



## ANALYSIS OF THE CAUSALITY RELATIONSHIP BETWEEN SPENDING ON HIGHER EDUCATION AND SOME ECONOMIC VARIABLES IN IRAQ FOR THE PERIOD 1990-2020

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Article history:	Abstract:
<p><b>Received:</b> 13<sup>th</sup> January 2022 <b>Accepted:</b> 13<sup>th</sup> February 2022 <b>Published:</b> 23<sup>rd</sup> March 2022</p>	<p>Higher education is important because it creates and develops human capital and provides qualified human cadres, which requires restructuring government spending so that an increase in funding allocated to education is brought about. During the period 1990-2020, government spending was weak on educational institutions in Iraq, which led to a decline in The role of these institutions in the economic development of the country. The highest percentage of spending on higher education of GDP was 0.47% in 2007 and the lowest was 0.01% in 2005. The number of public universities reached 35, and the number of private universities and colleges reached 64 universities and private colleges in 2020. This was accompanied by an increase in the number of students and a weakening of the absorptive capacity of public universities. Iraq is considered one of the countries most affected by the Corona virus pandemic in the Middle East, in terms of the rate of injuries and deaths, and as a result of the pandemic, education has been transformed to lectronic learning platforms. Granger causality also showed the existence of a significant causal relationship between government spending on higher education, gross domestic product, the number of graduate students, and unemployment.</p>

**Keywords:** higher education spending, Granger causality, unemployment

### 1 INTRODUCTION

The role of universities is not limited to scientific research, but rather they must have a role in developing production and motivating the various economic sectors and play their role in spreading scientific knowledge. Universities have become an essential part of the economies of developed countries, and capital worthy of investment and growth as a source of wealth, and a new strategic resource in economic life.

Since November 2019, the foundations of this educational system have been significantly affected by the rapid spread of the Coronavirus (Covid-19), creating uncertainty about the implications for higher education. The first steps were online lectures which were the most effective tool in maintaining student retention and maintaining access to learning. Universities in Iraq adjusted their programs in response to the spread of the Corona virus and teaching was via e-learning platforms (google classroom, Moodle), and Iraqi universities worked quickly with efforts The faculty members played a

major role in finishing the academic year. In the year 2020-2021, the Ministry of Higher Education adopted the blended education system, part of the basic study modules to be in person and the rest electronically. The importance of the university is not only the field of teaching and scientific research, but also lies in bringing out new leaders and cadres. In a changing world, needs, tools, methods and mechanisms change rapidly.

#### 1.1 Research Importance

The activity of universities is no longer limited to scientific research, but rather includes the development of production and innovation for operational and administrative systems. The educational process and universities are not channels for providing and attracting knowledge, but rather they have an important role in marketing knowledge to society. This role varies from one university to another according to the university's ability and scientific potential. And work must be done to ensure that universities have a role in addressing the problems that the country suffers from.

#### 1.2 Research Problem

1- The issue of financing public higher education is



one of the biggest challenges in Iraq. Spending on education varies in its different levels as a percentage of the gross domestic product and this is due to many factors, the most important of which are the availability of financial resources, as well as the institutional structure in the community, the availability of transparency and efficiency effectiveness, and the extent of the ability to respond to citizens' needs and development needs.

2- The increasing number of certificate holders who are rejected by the labor market pushing them towards unemployment, and this requires attention to the quality of education in a way that suits the requirements of work.

### **1.3 Research Goal**

1- Preparing an educational system that conforms to the standards and requirements required by the labor market and economic development plans, taking into account the capabilities of the country and the quality of the required development programs.

2- The e-learning should support the in person education in universities in a manner appropriate to maintaining the quality of education.

### **1.4 Research Hypothesis**

The research hypothesis is based on the following argument:

Spending directed towards important economic sectors leads to the development of those sectors. Therefore, directing spending towards the higher education sector leads to an increase in financial resources and is positively reflected on the process of economic development. Raising the quality of education and providing job opportunities according to the requirements of the local and international labor market helps reducing unemployment rates among the graduates.

## **2 PREVIOUS STUDIES**

Nasreen Amin and others. 2017 study, Using E-Learning by Students in Iraqi Universities: Possibilities and Challenges. The research dealt with the possibilities and challenges associated with the use of e-learning by universities in Iraq from the perspective of the university students. 300 questionnaires were distributed to students of Salah al-Din University in Iraq. The results showed that students realize the importance and benefits of e-learning for their studies, and that there are significant challenges associated with public infrastructure, support from universities and e-learning policies in Iraq. The results also revealed that Iraqi students prefer a hybrid approach to learning using mobile phones rather than using computers only.

