

ISSN (ONLINE) 2598 9928



INDONESIAN JOURNAL OF LAW AND ECONOMIC
PUBLISHED BY
UNIVERSITAS MUHAMMADIYAH SIDOARJO

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Indonesian Journal of Law and Economics Review

Vol. 21 No. 2 (2026): May
DOI: 10.21070/ijler.v21i2.1565

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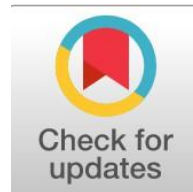
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The Dynamic Relationship Between Public Education Expenditure and Economic Growth: A Case Study of Iraq (2010–2024)

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Abstract

General Background: Public expenditure on education is an important investment in human capital and economic development. **Specific Background:** Iraq experienced fluctuations in education expenditure and economic growth during 2010–2024 due to oil dependency, political instability, and financial crises. **Knowledge Gap:** Limited studies explain the dynamic relationship between educational spending, human capital, and economic growth in Iraq under unstable economic conditions. **Aims:** This study examines the relationship between public education expenditure and economic growth in Iraq by analyzing educational, economic, and policy indicators. **Results:** The findings show that educational spending has a positive long-term relationship with economic growth, but its contribution is constrained by weak infrastructure, administrative inefficiency, corruption, curriculum gaps, and reliance on oil revenues. The study also identifies gradual improvements in literacy, enrollment, education quality, and graduate employment indicators, while technical and vocational education supports productivity and economic diversification. **Novelty:** This study combines educationalexpenditure trends, human capital indicators, and sectoral economic analysis to explain the multidimensional relationship between education and growth in Iraq. **Implications:** Improving educational quality, governance, vocational training, and equitable resource allocation is essential to strengthen sustainable economic growth.

Highlights:

- Educational expenditure in Iraq showed a positive long-term connection with human capital development and productivity.
- Economic expansion remained unstable because of oil dependency, political instability, and financial fluctuations.
- Technical and vocational training supported workforce readiness and economic diversification strategies.

Keywords: Education Expenditure, Economic Growth, Human Capital, Vocational Education, Public Policy

Indonesian Journal of Law and Economics Review

Vol. 21 No. 2 (2026): May
DOI: 10.21070/ijler.v21i2.1565

Published date: 2026-05-20

Introduction

Education is one of the fundamental pillars of national economic development, as public spending on education represents a direct investment in human capital, the main driver of sustainable economic growth. Higher efficiency and improved scientific and technical skills within the labor force contribute to increased productivity and foster innovation, which in turn positively affect the gross domestic product (GDP) and the overall standard of living. Moreover, they enhance the competitiveness of the national economy at both the regional and international levels.

In Iraq, public spending on education represents a strategic issue with both economic and social dimensions, reflecting the state's ability to train and develop human resources in line with the needs of the modern labor market and global economic transformations. However, between 2010 and 2024, Iraq has faced multiple challenges that have affected the effectiveness of educational expenditure. These include wars and internal conflicts, heavy dependence on oil as the primary source of revenue, weak educational infrastructure, recurring financial crises, and geographical disparities in the distribution of educational resources among provinces. These factors have had a noticeable impact on economic growth rates, underscoring the need for a deeper understanding of the relationship between educational spending and economic development.

Research Significance

The significance of this research lies in clarifying the relationship between public spending on education and economic growth in Iraq by analyzing the impact of education on human capital and productivity, identifying gaps in resource allocation and educational quality, and providing insights for policymakers to develop effective educational and financial policies that promote economic diversification and sustainability.

Research Problem

Despite the importance of educational expenditure as a fundamental driver of economic growth, Iraq faces structural, political, and economic challenges that have affected the effectiveness of such spending. These challenges include heavy dependence on oil, internal conflicts, political instability, and recurring financial crises. Moreover, the relationship between educational spending and economic growth is influenced by the quality of education, resource distribution, and administrative efficiency. This raises questions about the extent to which educational policies can effectively promote economic growth and achieve tangible outcomes.

Research Hypothesis

This research hypothesizes the existence of a positive and dynamic relationship between public spending on education and economic growth in Iraq. It assumes that increasing educational expenditure, improving education quality, and enhancing administrative efficiency contribute to strengthening human capital and increasing productivity, thereby supporting sustainable economic growth. However, political, economic, and educational challenges may limit the effectiveness of this spending in driving growth.

