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# THE REALITY OF THE IRAQI ECONOMY AND ITS STRUCTURAL CHANGES

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**Abstract:**

Economic indicators declined during the period (1990-2003) as a result of the continuous wars from the Iran-Iraq War to the Gulf War, in addition to international sanctions. In an attempt to revive an economy that witnessed structural imbalances in the economic structure, the latest of which was the issue of destabilizing dependence on the oil sector after the United Nations supervised and restricted oil revenues, one of the most important urgent issues for Iraqi economic decision-makers in order to diversify sources of local income. Here, the researcher seeks to analyze the economic variables represented by economic growth. The Gross Domestic Product (GDP) of any country reflects the total output of various goods and services by citizens and foreigners within the country during a specific period of time. Analyzing the contribution of the main sectors to the formation of the GDP represents a very important indicator in the economy, as it shows the contribution of each sector to the output, its role in exploiting available resources, operating means of production, and the extent of its contribution to economic growth.

**Keywords:** reality, Iraqi economy, structural changes, GDP, economic growth

## INTRODUCTION

Economic Growth: Economic growth in all countries of the world provides the opportunity to utilize and invest all available human, natural, and financial resources to meet the requirements for achieving economic development. This indicator can be considered the result of all economic, social, and political factors (1). Before analyzing these indicators, it is necessary to explain the nature of the Iraqi economy and its economic growth rate. It is considered a rentier economy that relies on the oil sector, despite possessing human and natural resources. The Iraqi economy has followed a downward trend, affected by the sanctions imposed on Iraq by the Security Council through Resolution No. (662) in 1990 after the Second Gulf War. These sanctions included economic sanctions that barred the Iraqi government from raising funds through the sale of its oil. It also barred the country from importing goods from other countries. Its economic growth rate reached (4.1%) during the (1993-1997) periods. This is measured by the rate of growth of national income at (30.2%), the rate of growth of the size of the population at (3%), and the rate of inflation at (23.1%) (2).

The total number of people is (22) million, according to the 1997 census. This is because of the stoppage of oil exports until 1995, the fall of the Iraqi production capacity, and the rise of the inflation rates due to the introduction of the new currency. At the same time, the contribution of the oil sector, which includes the extractive industry, increased because of the adoption of the Oil-for-Food Program agreed upon with the United Nations through Resolution No. (986) in 1996. This occurred at a time when there was the stoppage of production at the local level and the exhaustion of funds, leading to a bad economy that is cut off from the global world and on the verge of collapse because of reliance on the agricultural sector and the Oil-for-Food Program. Although the rate of economic growth reached 9.2% between 1997-2007, the rate of growth of the national income reached 20%, the rate of growth of the population reached 3.1%, and the rate of inflation reached 7.7% (3).

The total Iraqi population in 2009 was 31.6 million. This is because of the rise in the oil exports ceiling in 1999. In 2003, the United States invaded Iraq and established their control over it through the Coalition Provisional Authority. After the adoption of UN Security Council Resolution 1483, there were challenges associated with the transition to a market economy. The Iraqi economy began to slow down, coinciding with a period of relative security. This resulted in increased oil production and exports. The economic growth rate reached 1.2% for the period 2009-2015, with the national income increase reaching [a specific percentage missing from original text]. (6.2%), the population growth rate reached (3.3%), and the inflation rate reached (1.7%). The total population of Iraq reached (35.2) million in 2015. This decline is attributed to the fact that, despite high oil prices which created financial surpluses, these surpluses were quickly depleted

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in 2014 due to two problems: the drop in oil prices and the occupation of some of its territory by ISIS. Enormous sums were spent on military operations to liberate those areas after ISIS had destroyed infrastructure, archaeological and religious sites, looted oil, burned oil wells, and committed other acts of destruction (4).

**Gross Domestic Product (GDP):**

GDP is one of the most important indicators used in economic analysis. It represents the final production value of goods and services across all sectors within a country's borders during a specific period. The Gross Domestic Product (GDP) gives a clear insight into the economic realities and state of economic development. This is because it is related to the economic growth and advancement path, which is measured in accordance with the nation's resource capacity. Human and material elements can be identified here. As indicated in Table (1) above, it can be noted that the Gross Domestic Product (GDP) of Iraq kept fluctuating during the course of this investigation owing to the changes that occurred within the nation between 1995 and 2018.

This is affected by the collective effect of the past years, especially the Iran-Iraq War, which ended in 1988. The current price for the GDP reached (2252263) million dinars, in contrast to (195712) million dinars at constant prices in 1995. It further rose to (2556307) million dinars at current prices because it rose from (217281) million dinars. Its rate of growth was (11) in 1996. This rise can be attributed to the dependency on domestic alternatives in the Iraqi economy, such as the agricultural sector, despite the stoppage of oil exports until 1995. This cessation was part of the international sanctions imposed under Security Council Resolution (661), which involved imposing a military levy by the coalition countries. Civilian infrastructure was destroyed, in addition to the economic embargo, and oil production declined (5).

