XK) on the dependent variable. It depends on two types of hypotheses: (Hadi et al., 2013):

- The null hypothesis: when the value of F is significant according to the significance used, this means that the acceptance of this hypothesis, which states that there are no significant differences between the variables included in the standard model, that is: Ho: B1=B2=…..=BK=0

- The alternative hypothesis: when the value of F is not significant according to the significance used, this means acceptance of this hypothesis, which states that there are significant differences between the variables included in the standard model, that is: H1: B1 ≠ B2 ≠.....≠ BK ≠ 0

The value of F is calculated and compared with its tabular value to determine the acceptance or rejection of the null hypothesis and then evaluate the significance of the relationship estimated in the model.

5-The t-test: It is one of the best important tests that are used to test the significant differences between the variables included in the mathematical model, and it is in terms of ((1% or (5%), and it is based on where it is used to assess the significance of the independent variables individually (X1.X2. ….XK) in the dependent variable (Y) in a multiple linear regression model, which depends on two hypotheses (Amin, 2008).

- The null hypothesis: when the value of t is significant according to the significance used, this means that the acceptance of this hypothesis which states that there are no significant differences between the variables included in the standard model, that is: Ho: B1=B2=…..=BK=0
- The alternative hypothesis: when the value of t is not significant according to the significance used, this means that this hypothesis is accepted, which states that there are significant differences between the variables included in the standard model, that is: H1: B1 ≠ B2 ≠ …..≠ BK ≠ 0

After calculating the value of t, it is compared with its tabular value to determine the acceptance or rejection of the null hypothesis, and then evaluate the significance of the estimated model.

5- Pearson test: It is a test used when there are measurable quantitative variables such as national income, national spending, gross domestic product and other quantitative variables. The independent variables with the dependent variable, as well as the relationship of the independent variables with each other, and one of the conditions of this test is that the independent variables are linked with the dependent variable in a stronger relationship than their relationship with each other, and that the multiple correlation does not become any standard problem that affects the standard model, and the need for that relationship to be in accordance with the Economic theory in terms of positive and negative (Hadi et al., 2013).

6- Durban Watson test (DW): It is a test used to detect the presence of autocorrelation in the model or not, its value is limited between (0-0), and the closer its value is to the number 2, the better, and this means that the model does not suffer from the existence of the problem of autocorrelation Which is based on the existence of two basic hypotheses: (Amin, 2008).

- The null hypothesis: which states that there is no autocorrelation Ho : P=0
- The alternative hypothesis: which states the existence of autocorrelation H1 : P ≠ 0

7- Interpretation Coefficient test: It is a test used to show the percentage of the influence of the independent variable on the dependent variable. In changing the dependent variable, and the original coefficient of determination (R-squared) is used when there is only one independent variable in the model, the adjusted coefficient of determination (R-squared) is used when there is more than one independent variable in the standard model (Yasin, 2016).

Fifth: The Method Used In Constructing the Standard Model

The researcher used the Ordinary Least Squares method (O.L.S. This method is one of the best methods in building the optimal model, which requires determining the nature of the relationship between the available data and the theoretical requirements in the economic variables included in the structure of the function, which assumes a number of conditions related to the inputs and others related to the outputs:

Sixth: Estimating the Standard Model

Static Test Results: The Unit Test of Stationary Augmented Dickey- Fuller Test (ADF):

Table 4 THE RESULTS OF THE UNIT ROOT TEST OF THE STANDARD MODEL						
Variable	**Calculated value**			**Degree of morale**		**The decision**
	Level one difference		The second difference	when 1 %	when 5 %	when 10%	
X2	2.125			0.99	0.99	0.99	insignificant
X2		-3.187		0	0	0	morale
X2			-10.522	0	0	0	morale
X1	1.808			0.98	0.98	0.98	insignificant
X1		2.227		0.99	0.99	0.99	insignificant
X1			-6.435	0	0	0	morale

Y	-0.797			0.36	0.36	0.36	insignificant
Y		-0.966		0.29	0.29	0.29	insignificant
Y			-8.922	0	0	0	morale

Source: The table prepared by the researcher based on the results of the statistical program EView12.