Research Objectives

The main objective of this study is to examine the relationship between educational spending and economic growth in Iraq by analyzing the development of public expenditure on education, annual economic growth indicators, and the impact of political and economic events on this growth. The study also aims to explore the link between education and human capital in terms of education quality, enrollment rates, and post-graduation employment. In addition, it seeks to analyze the sectoral role of the economy particularly the oil and industrial sectors in supporting the GDP. The research further evaluates the political, economic, and educational challenges that hinder the effectiveness of educational spending and proposes ways to strengthen the relationship between education and economic growth by improving educational policies, enhancing education quality, promoting vocational training, and fostering public-private partnerships, while envisioning future scenarios for the impact of educational expenditure on economic growth.

Research Methodology

This study adopts a descriptive and analytical approach to examine the relationship between public spending on education and economic growth in Iraq. Secondary data were collected from official sources and academic reports, using indicators related to educational expenditure, economic growth, human capital, and sectoral data. The data were analyzed through tables and graphical representations, with comparisons made between Iraq and several Arab countries to identify gaps and educational policies. The study also explores the impact of education on human capital and the productivity of economic sectors while forecasting future scenarios to strengthen the link between education and growth.

First: Public Spending on Education

1. Public Spending on Education and Its Economic and Social Dimensions

Public spending on education is defined as the financial allocations made by the state to cover all expenses of the educational sector, including teachers' salaries, educational infrastructure, student financial support, and various educational programs (Akkawi, 2018; Al-Dulaimi & Al-Mashhadani, 2021). Educational expenditure is considered one of the most significant tools governments use to promote human and economic development, given its direct role in enhancing human resource efficiency and developing individuals' productive capacities. The dimensions of public spending on education can be summarized as follows:

Economic Dimension: Reflected in supporting economic growth by increasing productivity and improving labor efficiency (Al-Zuhairi & Murad, 2023).

Social Dimension: Contributes to promoting social justice by expanding educational opportunities for all segments of society and reducing unemployment and poverty rates (Iraqi Ministry of Planning, 2022).

2. Classifications of Educational Expenditure

Educational expenditure can be classified into several educational levels, each serving specific developmental objectives that contribute to building human capital and supporting economic growth.

Basic Education: Spending at this level includes primary schools, teachers' salaries, and learning materials. Its goal is to ensure universal access to basic education and improve literacy rates.

Secondary Education: Expenditure focuses on secondary schools, educational equipment, and extracurricular activities, aiming to enhance critical thinking skills and prepare youth either for higher education or for integration into the labor market.

Higher Education: This includes universities, colleges, research programs, and scholarships. It contributes to producing specialized professionals, supporting scientific research, and fostering innovation.

Technical and Vocational Education: Expenditure in this area targets vocational institutes, training programs, and workshops designed to prepare the workforce for the labor market and increase productivity in industrial and service sectors (Al-Zuhairi & Murad, 2023; Iraqi Ministry of Planning, 2022).

3. Objectives of Educational Expenditure

The objectives of educational expenditure encompass economic, social, and developmental aspects, which can be summarized as follows:

- a. **Developing Human Capital:** Education serves as the foundation for improving individual skills and capabilities, thereby enhancing the efficiency of human resources and strengthening the country's economic competitiveness (Akkawi, 2018).
- b. **Reducing Unemployment:** By providing technical, vocational, and practical training, individuals become better qualified to enter the labor market effectively (Al-Dulaimi & Al-Mashhadani, 2021).
- c. **Enhancing Productivity and Economic Growth:** Higher education levels contribute to increased productivity and improved national economic performance through a more efficient workforce capable of adapting to technological advancements (Iraqi Ministry of Planning, 2022).

Second: Economic Growth

1. Economic Growth and Its Components

Economic growth is defined as the continuous increase in the productive capacity of an economy, leading to a rise in the total output of goods and services over a specific period (Akkawi, 2018; Todaro & Smith, 2020). This growth is considered a key indicator of a country's progress and the improvement of citizens' living standards (Al-Dulaimi & Al-Mashhadani, 2021). The main components of economic growth include:

Capital: Includes physical investments such as factories and equipment, as well as financial investments to support production (Samuelson & Nordhaus, 2010).

Labor: Refers to human resources represented by both skilled and unskilled workers (Al-Zuhairi & Murad, 2023).

Technology: Encompasses innovations and scientific developments that enhance production efficiency (Romer, 1990).

Education: Involves developing individuals' skills and knowledge, which increases economic productivity and strengthens human capital (Iraqi Ministry of Planning, 2022).

2. Factors Influencing Economic Growth

Economic growth is influenced by several key factors, the most important of which are:

- a. Capital: Increased investment enhances productive capacity and generates new employment opportunities (Todaro & Smith, 2020).
- b. Labor Force: The availability of an educated and skilled workforce contributes to improving production quality and efficiency (Al-Dulaimi & Al-Mashhadani, 2021).
- c. Technology: Technological advancements enhance productivity and reduce production costs (Romer, 1990).
- d. Education: Education is one of the most significant long-term determinants of economic growth, as it increases individuals' capabilities, stimulates innovation, and boosts productivity (Iraqi Ministry of Planning, 2022).