During the period (1996-1999), GDP at both current and constant prices increased at a high rate and with positive growth values. It rose from 2556307 million dinars at current prices, while GDP at constant prices reached 21728.1 million dinars, representing a growth rate of 11% in 1996. This increased to 3286925 million dinars at current prices and 263427 million dinars at constant prices in 1997. These positive growth rates were a result of Resolution No. 986, which included the signing of the Oil-for-Food Programme. GDP then rose to 6,607,664 million dinars at current prices, and 41771.1 million dinars at constant prices, with a growth rate of 17.5% in 1999. This increase was a result of raising the ceiling on oil exports, with an agreement to allocate 75% of the revenue to humanitarian needs and the remaining 25% to a fund that was not typically used for other purposes. The war devastated the economy, and both current and constant prices declined during 2002 and 2003 (6).

At current prices, GDP reached 29585788 million dinars, while at constant prices; it reached 26,990.4 million dinars, representing a negative growth rate of -33.1%. This was due to the US-led invasion of Iraq, which destroyed the infrastructure of the productive sectors, bringing production to a standstill, in addition to the lack of security. However, during the period 2004-2007, positive growth rates were achieved. GDP at both current and constant prices rose, reaching 53235358 million dinars at current prices, while GDP at constant prices reached 41,607.8 million dinars, representing a growth rate of 54.1% in 2004. This increase was a result of the lifting of international economic sanctions imposed on Iraq by UN Security Council Resolution 1483. In 2003, the Iraqi economy, exhausted from a series of wars, was rebuilt, and the Iraqi economy was transformed into a market economy. In 2006, it began to rise to (95587954) million dinars at current prices, as well as GDP at constant prices (478514) million dinars, with a growth rate of 10.2%, to (11155813) million dinars at current prices (7).

In 1996, an agreement was reached between the United Nations and Iraq, allowing the latter to sell oil in exchange for being permitted to import essential goods under Resolution 986, which included the Oil-for-Food Programme. Iraq was then required to export $2 billion worth of oil every six months, with the proceeds to be used for humanitarian needs. This resolution was implemented in 1996, with Iraq beginning to export oil as agreed, and was later allowed to increase exports to $5.26 billion, provided that the oil revenues continued to be spent on humanitarian needs. This restriction was lifted in 1999 by a Security Council resolution, subject to specific spending conditions agreed upon with Iraq.

Table (1) Gross Domestic Product and its Growth Rates in Iraq for the period (1995-2018) Million Dinars

| Years | GDP at Current Prices | GDP at constant prices | Real growth rate |
|---|---|---|---|
| 1995 | 2252263 | 19471.2 | 2.2 |
| 1996 | 2556307 | 21728.1 | 11 |
| 1997 | 328625 | 26342.7 | 21.2 |
| 1998 | 4653524 | 35525 | 34.8 |
| 1999 | 6607664 | 41771.1 | 17.5 |
| 2000 | 50823005 | 42358.6 | 1.4 |
| 2001 | 41941513 | 43335.1 | 2.3 |
| 2002 | 41022927 | 40344.9 | 6.9- |
| 2003 | 29585788 | 26990.4 | 33.1- |

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|---|---|---|---|
| 2004 | 53235358 | 41607.8 | 54.1 |
| 2005 | 73533598 | 43438.8 | 4.4 |
| 2005 | 73533598 | 47851.4 | 10.2 |
| 2006 | 95587954 | 47851.6 | 1.4 |
| 2007 | 11155813 | 48510.2 | 6.6 |
| 2008 | 157026061 | 51712.6 | 5.8 |
| 2009 | 130642187 | 54721.2 | 5.5 |
| 2010 | 162064565 | 57751.6 | 10.2 |
| 2011 | 217327107 | 63650.4 | 12.6 |
| 2012 | 254225490 | 71680.8 | 5.5 |
| 2013 | 273587529 | 75658.8 | 3.8- |
| 2014 | 266420384 | 72736.2 | 2.4 |
| 2015 | 194680971.8 | 74554.6 | 2.4 |
| 2016 | 198774369.4 | 80146.5 | 7.5 |
| 2017 | 224636323.2 | 78142.5 | 2.5- |
| 2018 | 258035199.6 | 77531.7 | 0.7- |

Source: The table was prepared by the researcher based on the Central Bank of Iraq, Annual Statistical Bulletin, General Directorate of Statistics and Research, Baghdad, various issues. Ministry of Planning, Central Statistical Organization, Annual Statistical Abstract, various years.

