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RESEARCH ARTICLE

The Impact of Government Expenditures on the Labor Market and Its Significance for the Education Sector: Evidence from Iraq

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ABSTRACT

This study aimed to identify the impact of Government Expenditures (GE) on the Education Sector (ES) on and development of the labor market in Iraq. The analytical survey method collected data, including 2000-2022. This study concluded that GE on education has a negative and significant impact on the illiteracy rate among young people while Expenditures on research and development has a negative and significant impact. It is shown that GE on education has a positive and significant impact on the unemployment rate among young people, while Expenditures on research and development has a positive but insignificant impact. As for the youth labor force, GE on education impacts it positively and significantly, a positive but insignificant impact on study and development. GE on education negatively and significantly impacts the female labor force with intermediate education. GE on education has a negative and insignificant impact on the male labor force with intermediate education. Moreover, it has a negative and significant impact on the female labor force participation rate, while Expenditures on research and development has a positive and insignificant impact.

INTRODUCTION

The ES in any country seeks to achieve humanitarian goals that work to develop individuals and direct them toward a rational scientific direction [1], [2]. Continuing and developing science provides opportunities for ambition and emphasizes the formation of individuals' lives [3], [4]. Education is important in creating knowledge because it provides the appropriate atmosphere, requirements, and opportunities for learners and individuals to invent and innovate [5]. The ES aims to achieve economic growth by achieving economic goals and has a significant role in contributing to investments [6], [7]. Education is a major player in the formation and building of human capital because education and human capital have a positive relationship [8]. Education provides a highly trained human force with professional and technical efficiency that society supplies to achieve economic goals [9], [10].

The interest in education mirrors people's development and progress, as it measures economic, health, and social systems [11]. Let us look at the impact of the relationship between the educational and economic systems [12], [13]. We find that it is a causal dependency relationship with a reciprocal effect between the two parties, as we find that the development of the educational system [14] and its support for the latest educational means and technological methods and the expansion in establishing universities and schools and distributing them according to a map that serves the needs of individuals and diversifying specializations in line with the growth of society and implementing development plans and eliminating illiteracy and focusing on preparing and qualifying cadres and individuals and training them and providing them with knowledge, information, foundations and educational principles that are consistent with the information received by students and developing curricula to be compatible with the requirements of development and human development and change to achieve comprehensive development [15]. The continuous increase in education

expenditures during the twentieth century led to an increase in interest by those concerned with education, planning, and economic affairs, as expenditures directed to the ES took up a significant portion of the state budgets, which necessitated that this increase become a phenomenon facing planners, economists and officials of different orientations [16], [17]. We can deduce from the report from UNESCO in 1998 on education allocations worldwide, where the report stated that spreading education requires doubling [18]. Therefore, we often find that there is a difference between countries in the size of Expenditures on education, and this difference is due to many factors, including the size of economic resources and the political system they follow, in addition to the level of development of those countries [19], [20]. Accordingly, educational expenditure has become one of the most important indicators through which we can deduce the state's effort it is making in the ES [21]. Because this sector is of great importance in educating human beings, which is considered the basis for the development process and the means to achieve various goals and then raise the social and economic level of the country [22].

The problem is that Iraq faces many difficulties and problems in achieving human development, represented by the weakness of the government's role in managing economic resources in line with human development goals. The ES has occupied a secondary role in its development and economic policy, unlike other countries that give the ES high importance. We notice the decline in Expenditures on the ES in a way that does not meet the aspirations of educational cadres in university institutions.

METHODOLOGY:

Sample

To describe the community representing Iraq, which was divided according to the studied variables represented by the independent variables (GE on the ES, GE on study and development) from 2000-2022.

Study Tools

The researchers utilized the World Bank bulletins as a primary tool; the bulletins and periodic reports issued by the World Bank were relied upon, containing comprehensive data on GE on education, study, and development to describe the method by which the study data was obtained. In addition to various economic and social indicators such as the illiteracy rate, unemployment rate, and labor force participation rate for Iraq during the period 2000-2022, the data were collected by reviewing the bulletins available on the World Bank website and extracting the relevant data from the statistical tables and attachments available in these bulletins. Figure 1 shows the study variables.

