



## The Efficiency of Domestic Savings and Its Impact on The Average Per Capita GDP In Iraq For the Period (2003-2022)

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### Abstract:

Local savings are an essential source for financing sustainable development. The research is based on careful analysis due to the importance of local savings in the Iraqi economy for the period (2003-2022) to provide the necessary local financing necessary for development investments in infrastructure and investments that enhance economic growth and productivity, generate job opportunities, and achieve The goals and indicators of sustainable development and the extent of the efficiency of those local savings and their impact on the average per capita share of GDP. The research aims to examine the effect of the efficiency of local savings on the level of per capita income of GDP. Moreover, it analyzes the potential impact on income distribution in the local community. The research adopts a multi-faceted approach that uses quantitative data to analyze the statistical relationships between the level of efficiency of local savings and the average per capita income from the gross domestic product, as local savings constitute an essential part of the local and national economy. The research starts from the hypothesis that the efficiency of local savings is represented by both the Local resource gap and the financing gap, which impacts the average per capita output and is linked to a causal relationship with the efficiency of local savings. The importance of this significant impact on the average per capita income, as local savings rates, the efficiency of these savings, and the local savings and financing gaps in Iraq were analyzed by cointegration analysis. The most important results showed that increasing the efficiency of local saving is linked to an increase in local investments, thus improving the level of per capita income and that there is a direct relationship between the Local resource gap and the average per capita share of GDP and an inverse relationship between the financing gap and the average per capita share of GDP.

**Paper:** Research paper

**Keywords:** Domestic Savings, Average Per Capita GDP, Domestic Gap, Financing Gap, Economic Growth, Investment.

## **1. Introduction:**

The global community is striving towards achieving sustainable development as a fundamental goal to enhance the quality of life for individuals and ensure the continued progress of nations in an era of economic and social transformations. In this context, the average per capita income from Gross Domestic Product (GDP) is a crucial indicator for measuring the extent of development and wealth distribution in societies. The role of local savings efficiency as a primary driver of sustainable development is emphasized. Understanding how savings efficiency impacts the average per capita income is a fundamental challenge for researchers and policymakers. Savings represent one of the most important economic indicators crucial in modern economic analysis, studies, and research. Savings are the foundation of economic development and growth, serving as a vital and principal engine for long-term economic expansion. This is achieved by financing investments, which are critical to economic growth and overall wealth. However, increasing investment can only occur with a concurrent increase in the volume of local savings, which is instrumental in building the national economy. Given the importance of this variable at the national level, it relates to both consumption and investment. An increase in the savings-to-national-income ratio and its rates leads to the growth of the productive capacity of both developing and advanced economies. Sustainable development does not solely rely on economic variables but also encompasses significant social, structural, and organizational changes. Development leads to an increase in real national income at a rate exceeding population growth, consequently enhancing the per capita share of income. This, in turn, reflects an increase in savings, capital accumulation, and technological advancement, as well as improvements in transportation, communication, healthcare, education levels, life expectancy, decent work, and other indicators of sustainable development that align with contemporary realities. Sustainable development faces more significant challenges today, particularly financing and savings adequacy.

### **1.1 Literature Review:**

We summarize here some of the most important previous studies that dealt with the topic of domestic savings, economic growth and development, and among these studies:

Adelakun (2011) proved the impact of private savings on economic growth, analyzed the sources and trends of savings, identified the motives for savings, and explored how private savings are measured in Nigeria. The most significant conclusion drawn from the research is that income growth and the real interest rate positively affect domestic savings. Fiscal policy also has a clear role in increasing total savings in the economy. The research recommends that development policy in Nigeria should focus on enhancing the economy's productive base to promote real income growth and reduce unemployment.

Jawad (2016) studied to assess the effectiveness of government savings in economic activity and explore ways to mobilize these savings. The research revealed significant areas for improvement in financial management and challenges in aligning and directing public revenues in the right economic and social directions. Among the key recommendations was the need to expand the base of public revenues by developing other economic sectors, including agriculture, industry, tourism, and transportation, which can generate tax revenues.

Sabe (2017) concluded the significant role that savings rates play in the development and understanding of their patterns and responsiveness. Despite empirical studies highlighting the importance of savings in Asian countries, the research found that per capita GDP is a prominent and essential indicator for local savings in the six countries studied. A significant inverse relationship existed between per capita GDP and savings at a 1% significance level. The research recommended policies to increase per capita GDP and maintain sustainable productivity levels for societal well-being.