GDP at constant prices was 48510.6 million dinars with a growth rate of 1.4% in 2007; this increase is attributed to the rise in oil prices, which reached $62.7 per barrel in 2007. In addition to relative security stability, the value of the dinar then decreased to (130642187) million dinars at current prices, while at constant prices it reached (54721.2) million dinars as a result of the effects of the 2009 financial crisis. It then continued to rise from (16206456) million dinars at current prices, while it reached (57751.6) million dinars at constant prices, with a growth rate of (5.5%) in 2010, to (217327107) million dinars at current prices, while at constant prices it reached (63,650.4) million dinars in 2011, as a result of the rise in oil prices. GDP rose to 273587529 million dinars at current prices, while GDP at constant prices reached 75658.8 million dinars, representing a growth rate of 5.5% in 2013.

This was a natural consequence of rising oil prices. However, GDP at both current and constant prices experienced a decline in real growth rates during the years 2014-2015, reaching its lowest point at 194680971.8 million dinars at current prices in 2015. GDP at constant prices reached 72736.2 million dinars, with a growth rate of -3.8% in 2014. This decline was attributed to the terrorist invasion of some Iraqi governorates, which damaged infrastructure, looted financial and human resources, and smuggled Iraqi oil, a key component of the GDP structure. In contrast, GDP at both current and constant prices subsequently saw a significant increase, achieving a positive growth rate. It reached (7.5%) in 2016, and this is attributed to the relative security stability, while for the period (2017-2018) it achieved negative growth rates, as its highest amount reached (258035199.6) million dinars at current prices, and at constant prices (77531.7) million dinars, with a growth rate of (-0.7%) in 2018 as a result of the destruction of the infrastructure, oil and civil facilities and the pipelines of the oil fields that were controlled by terrorism and were recovered. Figure (1) shows the development of the gross domestic product in Iraq during the study period.

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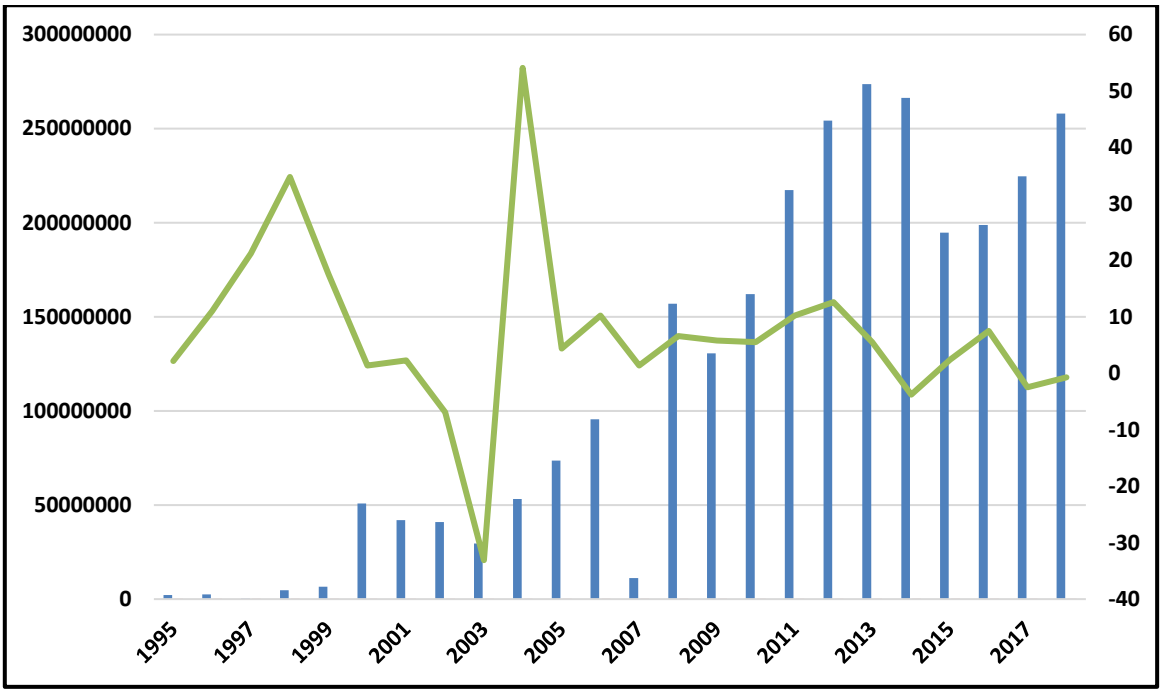


Figure (1) Development of Iraq's Gross Domestic Product (GDP) for the period (1995-2018) in millions of dinars
Source: Data from Table No. (1)

The economic sectors contributing to Iraq's GDP can be illustrated from the data in Table (2), which shows a decline in the agricultural sector's contribution to GDP during the period (1995-2018). Its contribution reached approximately 11.95% of GDP, due to outdated agricultural production tools and methods, stagnant crops, and a lack of diversification, technology, modernization, and the use of modern techniques. This is worsened in the context of water scarcity, lack of control of diseases and pests affecting agriculture, and the inundation of Iraqi markets with imported agricultural products. During the same period, the role of the industrial sector, particularly manufacturing, to the country's GDP fell dramatically to approximately 3.89% of the total GDP, which is not surprising owing to the series of wars. The era when the Iraqi economy encountered massive destruction of infrastructure and industrial capacity, combined with the economic embargo and lack of raw materials vital to industry because of the stoppage of imports in the early years of the observation period and the predominance of the public sector. After 2003, the Iraqi economy shifted to a market economy. It fared very poorly because of non-competitiveness in export markets and because of the dumping of products at prices cheaper than those of domestic products, as well as the high price of domestic production.