Based on the results of the expanded Dickey-Fuller test, it was found from Table (4) that the time series is not static at the level, as we find that the calculated t value is not significant at all significant levels, and this indicates the existence of a unit root problem and that the time series of the three variables are unstable at the level After taking the first difference, we found that the calculated t value is not significant at all levels of significance and for all-time series except for the variable X2, which represents expenditure on education, which indicates the existence of the unit root and that the time series of the variables: physical capital and GDP are unstable and all data is not static,But after taking the second difference, it was found that all the data for the three variables in question are static and stable, and there is no problem of the root of the unit, and therefore it is possible to conduct joint integration and study the long-term relationship, as these results apply with the standard theory that assumes that most of the variables are not static in the level or difference. The first, and this means that it has a relationship with time, which is confirmed by the increasing value of the variables in question.

B-Johansen Cointegration Test:

The test requires that the variables be integrated of the same degree and related to a long-term relationship. To achieve this, two conditions must be met:
1- All the variables included in the model are stable at the same level.
2- This level is greater than (0) 1

Table 5 RESULTS OF THE JOHANSEN CO-INTEGRATION TEST FOR THE STANDARD MODEL			
Trace Test			
The number of common (r) integration vectors	Calculated value	Tabular value at 5%	Morale
r =0*	40.96	29.797	0
r =1	19.295	15.494	0.01
r =2	7.689	3.841	0
Maximal Eigen Value			
The number of common (r) integration vectors	Calculated value	Tabular value at 5%	Morale
r =0*	21.665	21.131	0.04
r =1	11.605	14.264	0.12
r =2	7.689	3.841	0

Source: The table prepared by the researcher based on the results of the statistical program EView12.

From table (5), the results of the two tests (Trace) and the maximum value (Maximum) of Johansen are presented, as it is clear that the hypothesis of the absence of any vector of co-integration at the level of statistical significance is 5%, that is, the acceptance of the alternative hypothesis that states the existence of a zero-order co-integration for the test The effect is that the calculated value (40.960), which is greater than the tabular value, which amounted to (29,797) at the level of significance of 5%, and the rejection of the hypothesis that there is no vector of co-integration at the level of statistical significance of 5% is clear, that is, the

acceptance of the alternative hypothesis that states the existence of co-integration Of the rank one for the impact test, as the calculated value (19.295) is greater than the tabular value, which amounted to (15.494) at the level of significance of 5%, as well as the rejection of the hypothesis of the absence of any vector of co-integration at the level of statistical significance of 5%. That is, accepting the alternative hypothesis that states that there is a co-integration of rank two to test the effect, as the calculated value is (7.689), which is greater than the tabular value, which amounted to (3.841) at a level of significance of 5%. Rank zero by observing the calculated value (21.665), which is greater than the tabular value, which amounted to (21.131) at the level of significance of 5%, as it is clear that the hypothesis of the absence of any vector of co-integration at the level of statistical significance is 5%, and the absence of co-integration of rank one. To test the maximum latent value, as the calculated value (11.605), which is smaller than the tabular value, which amounted to (14,264) at the level of significance of 5%, it is also clear that the hypothesis of the absence of any co-integration vector is accepted at the level of statistical significance of 5%. And the lack of co-integration of the second order to test the greatest latent value, since the calculated value (7.689), which is smaller than the tabular one, which amounted to (3.841) at a level of significance of 5%, and accordingly, the variables are a set of rank zero and rank one, using the third proposal, which states that there is a constant And a tendency to the joint integration function according to Johansen's test, and as two periods of slowing were chosen, it became clear that there is a co-integration, so there is a long-term equilibrium relationship between Jordan's GDP as a dependent variable and physical capital and spending on education as independent variables.