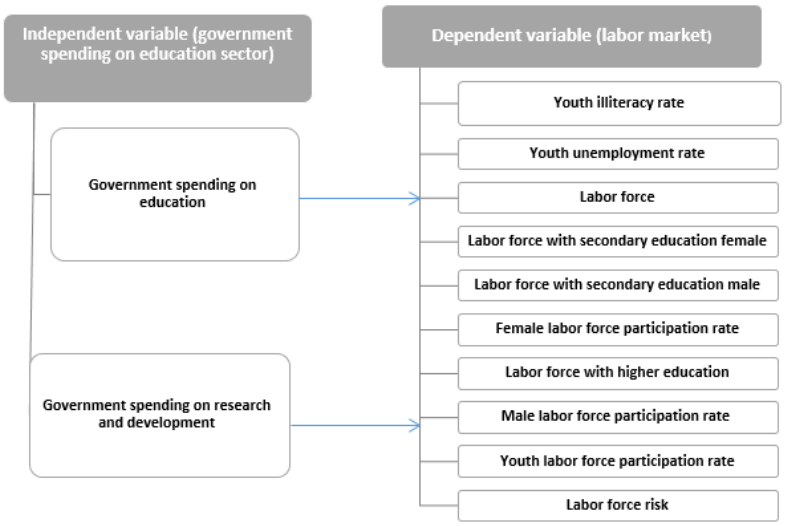

Figure 1. Study Scheme

RESULTS

The study model was described by multiple linear regression analysis, and the following steps can be used to estimate the model by testing the stability of the time series and determining their rank using the expanded Dickey-Fuller (ADF) unit root test and estimating the linear regression model.

Furthermore, the integrity and stability of the model are tested through a set of tests, including the absence of linear multiplicity through the (VIF) test and the absence of serial correlation in the model. The stability of variance (homogeneity of variance) was also used, and the stability test of the model was used through the CUSUM test.

Study Models

The first model: The relationship between the illiteracy rate and GE with GE on the ES and GE on study and development.

Table 1. Results of estimating the relationship between the illiteracy rate and GE on the ES and GE on study and development

Variable	Coefficient	Standard deviation	t	Probability
C	11594061	1178201.	9.840478	0.0000
LGEDEXP	-0.129005	0.020880	-6.178346	0.0000
LTRIA_DEV	-0.304560	0.087853	-3.466687	0.0024
Adjusted-R square	69.9	-	-	-
F-Statistic	26.516	-	0.000	-
DW	2.448	-	-	-

It is clear from the results in Table 1 that the coefficient of GE on the ES has a negative and significant effect on the illiteracy rate among young people (over 15 years old) (probability less than the significance level 0.05, 0.01) while Expenditures on education and development has a negative and significant effect (probability less than the significance level 0.05, 0.01). By referring to the adjusted coefficient of determination, we note that the explanatory model variables determine 69.9% of the changes in the total illiteracy rate. Fisher's test of the model's significance indicates that the model is acceptable at a significance level of 1% (probability less than the significance level of 0.01).

Colinearity test

Table 2. Value of the variance inflated coefficient (VIF) for the variables in the model (1)

Independent Variable	VIF
LGEDEX	1.003816
LTRIA_DEV	1.003816

The results of Table 2. for the inflated coefficient of variance show no linear coupling between the independent variables in the first model, which are GE on the ES and Expenditures on study and development, as (VIF < 5).

Table 3. The following shows the results of the tests on the model's residuals. Table 3. Residuals Test

Test	Standard	Value	Probability
Nature of residuals	Jarque-Bera	4.784	0.914
Autocorrelation	Breusch-Godfrey	0.1.851	0.186
Homogeneity of variance	Breusch-Pagan-Godfrey	1.0803	0.359

By reading the results of Table 3. which are related to the first model, it is clear that the residuals are distributed generally according to the Jarque-Bera test, and there is no autocorrelation of errors Breusch-Godfrey, and the stability of homogeneity Breusch-Pagan-Godfrey. The cumulative sum of recurring residuals test CUMSUM was used to ensure that the variables under study and the model are free of structural changes.