The above table (2) indicates that the extractive industries sector had the largest percentage in the composition of the country's GDP during this time with a total of 42.74%. Although it had the highest percentage, it did not perform well due to global instability in the price of oil. The rise in the participation of other sectors in the composition of the country's GDP during this time with a total of 41.42% affected the country's economy because it rose to approximately 41.42% of the country's total Gross Domestic Product. This was a natural consequence of the expansion of government projects after 2003, such as the establishment of health centers, hospitals, and centers for people with special needs, as well as sports cities, residential and recreational complexes, school buildings, and electricity generation projects during 2003. The relative importance of the sectoral structure of the Iraqi GDP also revealed the dominance of the oil sector during the study period, alongside a significant increase in the contribution of other sectors after 2003 due to the implementation of numerous government projects, including educational, service, and recreational facilities.

Table (2) Relative importance of economic sectors in the gross domestic product in Iraq for the period (1995-2018) (%)

| Years | oil sector | Agriculture sector | Industrial sector | others |
|---|---|---|---|---|
| 1995 | 25 | 21 | 8 | 46 |
| 1996 | 25 | 21 | 8 | 46 |
| 1997 | 48 | 16 | 6 | 30 |
| 1998 | 60 | 13 | 5 | 22 |
| 1999 | 61 | 12 | 4 | 23 |
| 2000 | 61 | 10.8 | 4.1 | 24 |
| 2001 | 59.2 | 10.7 | 4.4 | 26 |

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|---|---|---|---|---|
| 2002 | 54.7 | 13.4 | 4.3 | 27 |
| 2003 | 51.5 | 14.2 | 4.6 | 30 |
| 2004 | 47.5 | 10.8 | 2.3 | 39 |
| 2005 | 42.1 | 13.6 | 2.2 | 42 |
| 2006 | 40.3 | 12.9 | 2.2 | 44 |
| 2007 | 42.8 | 9.2 | 2.3 | 46 |
| 2008 | 45 | 8 | 2 | 45 |
| 2009 | 44 | 7 | 3 | 46 |
| 2010 | 41.6 | 8.1 | 2.9 | 48 |
| 2011 | 42.9 | 7.6 | 2.7 | 47 |
| 2012 | 43.6 | 7 | 3 | 27 |
| 2013 | 41.5 | 6.9 | 3 | 48 |
| 2014 | 43.5 | 6.9 | 3.1 | 46 |
| 2015 | 43.9 | 4.9 | 1.8 | 59 |
| 2016 | 43.1 | 3.8 | 2.2 | 62.3 |
| 2017 | 39.6 | 2.9 | 2.1 | 56.7 |

Source: Calculated by the researcher based on data from the Ministry of Planning, Central Statistical Organization, Annual Reports, Multiple Years. Average GDP per capita

Here, the average GDP per capita indicator serves as a measure of real growth and the extent of economic progress in a country when the standard of living for individuals rises. However, it may not provide a true picture if this indicator rises without a corresponding increase in the standard of living. Table (3) shows fluctuations in the average GDP per capita at current and constant prices during the study period. The period (1995-2018) witnessed a gradual increase from 1,096,000 dinars at current prices in 1995 to 1,180,000 dinars in 1996. As for GDP per capita at constant prices, it rose from 953,000 dinars in 1995 to 1,028,600 dinars in 1996.

The period from 1996 to 2001 witnessed a rise in the average per capita GDP at both current and constant prices, achieving positive growth rates. At current prices, it increased from 1,180,000 dinars in 1996 to 2,048,000 dinars in 1998, and then to 2692000 dinars in 1999. At constant prices, it rose from 1028600 dinars (with a positive annual growth rate of 7.9%) to 1,564,800 dinars in 1998, and further to 1786500 dinars in 1999. This increase is attributed to the implementation of the Oil-for-Food Program, which allowed Iraq to export oil and obtain goods and foodstuffs to alleviate the severity of the economic sanctions imposed on it. However, in the final years of this period (2000-2001), GDP declined, registering a negative annual growth rate due to the drop in oil prices. The period (2002-2008) witnessed a clear decline in annual growth rates. Per capita income reached 1604000 dinars at current prices, while at constant prices it reached 1578100 dinars. The annual growth rate was negative, reaching -9.6% in 2002, and continued to decline until 2003 as a result of the occupation of Iraq. However, the remaining period achieved positive growth rates, rising from 2629000 dinars at current prices in 2005 to 3274000 dinars in 2007. Meanwhile, per capita income at constant prices rose from 1553400 dinars in 2005 to 1,634,300 dinars in 2007 as a positive result of the transformation of the Iraqi economy into a market economy, the rise in oil prices, and the opportunity afforded to the private sector, which positively impacted the increase in per capita income to 5135000 dinars at current prices. Per capita income at constant prices reached 1691300 Iraqi dinars in 2008, in addition to the issuance of decisions to correct the course of the Iraqi economy after the events of 2003.