The study of Faris Brahe et al. 2016 This research aimed to identify the reality of university education in Iraq for the period from 1997 to 2012 through the use of data for undergraduate and graduate students and knowledge of the challenges facing the rebuild development process. The research concluded that Iraq went through exceptional circumstances during the research period, and this was reflected in the role of education in supporting the economic process, and it was weak as a result of the economic and political conditions experienced by the country, which led to a low level of efficiency in education and this was reflected in the suitability of higher education graduates to the labor market. The reason for this is due to the lack of prior planning for what the labor market needs from these graduates. As a result, higher education did not affect economic development. This requires a review of curricula and various disciplines in line with future expectations and the country's market need for various disciplines and scientific, professional and administrative competencies.

Salman's 2011 study of the role of universities in economic development in the Arab countries, including Iraq and Egypt, showed that the long-term growth, economic development or sustainable development all lead to the need to activate economic variables in a way that leads to a continuous and sustainable increase in production. Education is the basis of science and knowledge, the basic necessity and the starting point in the field of sustainable development and development projects. Education is an investment that needs capital, and this depends on the state's ability to provide it. There is a correlation between the two variables of education and economic development, and that each affects the other.

## **3 HIGHER EDUCATION IN IRAQ FOR THE PERIOD 1990-2020**

### **3.1 The Reality of Higher Education in Iraq for the Period 1990-2020**

The education system in Iraq is based on the constitution of the Republic of Iraq (Ahmed Al-Husseini, 2010: 129). Article 32 of the Iraqi constitution states that free education is a right for all Iraqi citizens in its various stages. Private education is guaranteed and regulated by law in developing countries, including Iraq, while education in private universities make an economic cost that affect the real income of individuals who are the element of human development.

An individual gets more job opportunities through college education than individuals who do not pursue post-secondary education, and individuals who have pursued education often have higher incomes than those who



have not. University education also contributes to increased self-confidence and self-esteem. Education enables the degree holder to rise in the positions of competitors and enter the labor market, which has made the educational institution able to provide the labor market through graduating an effective cadre capable of adapting to modern technology and the challenges of globalization.

University education in Iraq from 1990-2003 witnessed the opening of many scientific departments and colleges, but this expansion was not accompanied by a similar expansion in providing its requirements even with the minimum required tools such as textbooks, scientific resources and scientific devices, laboratory supplies, as well as a severe shortage of teaching staff suitable for university teaching in terms of quantity and quality, especially in scientific disciplines. The proportion of master's holders in some universities exceeds 80% of the total faculty members and 50% at best. As for the evening studies, in many of them the conditions of scientific sobriety were not met, and because of the difficult living conditions many students are forced to work to provide their livelihood at the expense of education (Dakhil Hassan, 2010: 57).

After decades of political instability and fluctuations in oil prices that negatively affected the Iraqi economy, the study period 1990-2020 can be divided into two periods. The first from 1990-2003 and the second from 2003-2020. The collapse of the higher education system began in 1990 due to the economic sanctions imposed on Iraq. It is clear from Table No. (1) that spending on higher education in 1990 amounted to 144.2 million dinars, and as a result of the economic sanctions imposed on Iraq during the 1990s, it decreased to 1388.1 million dinars in 1998. Expenditure on higher education was 1% of government spending during In 1990 and 1992, the lowest rate was 0.1% in 1998, and it reached 1.02% in 1993, declining to the lowest expenditure rate of 0.15% in 1998. As for the percentage of expenditure on higher education, the GDP for the same period was 0.36% in 1991, to start in The decline to the lowest level of 0.01% in 1998, 2000 and 2001. The reasons are mentioned above. After 2003 the embargo and economic sanctions ended, GDP began to increase with the return of oil exports, and despite the explosive budgets that were recognized the higher education sector was not taken into account, and during the period 2003-2020, spending on higher education was volatile, while The GDP increased from (29585,788.6) million dinars in 2003 to (273.59 million) million dinars in 2013. During this period, the highest percentage of spending on higher education of GDP was 0.47% in

2007 and the lowest was spending. 0.01%. In 2005. As a result of the lack of spending on the higher education sector, this sector has suffered from major problems and a chronic shortage of resources despite the increasing demand for it. Higher education is considered an important field for human resource development because it is necessary to produce a trained workforce that would raise the productive capacity of individuals. Education represents consumption and investment at the same time through its impact on employment and wages.