Namoloh (2018) investigated whether there is a causal relationship between savings and investment in Namibia, as they are crucial variables for income generation. In other words, an increase in investment leads to increased income and, subsequently, increased savings. The most important finding was a causal relationship between capital formation and GDP in Namibia and the contribution of savings to investment. Additionally, there is an inverse relationship between investment and economic growth. The research recommended implementing policies that encourage long-term investment in Namibia, such as promoting investment in capital goods through providing customs exemptions for capital goods.

Al-Maytham and Al-Makhzanji (2020) concluded by identifying some other variables, such as fixed capital formation, national income, inflation rate, and government expenditure, to explore the causal and integrative relationships between them. The most significant finding was a causal relationship between domestic savings and economic growth in both the short and long terms, consistent with economic theory. There was also a causal relationship between net income and economic growth. The research recommended developing and supporting the private sector to increase production by providing tax incentives and reducing social burdens, leading to an increase in savings that would, in turn, boost economic growth in Egypt. It emphasized the need to control the economic factors and variables that directly affect economic growth in Egypt.

Younis and Thanoun (2020) studied to achieve economic stability by establishing a well-defined policy for harnessing local savings through the analysis and measurement of capital mobilization. One of the key findings is that the relationship between savings and investment could be more robust due to the inflow of foreign capital. The research recommends integrating local and foreign resources and adopting the principle of intelligent cooperation between the domestic and external sectors.

Kadhim (2020) discussed and analyze the theoretical and applied relationship between saving and investment for their impact on economic growth. One of the results of this research was that the Iraqi economy is rentier from one source: oil revenues. Therefore, the research recommended working to eliminate administrative and financial corruption to protect the Iraqi economy and achieve justice in the distribution of.

Makori and Mose (2022) revealed to analyze the effects of fiscal and monetary policy on total domestic savings in Kenya and to achieve its 2030 plan, which aims to raise the average per capita share of domestic product. The most important result was that total domestic savings were meagre over the past four decades, affecting investment. Hence, the average per capita income and the research recommendation were to follow up on strategic financial policy measures to stimulate economic growth and thus increase individual income.

The problem of the research lies in the efficiency of local savings and their impact on the per capita GDP as an indicator of sustainable development in light of the limited sources of financing and the role of these savings in financing sustainable development.

The objectives of the research are to theoretically and empirically analyze and evaluate the efficiency of local savings and its impact on the per capita GDP as an essential indicator of sustainable development, as well as to assess the importance of savings in the financial policies in Iraq for the period (2003-2022).

## **2. Material and Methods:**

The research relies on the deductive approach based on theoretical and empirical foundations, utilizing a descriptive-analytical method for data presentation. It also employs a quantitative research design, utilizing statistical methods to test the research hypothesis by describing and interpreting the variables.

## **2.1 Hypothesis of the Research:**

There is a cointegration relationship between the efficiency of local savings and the per capita GDP in the Iraqi economy through their role in increasing capital accumulation and consequently boosting investments in Iraq.

## **2.2 Importance of Research:**

Local savings are considered fundamental sources of financing, and the efficiency of these savings indicators in the per capita GDP is crucial as an indicator of sustainable development.

## **2.3 The Concept and Importance of Local Savings, Their Types and Sources, and Development Financing:**

### **2.3.1 Savings Concept:**

Savings represent that portion of available income not spent on the final consumption of goods and services. Capital formation measures the amount of money spent on purchasing capital goods for future expansion of production capacity. Savings withdraw money from the financial system, while capital formation injects money into the financial system (Higgins, 2020). It can also be defined in the general economic sense as the discretionary expenditures that must be deferred for development. In the specific economic sense, it means postponing expenditure for a specified period, provided the money deferred for expenditure is placed in a specialized savings institution. These savings will be transformed into investments, and optimal use benefits individuals and society (Al-Obaidi, 2011).

The concept of local savings refers to the total savings resulting from the increase in income generated by all economic activities within a country minus the total final consumption for the same period. Thus, local savings can be expressed as  $\text{Local Savings} = \text{National Income} - \text{Total Final Consumption}$  (Karmoush, 2023). It is also defined as the output of economic activities that is not consumed but is directed towards increasing future capacity to satisfy needs (Abdullah et al., 2023).