C- Estimating the multiple linear regression equation of the standard model: by using the available statistical data and entering it into the EView12 program for statistical tests, adopting the normal approach to these data, representing Jordan's GDP as a dependent variable, physical capital as a first independent variable, and spending on education as a second independent variable. The following is the multiple linear regression equation:

$$Y = B_o + B_1 X_1 - B_2 X_2 + e$$
$$Y = -315.1164 + 0.143706\, X1 + 15.89484\, X2 \ldots\ldots 1$$

It is clear from equation No. (1) That the constant of the function amounted to (-315.1164), which represents the value of Y when the value of both X1 and X2 is equal to zero. As for the slope of the function for the first independent variable (X1), its value was (0.143706), which means that the increase of X1 by One unit will lead to an increase of Y by (0.143706), meaning that the relationship is direct between X1 and Y, and the value of the slope of the function for the second independent variable X2 is (15.89484). This means that an increase in X2 by one unit leads to a decrease in Y of the amount (15.89484), meaning that the relationship is direct Between the variable X2 and Y, this is with regard to the statistical analysis of the equation. As for the economic analysis of the equation, we conclude from the values of the regression equation that the value of the total GDP in Jordan is (-315.1164) million Jordanian dinars when the physical capital and expenditure on education are equal to zero. Likewise, when we increase the physical capital by one dinarThis means an increase in the GDP in Jordan by (0.143706) dinars, which leads to an increase in the proportion of the contribution of this physical capital to the growth of GDP by the same amount, and when spending on education increases by one dinar, the gross domestic product in Jordan will increase by (15.89484) This increase comes from the development of human capital, which increases the productivity of the labor component and thus leads to an increase in the contribution of human capital to the growth of GDP in Jordan.

Table 6 STANDARD MODEL QUALITY STANDARDS		
Morale	The value	Model quality standards
-----	0.99	Adjusted R-squared

0.16	-1.428	t-Bo
0.00	3.405	t-B1X1
0.00	5.007	t-B2X2
-----	0.803	D-W
0.00	2695.173	F

Source: The table prepared by the researcher based on the results of the statistical program EView12.

It appeared through the results in the estimated model in Table (6) that the value of the modified interpretation coefficient adj R^2 amounted to (0.9948), which means that the two independent variables (X1, X2) explain about (99.48%) of the change in the dependent variable (Y) and that the ratio The remaining (1.52%) represents the effect of other variables not included in the equation (multiple linear regression function). It is clear from this that physical capital and spending on education in Jordan explain about (99%) of the change in GDP in Jordan and the rest is what its value is (1.52%). They are economic variables and activities that were not included in the standard model, including inflation, unemployment, exports, imports, and other economic variables that exercise their impact on the gross domestic product.

Through the results in Table (6), the value (t) of the calculated parameter Bo, which is (-1.428) appeared, is smaller than the tabular value at the level of significance (5%) and the degree of freedom (33) of (1.703). It rejects the null hypothesis (H0: Bo=0) and we accept the alternative hypothesis (H1: B1 ≠ 0), which means the significance of the estimated parameter and prove that its value in the model was very high, and the (t) value of the calculated parameter B1 (3.405) appeared to be greater than the tabular at the level of significance (5%).) and the degree of freedom (33) of (1.703) it rejects the null hypothesis (H0: Bo=0) and accepts the alternative hypothesis (H1: B1 ≠ 0), which means the significance of the estimated parameter (B1), which represents the slope of the variable (X1), which indicates the effect of this independent variable on the dependent variable,That is, the physical capital has a clear impact on the gross domestic product in Jordan, as the value of (t) for the calculated parameter B2 (5.007) appeared to be greater than the tabular at the level of significance (5%) and the degree of freedom (33) of (1.703). The null hypothesis (H0: Bo=0) and we reject the alternative hypothesis (H1: B1 ≠ 0), which means that the estimated parameter (B2) which represents the slope of the variable (X2) is not significant, which indicates the absence or low level of the influence of this independent variable on the dependent variable, In other words, spending on education has a clear impact on Jordan's GDP.