### **3.2 Population Growth and the Development of Universities in Higher Education**

Education aims to develop human forces by providing them with the skills and knowledge necessary to carry out their productive work. Most developing countries, including Iraq, suffer from the problem of weak absorptive capacity in public education institutions. Table No. (2) shows that the number of public universities reached 11 and the number of private colleges and universities 4 in 1990. The number of public universities increased to 12 in 1993 until the end of 2003, and the number of private universities reached 10 in 2003 accompanied by a development in the population from 4.9992 million in 1990 to 16.308 million in 2003. During the period 2003-2020, the number of public universities reached 17 in 2005, with the establishment of universities in the provinces and Baghdad, bringing the number of public universities to 35 universities towards the end of the study period.

The increase in the number of private universities and colleges, which represents an investment by the private sector in the field of education, accompanied by an increase in demand and a weak absorptive capacity of public universities, which amounted to 12 in 2004 and was approved by the government. The Ministry of Higher Education allows private colleges and universities to reach 64 private universities and

**Table (1)** Government spending, spending on higher education and GDP (at current prices) million dinars.

year	Government Spending	Government Spending on Higher Education	Gross Domestic Product	Spending on Higher Education out of Government Spending*%	Percentage of Spending on Higher Education as a Percentage of GDP*
1990	14179	144.2	55926.5	1.02%	0.26%
1991	17497	151.3	42451.6	0.86%	0.36%
1992	32883	332.9	115108.4	1.01%	0.29%
1993	68954	619.5	321646.9	0.90%	0.19%
1994	199442	1278.1	1658325.8	0.64%	0.08%
1995	600784	2839.6	6695482.9	0.47%	0.04%
1996	542542	4220.5	6500924.6	0.78%	0.06%
1997	605802	4811	15093144	0.79%	0.03%
1998	920501	1388.1	17125847	0.15%	0.01%
1999	1033552	1653.402	3446401.6	0.16%	0.05%
2000	1498700	2686.809	50213699	0.18%	0.01%
2001	2079727	3224.25	41314568	0.16%	0.01%
2002	3226927	7234.1	41022927	0.22%	0.02%
2003	1982548	3385.735	29585788.6	0.17%	0.01%
2004	32117491	244650.7	53235358.7	0.76%	0.46%
2005	26375175	3731.298	73533598.6	0.01%	0.01%
2006	38806679	246512.8	95587954.8	0.64%	0.26%
2007	39031232	520507.07	111455813	1.33%	0.47%
2008	59403375	183243.3	155982258	0.31%	0.12%
2009	52567025	191821.1	130643200	0.36%	0.15%
2010	162064566	217088.9	162060000	0.13%	0.13%
2011	217327107	220721.3	217330000	0.10%	0.10%
2012	251907662	303584.7	254220000	0.12%	0.12%
2013	271091778	333560	273590000	0.12%	0.12%
2014	260610438	262068.6	266330000	0.10%	0.10%
2015	179552692	275766.356	194680000	0.15%	0.14%
2016	184286351	289107.0237	196920000	0.16%	0.15%
2017	100671161	244527.3	225720000	0.24%	0.11%
2018	104158184	231078.3705	251060000	0.22%	0.09%
2019	133107616	286517.4195	262920000	0.22%	0.11%
2020	148606809	320097.5873	199330000	0.22%	0.16%

Source: Central Agency for Statistics and Information Technology, National Accounts Statistics.\* Calculated by the researcher

colleges in 2020, accompanied by an increase in the population of 40,222,493 people. While population growth has been faster than the growth in number of public universities and colleges in a country that offers free education, the lowest population growth rate was 1.69% in 2007, rising to 3.97% in 2013 and then declining to 2.32% from 1990-2020. The population growth was accompanied by the growth of the number of students admitted to universities and colleges during the period 1990-2003 from (49,992 to 116,308)

students. It decreased to (95,305) in 2004 due to the political and economic changes that occurred in the country. After that, the number of university admissions increased to (247,555) in 2019.