### **2.3.2 The importance and objectives of savings in economic growth models in the national economy:**

Several growth models have emphasized the importance and objectives of savings. Rostow, for instance, highlighted that raising savings and investments from 5% to 10% of national income is crucial for the transitional stage toward sustainable self-driven growth (Jhingan, 2022, p. 263). Neoclassical economists stress the importance of savings because they are relied upon in capital formation to determine the prices of production factors, focusing on marginal utility for this determination by substituting capital for labour (Amina, 2021). In the New Classical Growth Theory, Robert Solow emphasized the significance of savings and capital formation for development (Nafziger, 2006).

The importance and broader objectives of savings at the national level include improving the country's economic conditions and freeing it from external political dependence and economic and financial pressure caused by foreign savings and their consequences (Morad, 2006), which negatively affect political and economic realities and reduce external debt. At the national level, efforts should converge to accumulate these savings, regardless of their size or sources, and close or reduce the savings gap (Salami, 2012). Increasing the savings rate and raising its level demonstrate its importance in capital formation, stimulating economic growth. To promote growth, this formation should be increased to raise investments to 10% of output, as Rostow showed, to provide the necessary financing for investments and projects to increase production capacity (Dagher Ali, 2010). Savings are also essential for individuals to cope with crises and challenges or for future planning (Al-Abdali & Ali, 2014).

### **2.3.3 Types Of Local Savings:**

#### **A- Discretionary Savings:**

These are savings based on complete freedom, individual choice, and personal desire without coercion or compulsion. This type of savings is of great importance in accumulating wealth and raising living standards and consists of two sectors: household and private business (Bani Issa, 2019).

#### **B- Compulsory Savings**

These are savings for which individuals have no freedom or decision-making authority. They are legally imposed and mandatory, consisting of a portion deducted from individuals' income for the state's account based on government decisions and policies. There are two types of compulsory savings: internal savings, which include household, business, and government sectors, and serve as social insurance and retirement pensions (Musaytifa & Bzian, 2015). This type of savings results from government decisions, legal requirements, or corporate decisions that individuals are obligated to follow (Smaqiyya, 2023).

### **2.3.4 Sources of Local Savings:**

#### **A- Household Savings**

These are savings households make by reducing consumption or investing in various financial instruments, such as bank deposits, stocks, and bonds. They are important sources of financing in the industrial or agricultural sectors, and commercial banks provide loans from these savings to support investments (Imad, 2010). Banks offer depositors two types of deposits: demand deposits that can be withdrawn at any time and deposits for a specified period with a fixed interest rate. They are a source of financing (Abdul et al., 2020). Savings deposits refer to savings that are deposited to earn a return. They are employed, invested, and used as long-term loans by banks and cannot be withdrawn at the depositor's discretion (Lutrash, 2010).

#### **B- Business Sector Savings**

These savings consist of profit realization and distribution policies. Undistributed profits are the shareholders' right (equity) retained and held to support, finance, renew, and expand the institution's projects. They are the second part of net profits; the first part is distributed to workers and shareholders. This sector includes all projects, establishments, and companies (Al-Hajj, 2010).

#### **C- Government Sector Savings**

These savings are defined as the surplus of current revenues over current expenditures in the same year, reflecting a surplus in the state's budget with positive savings. An increase in expenditures over revenues results in a deficit in this budget referred to as negative savings. Government savings represent the difference between current general revenues and expenditures (Biloul, 2020).

### **2.3.5 Sustainable Development Indicators**

Sustainable development is the achievement of the needs of the present generation without compromising the ability to meet the needs of future generations. It means fair and equal distribution of resources for all members of society at all times, present and future, without depriving any generation of its rights (Györgyi, 2013). Sustainable development has dimensions and indicators that have evolved beyond the economic aspect. In sustainable development, an indicator is "a standard or measure that summarizes information about a specific subject or problem, providing an answer to that specific problem, and influencing decision-making." The most important of these indicators are economic indicators. Sustainable development indicators reflect the image of economic policy and its impact on natural resources. These indicators include economic performance indicators, such as per capita gross national income (per capita income), which measure growth and the overall production level. Another important indicator is the ratio of investment to gross domestic product (formation of fixed capital), which measures existing production capacity and compensates for losses through investments (buildings,

machinery, equipment). The general price level is also an essential indicator (Backer, 2005). The most crucial indicator is the average income per capita from the national income, which represents the value of the gross domestic product.