What the results showed in Table (6), the calculated F value amounted to (2695.173) which is greater than the tabular value (F) at the level of significance (5%) and the degree of freedom (34,2) for the numerator and denominator, which is (3.28), so we reject it The null hypothesis (Ho) and we accept the alternative hypothesis (H1) which states that the estimated relationship is significant. In other words, there is an effect of at least one of the variables X1, X2 on the dependent variable Y, meaning that physical capital and spending on education are associated with the GDP of those countries with a significant relationship With a clear effect between them, and it was sig=0.000, and this indicates that the degree of morale is very high, more than (0.01), which makes the model efficient and reliable for the purposes of planning and forecasting the future with regard to increasing growth rates in GDP in Jordan through increasing physical capital. Spending on education.

Table 7 ANALYSIS OF VARIANCE (ANOVA TABLE)				
F. test	Average sum of squares	Degrees of freedom	Sum of squares	Contrast source S.O.V
2695.17	5325122	2	E+071.1	Deviations shown by the regression line

				$X_1.X_2$ SSE
	1975.8	33	59.8727	Unexplained deviations (residuals) SSR
		35	E+071.1	Total deviations SST

Source: The table prepared by the researcher based on the results of the statistical program EView12.

From table (7) and through the F test, it becomes clear to us the significance of the estimated relationship, in other words that there is an effect of at least one of the variables X1 and X2 on the dependent variable Y.

From Table (6), which was revealed by the DW test, whose calculated value was (0.803), which is away from the number (2), which is smaller than the tabular value of the research sample, which amounted to (36) observations, which amounted to (1.011), so we reject the null hypothesis Ho, which states that the model does not suffer from the problem of autocorrelation, and we accept the alternative hypothesis H1, which explains the problem of autocorrelation between the research variables.

C- Pearson test: It can be proven that there is no multiple correlation problem in the estimated model through the partial correlation matrix, which shows the extent of the relationship of the dependent variable with the independent variables, as well as the extent of the relationship of the independent variables with each other, as the closer its value to the correct one indicates that the relationship is strong between the variables.

Table 8 Pearson Standard Model Test Results			
X2	X1	Y	
0.996	0.995	1	**Y**
	1		X1
1	0.993		X2

Source: The table prepared by the researcher based on the results of the statistical program EView12.

It emerged from the results of Table (8) that the dependent variable (y) is associated with the first independent variable (x1) with a very strong positive relationship as it approaches the correct one as it reached (0.995), and the dependent variable (y) is associated with the second independent variable (x2) With a very strong positive relationship, as it approaches the correct one as well, reaching (0.996), as for the relationship of the two independent variables X1,X2 with each other, it was positive and smaller than their relationship with the dependent variable, where the ratio of the relationship between them reached (0.993), which indicates that there is no correlation problem. The multiple that is assumed, The value of the relationship between the independent variables individually with the dependent variable must be greater than the relationship with each other, so we find that both physical capital and spending on education in Jordan have a significant positive relationship with the gross domestic product at the market price in Jordan, which is a greater relationship of the relationship with each other.

CONCLUSIONS

1. Despite the difference in data static for the research variables, there is a long-term equilibrium relationship between physical capital, spending on education, and GDP in Jordan.

2. There is a clear impact of human capital on the gross domestic product in Jordan, and this is evident from the effect of spending on education, which develops the skills and capabilities of the human production factor.
3. The effect that both physical capital and spending on education in Jordan exert is positive, that is, an increase in each of them by one dinar leads to an increase in the gross domestic product with the same amount of mileage for each of them.
4. Expenditure on education plays a major role in increasing the GDP during the research period, and this can be seen from the value of the tendency, which was very high compared to the tendency of physical capital.
5. Through the results of the model, which were all in agreement with the economic theory, the estimated model is efficient and reliable for the purposes of planning and forecasting for the future.

RECOMMENDATIONS

1. The Jordanian government must achieve a balance in the use of physical capital and human capital in the production process so that there is stability and silence in its data.
2. Work to increase spending on education in order to increase the productivity of human capital, which increases its contribution to the production process and thus increases the growth rates of the gross domestic product.
3. Enhancing the role of both material capital and spending on education in the production process.
4. The combination of these productive factors, which contributed to the increase in production, can be relied upon in the future.