During the period (2009-2013), positive annual growth rates were achieved. We note an increase in the average per capita income at current prices from 4423000 Iraqi dinars in 2009 to 6359600 Iraqi dinars in 2011, and then to 7795500 Iraqi dinars in 2013. Per capita income at constant prices reached 1728100 Iraqi dinars in 2009, rising to 1924500 Iraqi dinars, and then to 2109400 Iraqi dinars. Its real rate of growth reached 3.0%, due to the increase in oil prices, in addition to the definite security stability that resulted in the growth of per capita income. The period between 2014-2016 showed a gradual fall in per capita income from 7649000 Iraqi dinars at current prices in 2014 to 5444500 Iraqi dinars at current prices in 2016. It reached a minimum of 1995 Iraqi dinars at constant prices with a negative growth rate of -2.6% in 2015. This is because there is a tense security situation due to the terrorist invasion of some Iraqi governorates by ISIS, which resulted in stealing money and oil wealth. However, the period from 2017 to 2018 saw a significant increase in per capita income from 5968500 Iraqi dinars at current prices to 6685300 Iraqi dinars at current prices. At constant prices, it rose from 2040000 Iraqi dinars to 2110000 Iraqi dinars, with a positive growth rate of 3.4%, due to improved security and higher oil prices. The per capita income also increased from 2040000 Iraqi dinars at constant prices to 2110000 Iraqi dinars, with a positive growth rate of 3.4%.

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Table (3) Average per capita share of GDP at current and constant prices in Iraq for the period (1995-2018) thousands of dinars

| Years | Average per capita current GDP | Average per capita of the constant GDP | percentage change (%) |
|---|---|---|---|
| 1995 | 1096 | 953 | 0.5- |
| 1996 | 1180 | 1028.6 | 7.9 |
| 1997 | 1491 | 1194.9 | 16.2 |
| 1998 | 2048 | 1564.8 | 31 |
| 1999 | 2692 | 1786.5 | 14.2 |
| 2000 | 2084 | 1758.6 | 1.6- |
| 2001 | 1665 | 1746.5 | 0.7- |
| 2002 | 1604 | 1578.1 | 9.6- |
| 2003 | 1123 | 1024.7 | 35.1- |
| 2004 | 1961 | 1533.1 | 49.6 |
| 2005 | 2629 | 1533.4 | 1.3 |
| 2006 | 3274 | 1639.1 | 5.5 |
| 2007 | 3754 | 1634.3 | 0.3- |
| 2008 | 5135 | 1691.3 | 3.5 |
| 2009 | 4423 | 1728.1 | 2.2 |
| 2010 | 5301 | 1800.4 | 4.2 |
| 2011 | 6359.6 | 1924.5 | 6.9 |
| 2012 | 7167.7 | 2047.2 | 6.4 |
| 2013 | 7795.5 | 2109.4 | 3 |
| 2014 | 7649 | 2050 | 2.8- |
| 2015 | 5528.7 | 1995 | 2.6- |
| 2016 | 5444.5 | 2100 | 5.2 |
| 2017 | 5968.5 | 2040 | 2.8- |
| 2018 | 6685.3 | 2110 | 3.4 |

Source: Table prepared by the researcher based on the Ministry of Planning, Central Statistical Organization, Annual Statistical Abstract, various years; and the Central Bank of Iraq, Annual Statistical Bulletin, Directorate of Statistics and Research, Baghdad, various issues.