The second model: The relationship between the unemployment rate among the youth category, GE on the ES, and GE on study and development.

Table 4. Results of estimating the relationship between the unemployment rate among the youth category and GE on the ES and GE on study and development

Variable	Coefficient	Standard deviation	t	Probability
C	1.986976	0.127508	15.58312	0.0000
LGEDEXP	0.067451	0.008242	8.183305	0.0000
LTRIA_DEV	2.376406	4.998220	0.475451	0.6399
Adjusted-R square	57.9	-	-	-

F-Statistic	34.114	-	0.000	-
DW	1.003	-	-	-

The results in Table 4 show that the GE coefficient on the ES has a positive and significant effect on the unemployment rate among youth (over 15 years) (probability less than the significance level 0.05, 0.01) while Expenditures on education and development has a positive but insignificant effect (probability more significant than the significance level 0.05, 0.01). Referring to the adjusted coefficient of determination, we note that the model's explanatory variables determine 75.9% of the changes in the total unemployment rate among youth. Fisher's test of the significance of the model indicates that the model is acceptable at a significance level of 1% (probability less than the significance level of 0.01).

Colinearity test

Table 5. Value of the variance inflated coefficient (VIF) for the variables in the second model

Independent Variable	VIF
LGEDEX	1.006237
LTRIA_DEV	1.006237

Table 5 results for the inflated coefficient of variance confirm no linear coupling between the independent variables in the second model, which are GE on the ES and Expenditures on study and development, as (VIF < 5)—table 6. The following shows the results of the tests on the model's residuals.

Table 6. Residuals test for the second model

Test	Standard	Value	Probability
Nature of residuals	Jarque-Bera	4.846	0.0887
Autocorrelation	Breusch-Godfrey	2.921	0.066
Homogeneity of variance	Breusch-Pagan-Godfrey	3.389	0.0551

By reading the results of Table 6. which pertains to the second model, it is clear that the residuals are normally distributed regarding the Jarque-Bera test, and there is no autocorrelation of errors Breusch-Godfrey, and the stability of homogeneity Breusch-Pagan-Godfrey. The cumulative sum of recurring residuals test (CUMSUM) was used to ensure that the variables under study and the model are free of structural changes.

The third model: The relationship between the labor force and GE on the ES and GE on study and development.

Table 7. Results of estimating the relationship between the labor force and GE on the ES and GE on study and development

Variable	Coefficient	Standard deviation	t	Probability
C	1.986976	0.127508	15.58312	0.0000
LGEDEXP	0.067451	0.008242	8.183305	0.0000
LTRIA_DEV	2.376406	4.998220	0.475451	0.6399
Adjusted-R square	57.9	-	-	-
F-Statistic	34.114	-	0.000	-
DW	1.003	-	-	-

The results in Table 7 show that the GE coefficient on the ES has a positive and significant effect on the youth workforce (over 15 years old) (probability less than the significance level 0.05, 0.01) while Expenditures on education and development has a positive but insignificant effect (probability more significant than the significance level 0.05, 0.01). Referring to the adjusted coefficient of determination, we note that the explanatory model variables determine 75.9% of the total youth unemployment rate changes. Fisher's test of the model's significance indicates that the model is acceptable at a significance level of 1% (probability less than the significance level of 0.01).

Collinearity test:

Table 8. Value of the variance inflated coefficient (VIF) for the variables in the third model

Independent Variable	VIF
LGEDEX	1.006237

LTRIA_DEV	1.006237

The results of Table 8. for the inflated coefficient of variance show that there is no linear multiplicity between the independent variables in the third model, which are GE on the ES and study and development, as (VIF < 5). The following table shows the results of the tests on the model's residuals.