### 3.3 Unemployment and Higher Education

One of the causes of unemployment is the imbalance between education outputs and the actual needs of the changing Iraqi labor market. which has caused high unemployment rates among higher education graduates. The unemployment rate



**Table (2)** Population, unemployment, number of students accepted and graduated in universities, number of private and public universities and colleges 1990-2020.

year	Population *	Unemployment %	Population Growth %	Number of Students Admitted to Universities	University Graduates	Number of Public Universities	Number of Private Universities
1990	17419113	5.5	2.5	49992	38233	11	4
1991	17889459	6.5	2.7	56787	37240	11	4
1992	18402734	7.5	2.87	53963	38054	12	4
1993	18955085	8.5	3	52455	43347	12	6
1994	19539340	10.5	3.08	73677	35274	12	7
1995	20149338	12.5	3.12	82788	33653	12	7
1996	20783073	13.5	3.15	80784	37917	12	9
1997	21439574	15.4	3.16	82519	46687	12	9
1998	22114324	17.4	3.15	88668	46522	12	9
1999	22802064	20.2	3.11	75404	50196	12	9
2000	23497585	22.4	3.05	80872	49935	12	10
2001	24208180	24.6	3.02	92467	53260	12	10
2002	24931919	26.7	2.99	95994	68826	12	10
2003	25644499	28.1	2.86	116308	74676	12	10
2004	26313838	26.8	2.61	95305	74518	12	13
2005	26922284	17.9	2.31	109044	74669	17	16
2006	27448124	17.5	1.95	99822	75529	18	17
2007	27911248	15.2	1.69	123339	67053	19	17
2008	28385746	15	1.7	102581	69020	19	17
2009	28973162	14	2.07	123339	73945	19	18
2010	29741976	12	2.65	157560	93357	20	26
2011	30725300	11	3.31	133219	98673	31	26
2012	31890011	11	3.79	186134	99772	31	28
2013	33157050	12	3.97	199064	100190	31	37
2014	34411951	12.7	3.78	123339	96564	35	43
2015	35572261	10.71	3.37	148410	100848	35	44
2016	36610632	10.82	2.92	190292	130488	35	45
2017	37552781	13.02	2.57	233935	144201	35	48
2018	38433600	12.86	2.65	241268	152467	35	49
2019	39309783	12.72	2.28	247555	160733	35	58
2020	40222493	13.74	2.32	253842	168066	35	64

Source: Ministry of Planning - Central for Statistics and Information Technology, Education Statistics, \* Ministry of Planning, Central Statistical Organization, Population and Unemployment Statistics, Miscellaneous Statistical Aggregates.

among young people in 2018 for the 15-29 age group was 22.6%, an increase from the national average of 74%. unemployment rate for this category was 18.1%, while the female unemployment rate was 56.3%. The problem of unemployment in Iraq in recent years is due to the absence of government plans that aim to provide job opportunities for the unemployed, especially degree holders graduates holders and due to the lack of coordination between the needs of the

labor market and the outputs of education. The Ministry of Planning also confirmed that the population growth rate in Iraq reached 2.6%, noting that the population of Iraq is increasing annually at a rate of 850 thousand to one million people (Ministry of Planning, 2018).

Table (2) for the period 1990-2020 shows that the unemployment rate was 5.5% in 1990, and because of the economic and political situation that Iraq suffered, the unemployment rate rose to 28.1% in 2003. after





which the economic conditions changed, sanctions were lifted and the private sector entered the labor market. Iraq has shifted towards a market economy, job opportunities became available, and the unemployment rate seemed to be declining, reaching 10% in 2015, then rising to 13% in 2020 due to the Corona pandemic and its economic repercussions as a result of the preventive measures lockdown. Unemployment in Iraq among graduates of higher education institutions is one of the most important challenges facing the educational system. graduates cannot integrate into the professional aspect of the labor market. This phenomenon extended to holders of higher degrees the unemployment rate for university graduates was 31.6% in 2012 (Ministry of Planning, 2014: 48) and in 2014 the Iraqi Ministry of Planning estimated the unemployment rate in Iraq at 35% which means 14% was for graduates (Central Statistics Organization, 2014). The main problem in university education was the lack of strategic plans clarifying the requirements of the labor market, which had a role in neglecting technical and vocational education significantly. Attention to quantitative levels led to neglect of qualitative standards, which was manifested in a lack of focus on improving field and laboratory knowledge and infrastructures that depend on governance.