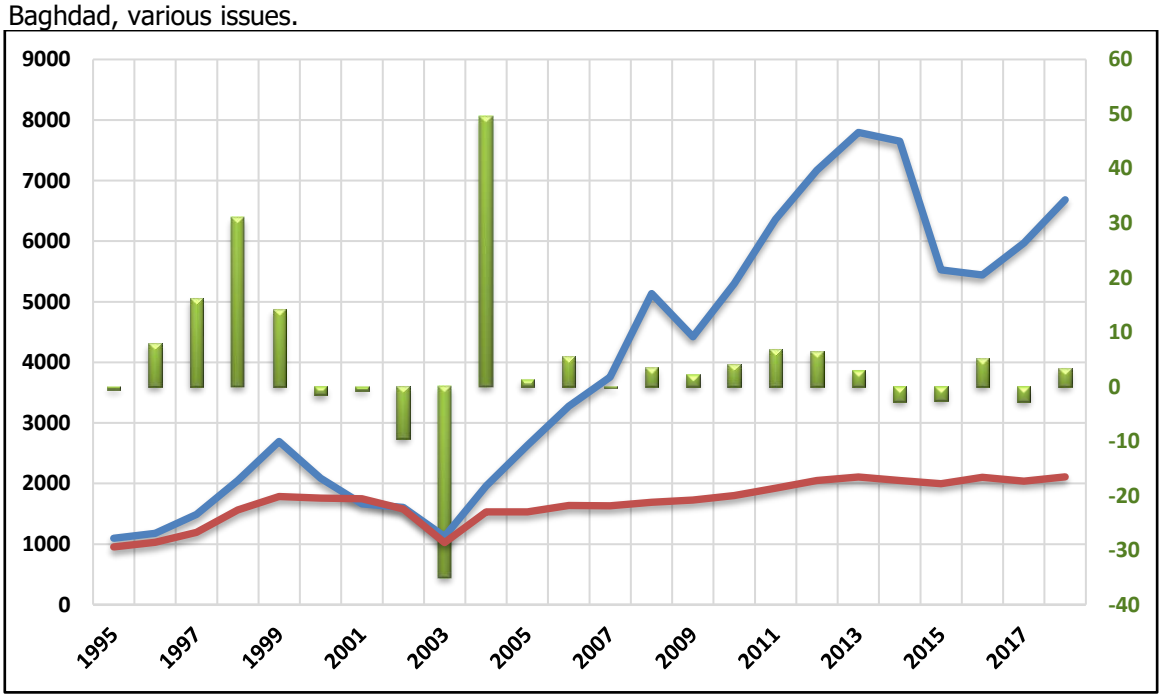


Figure (2) Average GDP per capita in Iraq for the period (1995-2018) (thousand Iraqi dinars) Source: Data from Table (3)

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## Sources of Economic Growth

### Economic growth depends on four main sources, which are as follows:

Natural Resources: The scarcity of natural resources is one of the obstacles to economic growth in some countries of the world. Natural resources play a fundamental and decisive role in the economic growth process, according to some economists who link the achievement of growth in some developed countries, such as England, France, Germany, and the United States, to the abundance of natural resources in them. Others believe that natural resources play a crucial role in achieving economic growth, while still others believe that natural resources do not play a decisive role in achieving economic growth, although they can contribute to it. Evidence for this is that some countries have achieved progress despite their relative lack of natural resources, as is the case with Japan, while some developing countries, despite possessing an abundance of natural resources, have not achieved significant economic progress to date.

Natural resources on Earth include its uses, its subsurface, and the minerals it contains; energy sources; chemical resources essential for human life; water sources from rivers, lakes, seas, and oceans, representing a national treasure; and air and the gases in the atmosphere, which influence the nature and practices of countries, varying from one another. For a resource to be economically beneficial, it must be exploited to satisfy a specific need or demand. This requires two conditions: first, the knowledge and technical skills necessary to extract and utilize the resource; and second, the existence of demand for the resource itself or the services it provides. Resources are classified based on their sustainability into two main types: renewable and non-renewable. Whether a resource is renewable or non-renewable depends on the degree of its exploitation, which significantly impacts its remaining reserves, rendering it economically depletable despite its abundance, as is the case with some oil mines and deep-sea mineral deposits. Social factors, legal frameworks, and the geological and natural formation of the resource also play a role.

The degree of exploitation determines whether a resource is renewable or non-renewable. Capital: Various economic schools emphasize that capital is a fundamental element in the production process. Some stress the importance of combining investment in physical capital with investment in human capital, as both are drivers of economic growth, as seen in the theory of internal growth, in addition to other equally important elements that contribute to economic development. This study examines both physical and human capital in Iraq, as follows:

### Physical Capital:

Capital invested in the economy is of two different types: productive capital and monetary capital. The former refers to all the physical means of production produced by humans and used in future production. It thus includes fixed assets and the potential for their expansion, which enter the economic sphere. The latter, investment, is represented by capital expenditure on new capital assets that serve the material and technical base of successive production cycles in the economy.

This is important in the investment process for obtaining the services of factors of production. The investment process depends on the accumulation of fixed capital in the national economy (*). To demonstrate the importance or efficiency of capital utilization at the level of the economy as a whole and at the sectoral level, the ratios have been calculated. These ratios vary between different sectors according to the nature or production technology used in that sector. The lower the value of the ratio, the more efficient the use of capital in that sector or the economy as a whole. The mining and quarrying sector is the sector with the highest capital efficiency compared to other sectors. This is attributed to its greater reliance on capital-intensive production techniques compared to other sectors. Similarly, the wholesale and retail trade sector is characterized by high efficiency due to its importance in securing a good standard of living for the population and in providing the requirements for implementing the Oil-for-Food Program. The size and availability of the workforce are among the main sources for economic growth and increase. The total workforce reached (546860) thousand people in 2003 with a compound growth rate of (3.47%). The agricultural sector workforce accounted for the largest share of the total workforce. The agricultural sector workforce witnessed an annual growth rate of (0.031%) to reach (612482) thousand people in 2014. Naturally, the availability of labor is a result of population growth in any country. In fact, a country can increase its workforce by increasing its population. However, it's important to note that the quantity of labor alone is insufficient to guarantee increased economic growth rates (8).