3. The Role of Education as a Key Driver of Economic Growth

Education plays a vital role in supporting economic growth through several dimensions:

- a. Enhancing Workforce Efficiency: Providing individuals with the skills and knowledge necessary to achieve higher productivity levels (Akkawi, 2018).
- b. Promoting Innovation and Creativity: Education strengthens the ability to develop new ideas and adopt modern technologies (Romer, 1990).
- c. Achieving Economic and Social Equity: Education provides equal opportunities for all individuals, thereby increasing social participation in development (Iraqi Ministry of Planning, 2022).

Third: Economic Theories Linking Education and Economic Growth

1. Human Capital Theory

The Human Capital Theory is one of the most prominent theories explaining the link between education and economic growth. It is based on the premise that individuals represent a form of human capital and that investment in their education and training increases their productivity, thereby promoting economic growth (Gary Becker, 1993; Shihab Saleh, 2023).

Mathematically, economic growth according to this theory can be expressed as:

$$Y = A \cdot f(K, L, H)$$

Where:

- **Y** = Gross Domestic Product (GDP)
- **A** = Technological progress
- **K** = Physical capital
- **L** = Labor
- **H** = Human capital resulting from education and training

Several studies indicate that increasing years of education and investing in vocational training led to higher individual productivity and, consequently, greater economic growth (Abdul Majid Akkawi, 2018; Ammar Al-Dulaimi & Hussein Al-Mashhadani, 2021).

2. Knowledge-Based Growth Theory

This theory emphasizes that knowledge, innovation, and education are essential elements for achieving sustainable economic growth (Paul Romer, 1990; Ahmed Khalil, Jamal Atiya, & Wael Ibrahim, 2024).

The mathematical model of growth according to this theory suggests that technological progress is dependent on education and research and development (R&D). Analytical findings highlight that investment in education and training enhances human capital and strengthens the economy's competitiveness (Iraqi Ministry of Planning, 2022).

3. Solow Model of Economic Growth and Gross Domestic Product

The Solow Growth Model explains that economic growth depends on capital, labor, and technological progress, emphasizing that human capital generated through education enhances productivity (Robert Solow, 1956; Shihab Saleh, 2023).

The mathematical expression of growth in the Solow Model can be represented as:

$$Y = A \cdot f(K, L)$$

Empirical studies show that investment in education improves the efficiency of the labor force and, consequently, supports long-term economic growth (Abdul Majid Akkawi, 2018; Shihab Saleh, 2023).

Fourth: Dimensions of the Relationship Between Education and Economic Development

1. The Direct Relationship Between Educational Spending and Economic Growth

The direct relationship between educational spending and economic growth is reflected in how government expenditure on education contributes to improving the level of human capital and increasing GDP. Numerous studies have shown that raising the share of educational spending as a percentage of GDP positively affects economic growth rates (Theodore Schultz, 1961; Mohammed Al-Jubouri, 2020).

2. The Indirect Relationship Through Productivity and Human Capital Indicators

The impact of education on economic growth is not limited to a direct relationship; it also appears indirectly through improvements in productivity, enhanced skills, reduced unemployment, and stronger human capital indicators (Eric Hanushek & Ludger Woessmann, 2015; Hussein Al-Hassani, 2019).

This perspective emphasizes that the quality of education is more critical than its quantity, as economies focusing on curriculum development and teacher efficiency have achieved higher economic growth compared to those that merely increased years of schooling (Hanushek & Woessmann, 2015).

3. The Role of Educational and Financial Policies in Strengthening This Relationship

Educational and financial policies play a pivotal role in enhancing the relationship between education and economic development. Efficient budget allocation, educational reform, and increased investment in research and development contribute to achieving long-term economic growth (Amartya Sen, 1999; Iraqi Ministry of Planning, 2022).

Reports on human development in Iraq indicate that inefficiencies in financial resource distribution and shortcomings in educational policies limit the impact of education on economic growth. Therefore, a comprehensive restructuring of educational spending is required to strengthen its developmental role (UNDP, 2022; Ali Al-Mursoumi, 2021).

Table (1): The Impact of Educational and Financial Policies on Economic Growth

Educational and Financial Policies	Impact on Economic Growth
Increasing the Efficiency of Budget Allocation	Increasing the Return on Investment in Education
Supporting Scientific Research and Innovation	Enhancing Productivity and Competitiveness
Curriculum Reform and Teacher Development	Improving the Quality of Human Capital

Source: Ali Al-Mursoumi, 2021; Iraqi Ministry of Planning, 2022.