#### **2.4 The Most Important Indicators of The Efficiency of Local Savings in Financing Sustainable Development in Iraq:**

The economy of Iraq has been exposed to numerous shocks, both bilateral and complex, as well as multiple shocks. It was possible to leverage the revenues from oil wealth and non-oil revenues, and it has become necessary to mobilize these revenues to ensure continuous financing for investments, achieve sustainable development goals and address local and financial gaps (Muslim, 2012). Solutions for managing external debt must also be considered. It is essential to analyze the investment and savings gap to determine the need for external inflows (external financing) and identify the main components of these inflows, such as foreign direct investment and official development assistance (Aldhaheeri, 2016).

Addressing the economic effects of these shocks and exacerbating budget deficits, which are part of the structural correction of the economy, can lead to inflation. Inflation is one of the most critical determinants of savings. Monetary and fiscal policies can influence various economic variables, such as savings, employment, production, and investment (Hamdan & Hussein, 2020). Monetary policy, in particular, directly affects the central bank's ability to control inflation rates, its primary goal. Increasing income taxes will reduce consumption spending and savings if a contractionary policy is pursued. Consequently, investment will decrease, and income will decline (Al-Aside & Al-Kubaisi, 2023).

Inflation directly affects all aspects of societal activity. High and low inflation directly affects essential goods' prices, impacting ordinary individuals' purchasing power. As a result, income disparities widen (Ali, 2022, p. 109). In most developing countries, public sector funding finances development. Therefore, sustainable development financing policies aim to involve the private sector in development financing and utilize public and private investments (Efobi & Asongu, 2018).

Due to its dependence on the oil sector alone and the limited contribution of other productive sectors, Iraq's economy has faced many challenges. This has increased imports and income leakage abroad, reducing economic growth rates (Saleh & Saleh, 2021). Economists have defined *dependency* on one sector for most budget revenues as a "rentier" economy. In this context, the economy relies on a single sector for most budget revenues. This sector contributes the largest share of the gross domestic product. Rentierism leads to the economy being a consumer rather than a producer, losing its diversification, and the sector becoming homogeneous (Abdul et al., 2022).

If the capacity to finance through savings is insufficient, access to external financing becomes necessary. In other words, borrowing is required (Hussein, 2020 Hamdan). *Development financing* is defined as the size of investment from savings, i.e., the volume of investment spending from these savings (Al-Sadi et al., 2019). Investment spending is one of the components of the gross national product and a fundamental factor in increasing production capacity, employment, and income (Khalef, 2011). This financing is carried out through financial assets, such as government securities and bonds in the form of loans issued by governments or private projects, bonds issued by investment companies, specialized banks, government deposits, savings bonds, and short-term commercial papers (Abdallah, and Dawood, 2023).

#### 2.4.1 Efficient Saving Through the Domestic Resource Gap:

The Local resource gap is the difference between local savings and investments. This indicator is essential to assess how much these savings can finance the necessary investments. The local gap is estimated by measuring local savings and the required investments to achieve sustainable development goals. The Local resource gap is a concept used to measure the disparity between these savings and investments (Al-Harbi, 1993). It is mathematically expressed as follows:

$$\text{Local resource gap} = \text{Local Savings} - \text{Local Investments}$$

Most developing countries face a problem of stagnant local savings that do not circulate within the income cycle, with a portion of these savings being directed towards non-productive investments. This situation results in a deficit in savings' capacity to finance the required investments (Khalaf, 2004).

The index and value of these local savings provide an incomplete picture due to the lack of accurate data on the size of savings leaking out of the income cycle and the extent of this leakage from their ability to finance investments, as they are part of the income that has not been consumed. As shown in Table 1, the local domestic resource gap (2022-20) indicates a negative sign for the local resource gap, representing the deficit of actual local savings in financing local investments. A positive sign would indicate the opposite.

Over the research period, the Iraqi economy witnessed a compound growth rate of 13.3% in the local resource gap, with a negative Local resource gap percentage of (-1.0%) relative to the total gross domestic product. Local savings recorded a compound growth rate of 13.0% over the research period, while local investments had a compound growth rate of 11.6%.