Table 9. Residuals test for the third model

Test	Standard	Value	Probability
Nature of residuals	Jarque-Bera	4.846	0.0887
Autocorrelation	Breusch-Godfrey	2.921	0.066
Homogeneity of variance	Breusch-Pagan-Godfrey	3.389	0.0551

By reading the results of Table 9. for the third model, it is clear that the residuals are normally distributed regarding the Jarque-Bera test, the absence of autocorrelation of errors Breusch-Godfrey, and the stability of homogeneity Breusch-Pagan-Godfrey. The cumulative sum of recurring residuals test (CUMSUM) was used to ensure that the variables under study and the model are free of structural changes.

The fourth model: The relationship between the labor force and secondary education for females with GE on the ES and GE on study and development.

Table 10. Results of estimating the relationship between the labor force and secondary education for females with GE on the ES and GE on study and development

Variable	Coefficient	Standard deviation	t	Probability
C	11594061	1178201.	9.840478	0.0000
LGEDEXP	-0.129005	0.020880	-6.178346	0.0000
LTRIA_DEV	-0.304560	0.087853	-3.466687	0.0024
Adjusted-R square	69.9	-	-	-
F-Statistic	26.516	-	0.000	-
DW	1.263	-	-	-

The results in Table 10 show that the GE coefficient on the ES has a negative and significant effect on the female labor force with intermediate education (probability less than the significance level 0.05, 0.01), while Expenditures on research and development has a negative and significant effect (probability less than the significance level 0.05, 0.01). Referring to the adjusted coefficient of determination, we note that the explanatory model variables determine 69.9% of the changes in the total female labor force with intermediate education. Fisher's test of the model's significance indicates that the model is acceptable at a significance level of 1% (probability less than the significance level of 0.01).

Colinearity test:

Table 11. Value of the variance inflated coefficient (VIF) for the variables in the fourth model

Independent Variable	VIF
LGEDEX	1.003816
LTRIA_DEV	1.003816

The results of Table 11 for the inflated variance coefficient show no linear coupling between the independent variables in the fourth model, which are GE on the ES and Expenditures on study and development, as (VIF < 5). The following table shows the results of the tests on the model's residuals.

Table 12: Residuals test for the fourth model

Test	Standard	Value	Probability
Nature of residuals	Jarque-Bera	4.784	0.0914
Autocorrelation	Breusch-Godfrey	1.851	0.186
Homogeneity of variance	Breusch-Pagan-Godfrey	1.080	0.359

By reading the results of Table 12. for the fourth model, it is clear that the residuals are normally distributed according to the Jarque-Bera test, the absence of autocorrelation of errors Breusch-Godfrey, and the stability of homogeneity Breusch-Pagan-Godfrey. The cumulative sum of recurring residuals test (CUMSUM) was used to ensure that the variables under study and the model are free of structural changes.

CONCLUSIONS:

The results of the study produced by the field side can be interpreted as showing that GE on education has a negative and significant effect on the illiteracy rate among young people, and Expenditures on research and development has a negative and significant effect. It is clear that GE on education has a positive and significant effect on the unemployment rate among young people, and Expenditures on research and development has a positive but insignificant effect. GE on education has a positive and significant effect on the youth workforce, and Expenditures on research and development has a positive but insignificant effect. It is clear that GE on education has a negative and significant effect on the female workforce with intermediate education, and Expenditures on research and development has a negative and significant effect. GE on education has a negative and insignificant effect on the male labor force with intermediate education, and Expenditures on education and development has a negative and significant effect. It also negatively and significantly affects the female labor force participation rate. Expenditures on education and development has a positive and insignificant effect. A negative and insignificant effect on the highly educated labour force and Expenditures on education and development has a negative and significant effect. It has a positive and significant effect on the male labor force participation rate, and Expenditures on education and development has a negative and significant effect. In addition, it has a positive and significant effect on the youth labor force participation rate. Expenditures on education and development has a positive and significant effect.

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