The Development of Educational Spending and Economic Growth in Iraq (2010–2024)

First: The Development of Public Spending on Education in Iraq

Public spending on education is one of the key indicators reflecting the extent of a state's commitment to developing human capital and supporting the process of economic and social development. The amount of resources allocated to the education sector is not merely a financial entry in the national budget; rather, it represents a long-term strategic investment that contributes to improving skill levels, expanding knowledge, and enhancing productivity.

In the case of Iraq, tracking the evolution of educational spending over recent years is essential to understanding the nature of the country's educational and financial policies and their capacity to address challenges such as weak infrastructure, high unemployment rates, and the need for economic diversification.

The volume of public expenditure on education serves as one of the most important indicators reflecting the direction of Iraq's economic and social policy. During the period 2010–2024, the share of education within the national budget and as a percentage of the gross domestic product (GDP) exhibited notable fluctuations. Educational spending gradually increased after 2010, reaching its peak in 2016, before declining significantly after 2020 due to financial and economic crises (World Bank, 2023; UNESCO, 2022).

Table (2): Development of the Percentage of Education Expenditure in Iraq (2010–2024)

Year	Education Expenditure as a Percentage of the General Budget	Education Expenditure as a Percentage of Gross Domestic Product (GDP)
2010	8.9	3.6

ISSN 2598-9928 (online), <https://ijler.umsida.ac.id>, published by Universitas Muhammadiyah Sidoarjo

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2011	9.6	3.8
2012	10.4	4.0
2013	11.3	4.2
2014	12.5	4.3
2015	13.2	4.5
2016	14.0	4.71
2017	12.8	4.4
2018	11.2	4.2
2019	10.1	4.0
2020	8.7	3.9
2021	7.2	3.6
2022	5.84	3.4
2023	4.15	3.1
2024*	4.5	3.2

Source: World Bank Data (2023); UNESCO Institute for Statistics (2022); Country economy (2024); YCharts (2024); Iraqi Budget Reports (2022–2024).

The table indicates that the share of education in the general budget gradually increased after 2010, reaching its highest level in 2016 (14% of the budget and 4.71% of GDP). This rise is attributed to higher oil revenues and the relative focus on rebuilding the educational infrastructure after decades of wars and sanctions. However, the figures sharply declined after 2016, reaching only 4.15% in 2023, which is low compared to international standards recommending at least 5–6% of GDP for education (UNESCO, 2022).

The data show that the Iraqi government, after 2003, allocated increasing shares of the budget to education to reconstruct the infrastructure destroyed by conflicts. Nevertheless, the education policy lacked sustainability: in some years, spending exceeded 12% of the general budget but quickly dropped to less than 5% in recent years (UNESCO, 2022). This is attributed to the absence of a long-term national education strategy, coupled with weak resource management efficiency, which negatively affected the allocation between primary, secondary, and higher education (World Bank, 2023).

1. Financial and Economic Challenges Affecting Education Expenditure

During the study period, Iraq faced significant financial challenges that directly impacted education spending. The main challenges include:

- a. Decline in oil prices in 2014 and 2020, which reduced public resources.
- b. Increase in military and security spending at the expense of social sectors, particularly during the war against ISIS (2014–2017).
- c. administrative corruption and weak financial governance, which lowered the efficiency of resources allocated to education (Transparency International, 2021).

These challenges prevented Iraq from reaching the recommended level of education expenditure of 5–6% of GDP, as suggested by international organizations (UNESCO, 2022).

2. Impact of Education Expenditure on Human Capital in Iraq (2010–2023)

Human capital is a fundamental pillar of economic growth, reflecting the level of education, skills, and experience that enable the workforce to contribute effectively to development. The quality of human capital is influenced by several key indicators: school enrollment rates, literacy rates, education quality, post-graduation employment indicators, and the geographic distribution of educational resources.

2.1 School Enrollment and Literacy Rates (2010–2023)

Enrollment and literacy indicators are among the most important measures to assess the efficiency of education spending and its contribution to human capital development. They reflect the ability of the education system to accommodate different age groups, reduce illiteracy rates, and improve essential skills necessary for economic and social development. Within this context, the evolution of enrollment rates and literacy in Iraq from 2010 to 2023 can be tracked as follows:

Table (3): School Enrollment and Literacy Rates in Iraq (%) (2010–2023)

Year	Primary Enrollment Rate	Secondary Enrollment Rate	Adult Literacy Rate (Ages 15+)
2010	93	54	83
2011	93.2	55	83.5
2012	93.5	55.5	84
2013	94	56	84.2
2014	94.2	56.5	84.5
2015	94.5	57	85
2016	95	58	85.5
2017	95.2	59	86
2018	95.5	60	86.2

2019	95.7	61	87
2020	96	62	87.5
2021	96.2	63	88
2022	96.5	64	88.5
2023	97	65	90

Source: World Bank, World Development Indicators (2023); UNESCO, Global Education Monitoring Report (2022).