The problem of unemployment, especially university degree holders, who represent the supply side, was accompanied by a neglect of the demand for manpower to solve this problem in the governmental or private sectors. The high rates of unemployment among the educated require rethinking the way education is provided in order to keep pace with developments in the labor market locally and globally. Moreover, most graduates seek to find work in the public sector due to the weak capabilities of the private sector and its inability to absorb the accumulated numbers of graduates from the educational system at its various levels and specializations.

Graduate students, according to the classification of the United Nations, are considered scientific competencies, and therefore these competencies have been well prepared for more than twenty years, which required huge expenses, of which the Iraqi family contributed a large part with the state.

Therefore, spending on preparing these graduates is an important investment called investment in human capital. Iraq was one of the first countries to invest in the health and education sectors in the Middle East and North Africa in the seventies and eighties, but today it is facing a human capital crisis. According to the World Bank's Human Capital Index (HCI), Iraq's

Human Capital Index is among the lowest in the world. As the share of human capital in the total wealth of Iraq does not exceed 15 percent, which is the lowest in the Middle East and North Africa region (World Bank, 2019).

### **3.4 The Impact of the Corona Pandemic and the Health Reality on Higher Education in Iraq**

One year after the World Health Organization declared COVID-19 a global pandemic, the health sector in Iraq is still unable to adequately address the crisis. Iraq has struggled with the emergency caused by the pandemic since the first infection appeared in February 2020. The factors of weakness caused by more than three decades of conflict, international sanctions, corruption and social and economic neglect have rendered the health system unable to cope with the epidemic.

Iraq is considered one of the affected most countries by the Corona virus pandemic in the Middle East, in terms of the rate of infections and deaths. The number of people infected by the virus exceeded 844,000, of whom more than 14,200 died. The number of infections is about 22 per 1,000 people (Public Health Department Daily, Corona pandemic in Iraq). The education system in Iraq was facing severe circumstances even before the arrival of the Corona pandemic (Covid 19), imposed by challenges represented in political and social instability and low government spending on education in general and higher education in particular. Since the Corona pandemic, educational institutions, including universities, have been closed, and the trend has been towards e-learning and the transition from traditional teaching methods to new ways through which technology is integrated into teaching and learning. Major advantages of using e-learning systems include greater access to information, better content, and students becoming independent thinkers because reliance on their teachers is minimized (Bhuasiri Xaymoungkhoun, 2012: 843–855).

Some the challenges facing the use of e-learning related to the characteristics of the individual (student or teacher), technological challenges, organizational challenges, cultural and societal challenges along with the obstacles of e-learning systems infrastructure, culture of teaching and learning, design and support of the system and student readiness. Culture also has an impact on the acceptance and use of e-learning systems. Certainly, the culture of teaching and learning in developing countries is different from that of developed countries and this is due to the differences in culture in different countries. Within this culture in Iraq, students view university teachers as the main source of information for their learning and rely heavily on them for their learning progress. When students rely heavily



on lectures, they may not prefer moving away from traditional teaching methods. (i.e. direct presence in class with the professor) (Andersson. A. & Grönlund, A. (2009): 1-16). After going into online education, The role of the teachers became monitoring students using the different platforms in universities.

In the 2021 school year, hybrid learning was used based on the instructions issued by the Ministry of Higher Education. It is a mixture between e-learning and in person education. E-learning is only for theoretical subjects, while students' attendance for practical (laboratory and clinical) and applied subjects. It was stipulated in it, the attended in person should be in the form of small, rotating groups, in order to ensure the benefit of the scientific and practical application aspect and to follow Covid-19 preventive measures. This is to prepare for the safe return to universities after the vaccine was provided. It is likely that university graduates will be severely affected by the Corona pandemic, especially since they have dropped out of studies in the final stage of their studies and will graduate at the beginning of a major economic recession, and that bad market conditions will make them accept low-paid jobs if they are available to start with (Ministry of Planning, 2021:52).

The success of the educational system depends largely on its commitment to globally agreed quality standards. In the field of e-learning, this matter takes special importance to separate the learner from the teacher (teaching). Quality in the field of education is a prerequisite for reforming the educational system so that students can possess the knowledge to advance the social reality in which they live.