The quality of the workforce with regard to vocational training, education level, and employment skills is one of the vital factors. The idea of physical capital is associated with savings and includes many types such as machinery, factories, offices, shops, transportation vehicles, among others. The accumulation of capital through savings and assets is associated with the financing of additional investments that can raise economic growth at increased levels according to the Hard-Domar growth model. Moreover, the accumulation of capital through savings can finance education and training to develop human capital or improve technical skills. These skills have been identified to contribute greatly to

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raising the number of the productive workforce. It is important to note that increased levels of physical capital can raise production levels but not necessarily improve productivity. This is especially because it is directly associated with the advancement of technology and its crucial role in improving worker efficiency (9).

**Human Capital:**

Human capital is a key element of the production process and a driver of economic growth in countries worldwide. Studies on human capital began with Adam Smith, who defined it as increasing capital accumulation as a commodity used in the production of other goods and services. This was achieved by including it within the overall capital base and increasing the stock in the economy. Human capital investment is realized through increased investment in education, health, and worker training, leading to improved productivity for the individual worker in the labor market. Theodore Schultz emphasized this point, focusing on the importance of education in his research on marginal human productivity and its significance for economic growth. He argued that developing human potential, including experience and office skills, is an independent factor in the growth of labor productivity. These concepts initially encompassed only market activities. Later, a broader understanding of human capital emerged, encompassing both market and non-market activities. Human capital is now defined as "a set of innate and acquired qualifications and skills that individuals develop throughout their lives (10).

In this sense, human capital is not considered a commodity to be exchanged, and individuals cannot make rational decisions about their needs for human capital or the development of innate skills during their early years except through their parents and governmental, educational, and social institutions. Thus, their decisions become dependent. The economic and social environment determines the level of investment in human capital. Furthermore, the diversity of qualifications and knowledge leads to a diversity of economic activities as a result of the diversity of ideas. Within the broad concept of human capital, external influences are considered, and the surplus quantity is factored into the calculation of the impact of individuals on the productivity of other elements in the production process. This gives the concept a prominent role in building human beings and developing their capabilities. The 2003 Human Development Report emphasized that human capital represents the sum of knowledge, abilities, and skills that an individual acquires in society through education and practical experience. It is the relatively solid core for measuring the intellectual capital of individuals. The Lucas concept has brought about a qualitative leap in economic growth studies, as it considers the growth in the accumulation of human capital and knowledge as one of the main sources for creating differences in the standard of living between nations and differences between people. Physical capital plays an essential and helpful role in the formation of human capital through education, research organizations, and through the production of attractive goods in trade (11).

The concept of human capital is fundamentally based on the premise that investing in a segment of society through education generates capital accumulation. This concept thus focuses on the demand for labor from productive and service institutions. United Nations concepts have emphasized this, considering human beings a renewable resource and a factor of production that requires capacity building and expertise development. This development is achieved through providing good nutrition and ensuring access to high-quality health and education services, enabling society to utilize these capabilities to maximize economic and social well-being. Therefore, the focus has been on the supply side of resources. Emphasis has been placed on developing human capabilities through improving health, knowledge levels, and educational skills. Education is a cornerstone of human capacity development and a fundamental requirement for human life, enabling work and profit, and contributing to the economic growth of any country. Applied studies in this field provide us with various human capital metrics, including:

**Educational attainment**

Education expenditure
Average years of schooling
Literacy rate
School enrollment rate
Education index
Human Development Index Per capita education expenditure index

**Technological progress:**

Scientific and technological progress plays a vital role in the economic growth process. This role has not escaped the attention of economic thinkers, who have emphasized its importance and identified the mechanism by which it influences the production function upwards, indicating an increase in output while other factors of production remain constant. However, quantifying this role is fraught with scientific difficulties. Therefore, the residual factors model has been employed to estimate this role, such as Solow's study, which attributed nine-tenths of economic growth in the United States to factors including scientific and technological progress. There is also a more extreme view that long-term

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economic growth is entirely consistent with technological change. However, this view is unacceptable because technological change cannot be effective without other factors of production such as capital and labor.

Technological progress is one of the most important factors contributing to increased economic growth rates. Science and technology have played a major role in the economic development of industrialized nations due to their impact on increasing productive efficiency in various sectors of the national economy. The application of technological advancements transforms and expands the structure of resources, leading to the creation of new resources and the development of existing ones. It also alters the relative weight of economic sectors in the gross domestic product (GDP) and the nature of employment.