Table 3 shows that school enrollment rates and literacy levels in Iraq during the period 2010–2023 demonstrated a gradual improvement, reflecting the direct impact of increased education spending and policies aimed at expanding school enrollment. Primary education enrollment rose from 93% in 2010 to 97% in 2023, indicating the success of government policies in ensuring universal basic education.

Secondary education enrollment also increased, from 54% to 65% during the same period; however, the gap between primary and secondary levels persists, highlighting challenges related to student retention in higher educational stages.

Regarding literacy, the rate among individuals aged 15 and above rose from 83% in 2010 to 90% in 2023, representing a positive indicator of improved basic skills across a broader segment of society. Nevertheless, the continued gap between primary and secondary enrollment points to structural shortcomings in the education system that need to be addressed, whether through infrastructure improvement, curriculum development, or enhanced family support programs to ensure student retention.

Therefore, Iraq has made tangible progress in enrollment and literacy indicators, but sustaining this progress and linking it to economic development requires adopting more effective education policies that focus on increasing secondary education participation. Secondary education is a critical stage for building human capital capable of pursuing higher education or efficiently integrating into the labor market (World Bank, 2023; UNESCO, 2022).

3. Education Quality and Post-Graduation Employment Indicators (2010–2023)

Education quality and graduates’ outcomes in the labor market are essential indicators reflecting the effectiveness of education spending in achieving economic and social development goals. The success of the education system is not measured solely by enrollment or literacy rates; it is more clearly reflected in graduates’ ability to integrate into the labor market, obtain jobs aligned with their qualifications, and the level of student satisfaction with the education they received.

Thus, assessing the relationship between education quality and post-graduation employment is particularly important in Iraq, as it determines the education system’s capacity to build productive and skilled human capital aligned with national economic needs.

Table 4 presents the key indicators of education quality and post-graduation employment in Iraq (%) during the period 2010–2023.

Year	-12Month Graduate Employment Rate	Education Quality Satisfaction Rate
2010	60	64.5
2011	60.5	65
2012	61	65.5
2013	61.5	66
2014	62	66.5
2015	62.5	67
2016	63	67.5
2017	63.5	68
2018	64	68.5
2019	64.5	69
2020	65	69.5
2021	65.5	70
2022	66	71

2023: Employment Rate – 66.5%; Student Satisfaction – 73%

Source: Iraqi Ministry of Higher Education (2023); World Bank (2023).

The table indicates a gradual improvement in employment rates and student satisfaction, reflecting the positive impact of education spending on developing and enhancing human capital. However, this progress still requires better alignment between educational outputs and the demands of the modern labor market to ensure a stronger match between academic qualifications and the practical skills required across various economic sectors.

4. Geographic Distribution of Educational Resources Across Governorates

The geographic distribution of educational resources is a fundamental element in evaluating the efficiency of the education system and the degree of equity in providing opportunities to students across all governorates. Variations in the number of schools, universities, and the student-to-teacher ratio reflect differences in resource allocation, which may lead to gaps in education quality between urban and rural areas.

Therefore, analyzing this distribution provides an important insight into the capacity of education policies to achieve regional balance and ensure equitable and comprehensive access to educational services.

Table 5 presents the geographic distribution of schools, universities, and teachers across Iraqi governorates in 2023.

Governorate	Number of Primary Schools	Number of Secondary Schools	Number of Universities	Student-Teacher Ratio
Baghdad	1500	800	10	1:20
Basra	800	400	4	1:22
Najaf	700	350	3	1:25
Dhi Qar	650	300	2	1:28
Karbala	600	280	2	1:27
Muthanna	800	400	4	1:22
Maysan	500	200	1	1:30
Anbar	480	180	1	1:31
Diyala	450	170	1	1:32
Salah ad-Din	470	190	1	1:29
Kirkuk	460	180	1	1:30
Babil	440	170	1	1:31
Rural Baghdad Governorate	500	200	1	1:28
Governorate	420	150	0	1:33

Source: Iraqi Ministry of Education (2023); Iraqi Ministry of Higher Education (2023).