REFERENCES

Adam, T. (2016). Found and published in the economics of education. Dar Al-Wafa, Alexandria.

Amin, O.R. (2008). Statistical analysis of multiple variables using SPSS program, Menoufia University, Faculty of Commerce, Department of Statistics and Sports, Cairo, Egypt.

Al-Buhairi, K.M. (2014). The economics of education. Dar Al-Fajr for Publishing and Distribution, Cairo.

Al-Quraishi, M.S.T. (2007). *Development and Growth, (First edition)*. Ithraa for Publishing and Distribution, Jordan.

Al-Quraishi, M.S.T. (2010). *The science of development economics, (First edition)*. Ithraa for Publishing and Distribution, Jordan.

Al-Qutaifi (1999). Economic development policies. Dar Al-Jami`iyyah, Egypt.

Barik, R.K., Patra, S.S., Kumari, P., Mohanty, S.N., & Hamad, A.A. (2021). A new energy aware task consolidation scheme for geospatial big data application in mist computing environment. *In 2021 8th International Conference on Computing for Sustainable Global Development (INDIACom)* (48-52). IEEE.

Barik, R.K., Patra, S.S., Patro, R., Mohanty, S.N., & Hamad, A.A. (2021, March). GeoBD2: Geospatial big data deduplication scheme in fog assisted cloud computing environment. In *2021 8th International Conference on Computing for Sustainable Global Development (INDIACom)* (35-41). IEEE.

Falih, K. (2006). The Economics and Planning of Education, The Modern World of Books, Irbid.

Hadi, A.K., & Al-Tai, K.D., & Al Shukri, A.M.K. (2013). *Applied Statistics, an analytical method using SPSS, (First edition)*. Al Zakir for Publishing and Distribution, Jordan.

Hamad, M.J. (2015). Government spending and its impact on human development in Algeria since 1994, PhD thesis in economic sciences, Cairo University, Institute of African Research and Studies, Egypt.

Hameed, A.H., Mousa, E.A., & Hamad, A.A. (2018). Upper limit superior and lower limit inferior of soft sequences. *International Journal of Engineering and Technology (UAE), 7*(4.7-7), 306-310.

Issa, S.S., Khalaf, H.H., Rashid, A.A., & Ahmed, E.R. (2019). Effectiveness of inflation targeting based monetary policy. Option, *34*(16), 1032-1057.

Khalaf, O.I., Ajesh, F., & Hamad, A.A., Nguyen, G.N., & Le, D.-N. (2020). "Efficient dual-cooperative bait detection scheme for collaborative attackers on mobile Ad-Hoc Networks. "*IEEE Access*, 8, 227962-227969.

Khalaf, H.H. (2018). The impact of electronic money on the effectiveness of monetary *policy. Academy of Entrepreneurship Journal, 24*(3), 1-16.

Morsi, M.M. (1998). Education Planning and Economics. World of Books, Cairo.

Musa, Y. (2016). A lecture in econometrics. Unpublished, College of Administration and Economics, University of Tikrit, Iraq.

Muthanna, M.M., Hameed, H.K., & Omar, A. (2021). Monetary policy responses to the global financial crisis: What did emerging economies do differently? *Academy Of Entrepreneurship Journal, 27*(5).

Najjar, A.M. (1988). "Human capital formation in economic thought". Bohouth magazine, Aleppo University, 11.

Rahi, M.G. (2013). Fiscal expansion and trends in fiscal policy in Iraq for the period 1951-2010, PhD thesis in Economic Sciences, College of Administration and Economics, University of Kufa, Iraq.

Zhang, G., Guo, Z., Cheng, Q., Sanz, I., & Hamad, A.A. (2021). Multi-level integrated health management model for empty nest elderly people's to strengthen their lives. *Aggression and Violent Behavior,* 101542.