This section is dedicated to studying the important aspects of technological progress through the following points:

First: The concept of technology and its importance in economic growth.

Second: Determinants of technological development.

Third: Technological development in Iraq.

First: The concept of technology and its importance in economic growth. The concept of technology: In Arabic, the word "technology" means mastering or perfecting something. However, in the literature of economic development and theories of economic growth, the concept of technology has varied according to its dimensions and constituent principles. Technology is defined as "the extraction of industrial raw materials from natural sources to secure materials and goods that meet human material needs." The term "technology" was used synonymously with "technology" in a study by Youssef Al-Halabawi, who defined technology as "the skillful and efficient use of knowledge to create new scientific achievements that contribute to finding solutions for satisfying human material needs." Thus, technology is the sum of accumulated knowledge and experience, along with material and organizational means, used in various fields of activity to satisfy increasing human needs, whether at the individual or societal level. Some believe that technology is linked to research and development without considering its social and human dimensions. Consequently, limiting this concept will not lead to achieving the social and human goals it was intended to serve. Technology is embodied in the means and capabilities that have economic value, which include Essentially, technology consists of machinery, equipment, devices, and all forms and types of knowledge, science, and specialized technical personnel. Without these, the desired progress, improved living standards, and increased productivity cannot be achieved.

In light of the preceding definitions or concepts of technology, we find that technology is closely linked to science. Science is the fruit of human intellectual activity, while technology is the application of scientific knowledge to solve human material problems. It is based on the theories, laws, and discoveries of science. The reason for the causal relationship between science and technology lies in the fact that technological advancement develops scientific knowledge, presents new tasks, and provides new tools used in scientific research.

This leads to increased economic viability for scientific studies and research, and this occurs in a state of mutual dependence between technology and science. Technological progress has witnessed significant development since the early 1970s, represented by the shift from an industrial economy to a post-industrial one. This shift is reflected in the knowledge and information economy, which is one of the fundamental changes in the nature of growth sources. It has also influenced the transformation of intellectual concepts of economic growth, which no longer relied solely on importing and using technology itself to achieve high added value and desired growth rates. Rather, continuous renewal and innovation in this technology is the most important factor in achieving growth rates.

**Second: Determinants of Technological Development**

The process of developing and adapting technology in developing countries, particularly Arab countries, is determined by several key elements, which can be summarized as follows:

Developing the productive base of civil society on a balanced basis through net investment in new production facilities, i.e., the economic application of growing technological knowledge. Education, training, skills development, and the productive use of human capabilities. All these elements are organized and guided within the framework of an increasing role for the state in disseminating technological advancements by establishing economic and social development programs alongside raising technological awareness. Scientific research and its institutions, as scientific discoveries provide knowledge that is transformed through production methods into benefits relevant to society. These elements are organized and directed within the framework of an increasing role for the state in disseminating technological advancements by establishing economic and social development programs alongside raising technological awareness.

Technology management is defined by the following basic elements for generating technology:

Research and development

Management of the national innovation system.

Establishment of new factories or companies.

Technology generation and  Patents and Intellectual Property Rights

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In conclusion, technological growth is a policy based on increased investment in human and material capital. This will be achieved by adopting a new work strategy and vision in light of global developments and changes. Therefore, a national practical and technological foundation must be established, and the vast resources available to Iraq must be utilized.

### Third: Technological Development in Iraq

Science and technology policies in Iraq are based on the country's current needs and the future outlook for economic growth. The National Development Plan for the period (1981-1985) adopted a set of interconnected and complementary policies regarding the development of science and technology in order to achieve the following objectives: Building local capacities to implement development programs using the latest scientific and technological achievements. Raising the technical level of the country's workforce to operate and maintain advanced development projects efficiently and successfully. Increasing productivity in all economic sectors by using modern technologies in the operation and management of production and service facilities. Providing a dynamic environment conducive to the continued flow and accumulation of modern technologies through the assimilation and development of imported foreign technology and the creation of new, suitable national technologies through local research and development.

Iraq has achieved several of these goals, most importantly building local capacity by developing the necessary human resources. The number of vocational and general schools and universities has increased. The state has also implemented several policies to enhance Iraqi capabilities, including:

Compulsory education for all children of primary school age. Compulsory literacy programs for all males and females aged 15-45. Sending a large number of qualified college graduates on scholarships to study abroad for higher levels of education and specialized training. Establishing higher scientific and technical colleges and institutes to provide technical skills suitable for development programs. The state has borne all program expenses and offers incentives in many programs to attract and encourage participation.

## CONCLUSIONS

We conclude from this research that the Gross Domestic Product (GDP) of any country reflects the total output of various goods and services produced by citizens and foreigners within the country during a specific period. Analyzing the contribution of major sectors to the formation of the GDP is a very important indicator in economics, as it shows each sector's contribution to the output, its role in utilizing available resources and employing means of production, and its contribution to economic growth.

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