The increased expenditure on education during the period 2010–2023 had a tangible impact on raising school enrollment rates and improving literacy levels. It also contributed to a gradual improvement in education quality and post-graduation employment opportunities, thereby enhancing human capital development. However, the uneven geographic distribution of educational resources across governorates highlights the need for more equitable policies to ensure inclusive and balanced development.

5. Evolution of Economic Growth Indicators in Iraq (2010–2023)

The economic growth rate is one of the key macroeconomic indicators reflecting a national economy’s capacity for expansion and production. It is usually measured by the annual change in GDP at constant prices, excluding the effects of inflation.

For Iraq, the period 2010–2023 was characterized by significant fluctuations in growth rates due to political changes, major economic events, and the economy’s heavy dependence on oil, alongside weak contributions from non-oil sectors (World Bank, 2023; International Monetary Fund, 2023).

The data show that Iraq’s economy experienced notable annual growth volatility during 2010–2023, reflecting structural fragility and overreliance on oil revenues. Certain years witnessed remarkable growth, such as 2012 with a rate of 13.94% and 2016 at 13.79%, driven by high oil prices and increased production. Conversely, some years recorded significant contractions, notably 2017 at –1.82% and 2020 at –12.04%, due to the impact of the COVID-19 pandemic, declining global oil prices, and ongoing conflicts and political instability.

The year 2023 also showed a contraction of –2.94%, demonstrating continued volatility in the Iraqi economy. This pattern indicates that economic growth in Iraq remains highly sensitive to oil price fluctuations rather than benefiting from economic diversification or productive investment, including education spending. These characteristics make growth vulnerable to setbacks during oil price declines or political and security disruptions, limiting the capacity of education expenditure to sustainably drive economic growth (World Bank, 2023; International Monetary Fund, 2023).

Table 6: Annual Economic Growth Rates in Iraq (2010–2023)

Year	Economic Growth Rate (%)
2010	6.40
2011	7.55
2012	13.94
2013	7.63
2014	0.20
2015	4.72
2016	13.79
2017	–1.82
2018	2.63
2019	5.96
2020	–12.04
2021	1.50
2022	7.64
2023	–2.94

Source: World Bank (2023); International Monetary Fund (2023).

6. Role of Economic Sectors in Supporting GDP

Analysis of the GDP structure indicates that the Iraqi economy relies heavily on the oil sector, while the contributions of non-oil industries, agriculture, and services remain limited.

Table 7: Contribution of Economic Sectors to Iraq's GDP (%) (2010–2023)

Year	Agriculture	Non-Oil Industry	Oil	Services
2010	4.5	6.8	43.2	45.5
2011	4.4	6.7	43.4	45.1
2012	4.3	6.5	44.2	44.7
2013	4.2	6.3	44.9	44.3
2014	4.1	6.2	45.7	43.9
2015	3.9	6.1	46.5	43.6
2016	3.8	6.0	47.0	43.2
2017	3.7	5.8	47.7	42.8
2018	3.6	5.6	48.4	42.4
2019	3.5	5.5	49.0	42.0
2020	3.3	5.5	49.3	41.9
2021	3.2	5.4	49.6	41.8
2022	3.0	5.3	50.3	41.4
2023	2.9	5.2	50.3	41.6

Source: World Bank (2023); Iraqi Central Statistical Organization (2022).

Table 7 reflects the sectoral composition of the Iraqi economy during the period 2010–2023, highlighting the continued dominance of the oil sector in GDP, compared to the limited contributions of non-oil sectors such as agriculture, industry, and services. The share of oil increased from 43.2% in 2010 to approximately 50.3% in 2023, indicating Iraq's heavy reliance on oil revenues as the primary source of growth and exposing the economy directly to global oil price fluctuations and domestic political and economic crises (World Bank, 2023; Iraqi Central Statistical Organization, 2022).

In contrast, agriculture's contribution gradually declined from 4.5% in 2010 to 2.9% in 2023, while the share of non-oil industry fell from 6.8% to 5.2% over the same period, reflecting limited investment and development in productive non-oil sectors and the impact of weak policies supporting economic diversification. The services sector experienced a slight decline from 45.5% to 41.6%, reflecting its reduced relative contribution to GDP due to the increasing dominance of oil, despite its importance in providing employment and essential services.

This analysis confirms that the Iraqi economy remains fragile and suffers from weak diversification, which limits the effectiveness of economic and educational policies in promoting sustainable growth. Efforts to increase the contribution of non-oil sectors, particularly industry and agriculture, could raise demand for skilled human capital, thereby enhancing the impact of education expenditure on long-term economic development.