As depicted in Figure 1 and Table 1, there is significant variation in the local resource gap over the research period, which can be summarized as follows:

The period (2003 - Saw a positive local resource gap, averaging 25.3% of the Gross Domestic Product (GDP). This resulted from a decrease in local investment rates during this period, which was 11.5%. This decline was due to the circumstances of the occupation, as well as the security situation during that time and the political instability until 2008. In 2008, the local resource gap reached its highest positive value, amounting to 32,262 billion dinars, primarily due to improved security conditions compared to 2007. Additionally, increased oil production and higher oil prices positively impacted Iraq's income, subsequently affecting the volume of investments—the savings rate during this period averaged period.

The Period (2009 - The local resource gap averaged 7.2% as a percentage of the GDP. In 2009 and 2010, negative local resource gaps of (-1.9% and -0.9%, respectively) relative to the GDP. These deficits resulted from the global financial crisis and increased public spending, which accounted for 43.3% of the GDP, as shown in the statistical appendix (1). The local resource gap recorded its highest positive values in 2011 and 2012, amounting to 41,988 and 34,361 billion dinars, respectively. This was mainly due to the increased local investment rates, averaging 14.9% of the GDP. The general trend of these investments was upward, with local investments reaching 13,471 billion dinars in 2009 and increasing to 55,037 billion dinars in 2013, with an investment rate of 20.1%. This percentage reflects an inverse relationship between investment spending and oil revenues. When oil revenues increase, investment spending also increases, and vice versa. During this period, local steroids averaged 22.1% of the GDP.

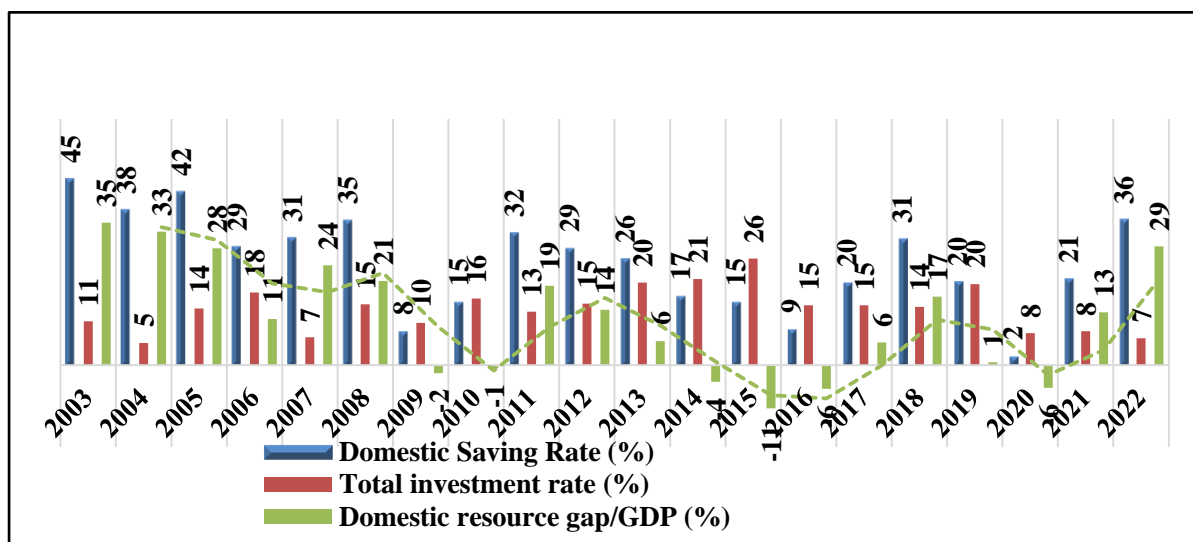
From (2014 - 2017) The local resource gap recorded a negative gap, averaging (-3.7%) as a percentage of the GDP. This was due to an increase in local investment rates, averaging 19.0%, due to increased public spending. Public spending averaged 39.3% as a percentage of the GDP during this period, with an increase in the investment spending rate to 27.7% of the GDP and a decrease in current spending, which accounted for 28.2% of the total GDP.

Additionally, austerity policies were implemented due to internal and external shocks, such as terrorist operations by ISIS and a decline in oil revenues. Oil revenues averaged 30.7% of the GDP due to falling crude oil prices. In 2017, the local resource gap had a positive value of 12,352 billion dinars due to an increase in local savings to 20.2%, marking the end of military operations to liberate occupied territories and increase oil revenues.