#### 4 THE CONCEPT OF CAUSATION

Granger's test of causality gives an idea of the nature of the short-run causation between the variables studied. Granger has developed a relatively simple test for testing causation between two variables, which is known as the Granger test of causality (Granger, 1969): 424-438) That is, events in the past can affect today's events, but future events cannot affect today's events. The following statistical hypothesis was tested:

$H_0$ : There is no causal relationship between the two variables

$H_1$ : There is a causal relationship between the two variables

There are four directions of causation:

The variable X causes Y ( $X \rightarrow Y$ ).

The variable Y causes X ( $Y \rightarrow X$ ).

There is a common exchange between the two variables X and Y, that is ( $X \rightleftharpoons Y$ ).

The absence of a reciprocal relationship between the two variables X and Y, meaning that one of them does not affect the other.

Table (3) shows the results of the causal relationship between government spending (X1) and expenditure on higher education (X2), GDP, unemployment (X3) and university graduates (X4). The results showed a significant causal relationship heading from GDP to government spending in two periods of slowdown ( $P = 0.0953$ ), which means that GDP affects government spending. There is a large causal relationship from GDP to government spending in both directions and in four periods of time deceleration ( $P = 0.0021$ ,  $P = 0.0531$ ), which means that GDP affects government spending and vice versa ( $GDP \rightleftharpoons X1$ ) and this is consistent with the rentier nature of the Iraqi economy.

A one-way causal relationship emerged between GDP, unemployment, and graduate student numbers ( $GDP \rightarrow X3$ ) ( $GDP \rightarrow X4$ ) with two periods of slowdown ( $P = 0.0938$ ,  $P = 0.0010$ ) as well as four periods ( $P = 0.0273$ ,  $p = 0.0150$ ). Thus, the null hypothesis ( $H_0$ ), which states that there is no causal relationship between the variables, is rejected. A relationship from government spending (X1) to unemployment and the number of graduate students also emerged in two slow periods ( $X1 \rightarrow X3$ ) ( $X1 \rightarrow X4$ ) ( $P = 0.0217$ ,  $P = 0.075$ ). In four temporal slowdowns, a significant causal relationship emerged from government spending (X1) to unemployment ( $P = 2.E-06$ ). The results indicate a causal relationship in two periods of slowdown, namely, from unemployment to higher education spending ( $X3 \rightarrow X2$ ) at a significant level ( $P = 0.0671$ ). And, from the number of graduates to higher education spending and unemployment ( $X4 \rightarrow X2$ ) ( $X4 \rightarrow X3$ ) at a significant level ( $P = 0.0756$ ) ( $P = 0.0671$ ). A one-way causal relationship also emerged in four periods, ranging from expenditure on higher education to government expenditure ( $X2 \rightarrow X1$ ) with a significant level ( $P = 0.0001$ ).

Gross domestic product is the source of financing in the Iraqi rentier economy, which is mainly dependent on oil. Government spending depends on the budget that depends on oil

prices. Unemployment comes as a result of the lack of job opportunities and the lack of provisions as a result of fluctuations in oil prices and their impact on appropriate government spending, as well as the weak role of the private sector. The GDP is also



**Table (3)** The results of the causal relationship between government spending (x1), expenditure on higher education (x2), GDP, unemployment (X3), university graduates (X4).

<b>Null Hypothesis: H0 There is no causal relationship</b>	<b>Lags</b>	<b>Prob</b>	<b>F-Statistic</b>	<b>The Decision</b>
GDP does not Granger Cause X1	2	0.0953	2.59646	<b>Reject:H<sub>0</sub></b>
X1 does not Granger Cause X3	2	0.0217	4.51409	<b>Reject:H<sub>0</sub></b>
X1 does not Granger Cause X4	2	0.0423	3.62031	<b>Reject:H<sub>0</sub></b>
X4 does not Granger Cause X2	2	0.0756	2.88122	<b>Reject:H<sub>0</sub></b>
X3 does not Granger Cause X2	2	0.0671	3.03056	<b>Reject:H<sub>0</sub></b>
GDP does not Granger Cause X3	2	0.0938	2.61633	<b>Reject:H<sub>0</sub></b>
GDP does not Granger Cause X4	2	0.0010	9.29953	<b>Reject:H<sub>0</sub></b>
X4 does not Granger Cause X3	2	0.0533	3.32148	<b>Reject:H<sub>0</sub></b>
X2 does not Granger Cause X1	4	0.0001	10.9145	<b>Reject:H<sub>0</sub></b>
GDP does not Granger Cause X1	4	0.0021	6.44160	<b>Reject:H<sub>0</sub></b>
X1 does not Granger Cause GDP	4	0.0531	2.87131	<b>Reject:H<sub>0</sub></b>
X1 does not Granger Cause X3	4	2.E-06	20.0573	<b>Reject:H<sub>0</sub></b>
X2 does not Granger Cause GDP	4	0.0252	3.60144	<b>Reject:H<sub>0</sub></b>
GDP does not Granger Cause X3	4	0.0273	3.52125	<b>Reject:H<sub>0</sub></b>
GDP does not Granger Cause X4	4	0.0150	4.13672	<b>Reject:H<sub>0</sub></b>
X4 does not Granger Cause X3	4	0.0356	3.25572	<b>Reject:H<sub>0</sub></b>