The Relationship Between Education Expenditure and Economic Growth in Iraq and Ways to Enhance It

1. Studying the Dynamic Relationship Between Education Expenditure and Economic Growth

The relationship between education expenditure and economic growth is a central topic in macroeconomics. Education is considered an investment in human capital that enhances productivity and leads to sustainable growth. This relationship can be studied dynamically over time to understand the short- and long-term effects of education spending on GDP.

1.1 Descriptive Relationship Between Education Expenditure and Economic Growth

The relationship between education expenditure (as a percentage of GDP) and annual economic growth rates in Iraq during 2010–2023 can be examined using the previous tables, providing a descriptive comparison:

Table 8: Education Expenditure and Economic Growth in Iraq (2010–2023)

Year	Education Expenditure (% of GDP)	(%) Economic Growth Rate
2010	3.8	6.40
2011	3.9	7.55
2012	4.0	13.94
2013	4.1	7.63
2014	4.2	0.20
2015	4.0	4.72
2016	4.1	13.79
2017	4.2	-1.82
2018	4.3	2.63
2019	4.4	5.96
2020	4.2	-12.04
2021	4.3	1.50
2022	4.4	7.64

2023	4.5	-2.94
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Source: World Bank, World Development Indicators (2023, Vol. 15, pp. 45–78); International Monetary Fund, World Economic Outlook Database (2023, Issue 10, pp. 30–75).

The table indicates that the relationship between increased education spending and economic growth in Iraq appears weak in the short term. Higher education expenditure did not consistently translate into tangible economic growth due to the volatility of the Iraqi economy and its heavy dependence on the oil sector. Some periods that witnessed significant increases in education allocations did not coincide with strong economic growth phases, suggesting that GDP is more influenced by external and political factors, such as oil prices and security conditions, than by the direct impact of education spending.

2. Analysis of Factors Influencing the Strength of the Relationship

The relationship between educational spending and economic growth in Iraq is shaped by several interrelated factors. Administrative efficiency plays a fundamental role in directing educational resources toward sectors that have the greatest impact on human capital—such as teacher development, curriculum improvement, and infrastructure enhancement (Al-Jumaili, 2020). The quality of education is also a vital factor; increasing expenditure alone is not sufficient unless it is accompanied by improvements in curricula, the use of modern educational technologies, and continuous teacher training to ensure the effectiveness of educational investment (UNESCO, 2022).

Moreover, maintaining balance among educational sectors significantly affects outcomes. Excessive focus on higher education without sufficient support for primary, secondary, and vocational education reduces the overall impact of spending on inclusive growth. Economic and political conditions, including internal conflicts, heavy dependence on oil revenues, and fiscal fluctuations—also play a crucial role in determining how effectively educational spending contributes to economic growth. Therefore, this relationship is dynamic and multidimensional, with its positive effects becoming more evident under conditions of high administrative efficiency, strong educational quality, and political and economic stability.

Second: Challenges and Obstacles in the Relationship Between Educational Spending and Economic Growth in Iraq

The relationship between educational spending and economic growth in Iraq faces several political, economic, and educational challenges that undermine the effectiveness of educational investment and its contribution to economic development.

1. Political Challenges:

The political landscape poses significant challenges, including internal conflicts and instability since 2003, which have negatively impacted the distribution of educational resources and infrastructure, thereby reducing the efficiency of educational spending (Al-Saadi, 2019). Administrative and financial corruption in resource allocation and budget preparation has also led to the mismanagement and waste of a large portion of funds without tangible improvements in human capital. Additionally, weak long-term financial planning—stemming from Iraq's reliance on volatile oil revenues has limited the ability to design sustainable education financing strategies, adversely affecting the long-term role of education in supporting economic growth (Al-Saadi, 2019, pp. 50–70).

2. Economic Challenges:

Economic challenges are primarily related to declining financial resources due to fluctuations in oil prices and recurring financial crises, which have restricted the government's ability to increase educational spending in line with growing needs. Budget instability and large year-to-year variations have made it difficult to ensure equitable and sustainable educational spending across provinces, particularly in less-developed regions, thereby reducing the overall impact of education on economic growth (World Bank, 2023, pp. 50–70).

3. Educational Challenges:

Educational challenges include weak infrastructure, such as shortages of schools and properly equipped facilities, leading to overcrowded classrooms and reduced educational quality. There is also a shortage of qualified teaching staff, particularly in key disciplines, which limits the education system's ability to develop human capital. Furthermore, gaps in curricula—resulting from the lack of alignment with modern labor market requirements—reduce the effectiveness of education in supporting sustainable economic growth (Iraqi Ministry of Education, 2023, pp. 10–45).