The period (2018 to Period witnessed a positive trend in the local resource gap, averaging 10.7% as a percentage of the Gross Domestic Product (GDP). During the same period, the average investment rate was 11.3% as a percentage of the GDP. This increase in the local resource gap was primarily due to higher local savings rates, which averaged 22.0% of the GDP, resulting from increased oil revenues that averaged 34.0%. In 2020, the local resource gap had a negative value of (11,953) billion dinars, accounting for (-5.5%) of the GDP. This was primarily due to a significant decrease in local savings, which reached its lowest level during the research period at 2.2%. This decline was a result of the triple shocks of the COVID-19 pandemic, a (-37.1%) annual change in crude oil prices, which reached \$38 per barrel, and a subsequent decline in oil revenues to 25.9% of the GDP, along with improved security conditions.

The existence of an upbeat local resource gap implies that local savings have exceeded local investments, and not utilizing these funds for investment leads to missed opportunities and productive potentials. This can result in increased income, production, employment opportunities, and higher per capita GDP, which are essential goals of sustainable development. On the other hand, having a negative local resource gap, indicating that local investments exceed local savings, is not only an economic problem but also a social and political issue. It may necessitate resorting to public debt for financing. Total investments in Iraq need a secure investment environment due to security and political instability.

The availability of local savings at rates classified as moderate (above 20%), good (above 25%), or perfect (above 30%) is essential, and the Iraqi economy has achieved these rates. However, the absence of straightforward economic indicators and the lack of economically viable projects and investments that generate new income within the economic cycle, add value and prevent local savings from flowing abroad, especially those of the private sector, contribute to this situation.



**Figure 1:** Evolution of the domestic resources gap in the Iraqi economy for the period (2003-2022)



#### 2.4.2 Efficiency of saving through the financing gap:

All economic schools and theories have affirmed that the availability of capital is the variable and fundamental cornerstone for financing any development process, raising the economic growth rate, and funding sustainable development goals. The amount of funds required to achieve these global goals and provide the necessary financing to achieve them, as well as the existence of a financing gap, is defined as the difference between available national savings and total local investments. This means that these investments are not funded due to the shortfall of these national savings in covering and providing the necessary financing for these investments. This can either lead to resorting to inflationary financing or external financing. There are many prerequisites for achieving sustainable development goals, including the need to import goods, services, and technology, which requires the availability of foreign currency to cover this financing, as shown in Figure 2. The extent of the national savings' shortfall in financing these investments, along with observing the trajectory of this financing gap, follows the same path as the local resource gap. Table 1 shows that Iraq's economy needs external financing when the financing gap is negative, which occurs for half of the research period. As previously mentioned, a negative gap means that actual national savings could not finance actual local investments, necessitating resorting to inflationary financing or external financing. The financing gap has exhibited significant variations during the research period, with the largest surplus recorded in 2008, 2018, 2021, and 2022, amounting to 18,470, 21,125, 38,535, and 89,401 billion dinars, respectively. A comprehensive analysis shows that from 2008 to 2003, a positive financing gap of 2.1% of the total GDP was recorded. This was due to national savings rates averaging 13.6% of the GDP, which were lower than the average rates of local investments, which averaged 11.5% of the GDP, as shown in Table 1. The period from 2013 to 2009 witnessed a financing gap with an average negative percentage of (-1.7%) due to the global financial crisis.

The most significant negative gap was recorded in 2009, amounting to (-11,118) billion dinars, with a negative financing gap of (-8.5%) of the GDP. This resulted from increased consumption spending during this period, characterized by increased oil production, export volumes, and rising oil prices. From 2017 to 2014, the financing gap exhibited a negative trend, with an average percentage of (-6.7%) of the GDP. During this period, we witnessed the most significant collapse of national financing in 2014 and 2015, reaching (-16,929) and (-32,013) billion dinars, respectively, representing (-6.4%) and (-16.4%) of the GDP. This was due to increased military spending to combat terrorism and the crisis of falling crude oil prices. The local investment rates averaged 19.0% during this period, while national savings rates averaged 12.3% of the GDP. From 2022 to 2018, the period saw a financing gap with an average positive percentage of 9.0% of the GDP. This was accompanied by a decrease in the average investment rate to 11.3% of the GDP during this period.