Source: Prepared by the researcher based on data from Table (1) and using the E-views 10 program.

reflected in its impact on the level of per capita income. It has been linked to the numbers of graduates who represent human capital. Which is supposed to contribute to economic growth and thus GDP.

The lack of job opportunities for graduates has led to increased unemployment rendered among university degree holders, which made spending on higher education unproductive in this case. The relationship between spending on higher education and government spending is that spending on education represents spending on human capital, which has been very limited in Iraq despite the large budgets that have accompanied high oil prices.

## 5. CONCLUSIONS AND RECOMMENDATIONS

### CONCLUSIONS

1- Education did not play its role in the economic enlivenment during the studied period, during which Iraq went through many challenges and difficult conditions that were reflected in the reality of the country. Government spending on educational institutions in Iraq was weak, and this led to a decline in the role of these institutions in the economic development of the country. The highest percentage of spending on higher education of GDP was 0.47% in 2007, and the lowest percentage of spending was 0.01% in 2005.

2- The number of public universities reached 35 universities, and the number of private universities and colleges reached 64 universities and private colleges in 2020, accompanied by an increase in the number of students and the population, reaching 253842 students, 40222493 (million people).

3- The weak absorption of students in higher education due to the lack of institutions to accommodate the numbers of students, as the number of public universities did not increase in proportion to the increase in the number of students. Offset by the increase in the number of private universities, which represent an economic burden on the students and their families.

4- The absence of a reliable database of the size of the workforce, the numbers of the unemployed and the requirements of the Iraqi labor market.

5- The education system in Iraq was facing severe consequences even before the arrival of the Corona pandemic (Covid 19), imposed by challenges represented by political and social instability and weak government spending on education in general and higher education in particular.

6- Since the Corona pandemic, educational institutions, including universities, have been closed. The trend is towards e-education and the transition





from traditional methods of teaching to new ways in which technology is integrated into teaching and learning.

7- The Granger cause showed the existence of a significant and one-way causal relationship at two periods of time lag and four periods heading from GDP to government spending and from unemployment to spending on higher education and from the number of graduates to spending on higher education and unemployment. One in four periods heading from spending on higher education to government spending, a significant causal relationship from GDP to government spending and in two directions with four periods of slowing down, meaning that the GDP affects government spending and vice versa.

### RECOMMENDATIONS

1- Maintaining to the infrastructure of public universities, colleges and private universities to accommodate the increasing number of students while modifying the curricula to suit the needs of the labor market so that educational outputs become appropriate inputs to the labor market.

2- Increasing the percentage of spending on education and health in the state's general budget, increasing spending on research and development, and stimulating and regulating the participation of the private sector with its financial capabilities with the public sector to invest in human capital.

3- Human capital represents the basis of progress. which contributes more to increasing productivity and increasing GDP. Therefore, the relationship between higher education majors and economic institutions must be strengthened in order to provide the economy with human capital appropriate to its needs.

4- Providing graduates with flexible education and training that gives them the ability to innovate and constantly renew. Take care of the outstanding is achieved through acquire skills and experiences from all countries of the world.

5- Improving the outputs of scientific research and creativity in order to develop its resources as well as work efficiently and quickly so that Iraq can get out of the deteriorating health and service reality through scientific research and the establishment of workshops, seminars and conferences in partnership with the various departments and ministries of the state so that the universities can have a role in economic development.

6- Creating job opportunities for graduates in the private sector by granting loans to the private sector. Making tax cuts and pledging to purchase the product in exchange for labor absorption. Protecting the local

product from foreign competition, as well as providing a stimulating and attractive business environment for foreign investment and partnership with the private sector.

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