Overall, the relationship between educational spending and economic growth in Iraq is constrained by political, economic, and educational obstacles. Political instability and poor financial planning limit available resources, while weak infrastructure, outdated curricula, and a shortage of qualified personnel reduce the impact of education on development. Overcoming these challenges requires strengthening political stability, improving financial resource management, increasing educational allocations, and upgrading infrastructure, curricula, and teacher training. Addressing these issues would enhance the efficiency of educational expenditure and amplify its positive contribution to Iraq's economic growth trajectory.

Third: Strategies to Strengthen the Relationship Between Educational Spending and Economic Growth in Iraq

Enhancing the link between educational expenditure and economic growth requires an integrated set of strategies encompassing fiscal policies, educational quality improvement, vocational training, and public–private partnerships. These strategies collectively increase the efficiency of educational spending and contribute to sustainable economic development.

1. Education Support Policies:

These policies focus on increasing the financial resources allocated to education by dedicating a higher percentage of GDP to the sector and ensuring sustainable annual funding. They also emphasize equitable resource distribution to less-advantaged provinces, thereby promoting equal access to education and the development of human capital nationwide (Al-Jumaili, 2020, pp. 80–95).

2. Improving Educational Quality and Vocational Training:

This involves modernizing curricula and aligning them with labor market demands, as well as establishing advanced vocational training programs to equip students and graduates with practical, applicable skills. Such initiatives improve workforce readiness and enhance human capital productivity (UNESCO, 2022, pp. 130–150).

3. Strengthening Public–Private Partnerships:

Enhancing collaboration between the public and private sectors includes involving private enterprises in funding educational projects and offering hands-on training programs for students. Cooperative training initiatives between universities and companies help develop professional competencies and improve graduates' employability (Iraqi Ministry of Higher Education and Scientific Research, 2023, pp. 20–55).

4. Focusing on Technical and Vocational Education to Boost Productivity:

Investing more in technical and vocational education aims to meet the needs of industrial and service sectors, link education with labor market demands, reduce unemployment, and enhance economic productivity. This approach supports sustainable development and promotes economic diversification away from overreliance on oil (World Bank, 2023, pp. 60–85).

In conclusion, strengthening the relationship between educational spending and economic growth in Iraq requires a comprehensive policy package that begins with increasing and equitably distributing financial resources for education across provinces. It also necessitates improving education quality through curriculum modernization and stronger alignment with labor market needs. Furthermore, public–private partnerships should be expanded to finance education and implement training programs, with particular emphasis on supporting technical and vocational education as a foundation for greater productivity and economic diversification. Implementing these interconnected policies will enhance the efficiency of educational spending and create stronger opportunities for sustainable national economic growth.

Conclusions

1. The relationship between educational spending and economic growth in Iraq shows a positive long-term effect, which becomes more evident under conditions of high educational quality and administrative efficiency. However, this relationship is dynamic and complex, influenced by political, economic, and educational factors such as internal conflicts, heavy oil dependence, and fiscal volatility.
2. Between 2010 and 2023, Iraq experienced gradual increases in educational spending, but these were insufficient to offset the effects of conflicts and unstable policies. Economic growth remained volatile, reflecting structural fragility and the country's excessive reliance on oil.
3. The main obstacles to effective educational spending include political challenges (conflicts, corruption, weak financial planning), economic challenges (budget instability, limited resources), and educational challenges (poor infrastructure, shortage of staff, and curriculum gaps), all of which reduce the potential of education to drive economic growth.
4. Strengthening the relationship between education and economic growth in Iraq requires supportive policies that increase and optimize financial resources, enhance educational quality, align curricula with labor market needs, expand vocational and technical training, promote public–private partnerships, and ensure political stability and effective governance.
5. Future projections suggest that sustained investment in education and improvements in educational quality could support annual economic growth rates of 5–7%, while continued weak funding, poor quality, and political instability could result in moderate or pessimistic growth scenarios.

Recommendations

1. Allocate a fixed percentage of GDP annually to educational spending and establish strong oversight mechanisms to ensure optimal resource utilization and sustainable educational financing.
2. Update educational curricula and align them with labor market needs while strengthening technical and vocational education to enhance workforce productivity.
3. Promote public–private partnerships by involving private enterprises in financing educational projects, practical training, and vocational programs.
4. Enhance political and administrative stability by combating corruption and improving governance to ensure equitable and efficient resource distribution.
5. Develop precise indicators to monitor the relationship between educational spending and economic growth, supported by continuous evaluation systems to adjust policies based on empirical results.
6. Prioritize investment in technical and vocational education to develop practical skills that support various economic sectors, boost productivity, and reduce unemployment

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Indonesian Journal of Law and Economics Review

Vol. 21 No. 2 (2026): May
DOI: 10.21070/ijler.v21i2.1565

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