Meanwhile, the national savings rate witnessed a significant increase, reaching 20.3% of the GDP, primarily due to the rise in oil revenues during this period, except for 2019 when the financing gap had a negative value of (-2,052) billion dinars, representing (-0.7%) of the GDP, as a result of declining crude oil prices to \$61 per barrel. Some commitments require massive investments, including the Paris Agreement on climate change. To bridge the gap, whether local, financing, or external, funding can come from public or private loans funded by commercial banks, private institutions, or multinational companies. Therefore, data on all financing sectors must be available to achieve these global goals, analyze this data, identify challenges and obstacles, and find solutions to overcome these difficulties. This is essential for financing sustainable development investments and providing sustainable financing to bridge local and financing gaps.

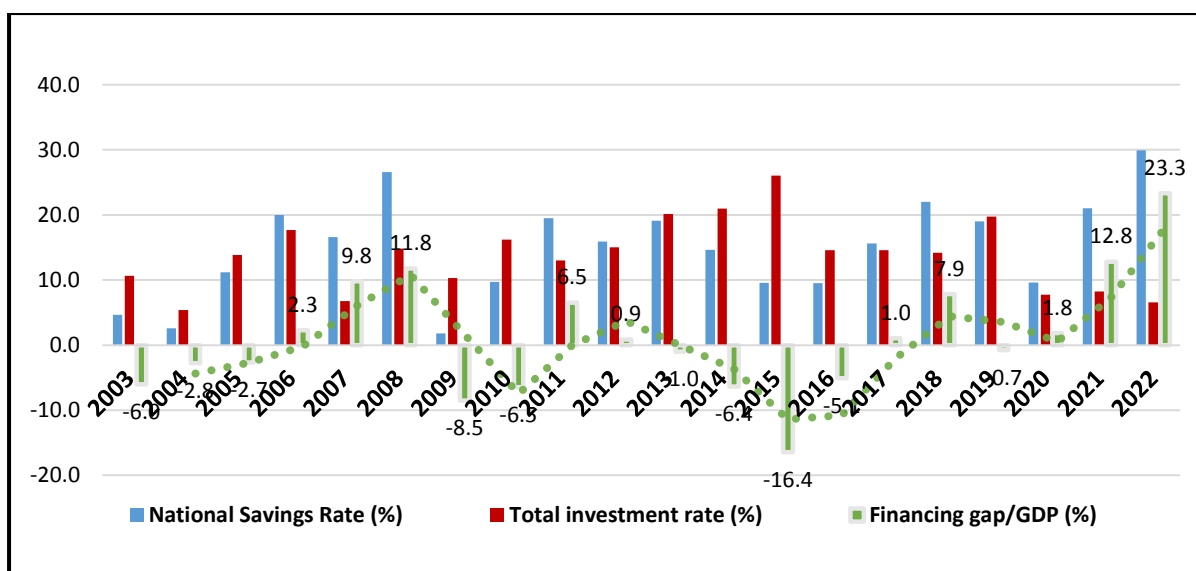


Figure 2: Development of the financing gap in the Iraqi economy for the period (2003-2022)

Table 1: The domestic resources gap and the financing gap in Iraq for the period (2003-2022)

Years	Gross domestic product	Local savings	Domestic Saving Rate (%)	Average ratios (%)	Disposable national income	Total final consumption	National savings	National Savings Rate (%)	Average ratios (%)	Total investments	Total investment rate (%)	Average ratios (%)	Local resource gap	Domestic resource gap/GDP (%)	Average ratios (%)	Financing gap	Financing Gap/GDP (%)	Average ratios (%)	
	1	2	2 / 1 = 3	4	5	6	5 - 6 = 7	8	9	10	10 / 1 = 11	12	10 - 2 = 13	13 / 1 = 14	15	5 - 6 = 16	16 / 1 = 17	18	
2003	29,586	13,436	45.4	36.8	18,620	17,248	1,372	4.6	13.6	3,151	10.7	11.5	10,284	34.8	25.3	-1,779	-6.0	2.1	
2004	53,235	20,197	37.9		34,535	33,148	1,388	2.6		2,858	5.4		17,339	32.6		-1,470	-2.8		
2005	73,534	31,122	42.3		50,505	42,277	8,228	11.2		10,182	13.8		20,940	28.5		-1,954	-2.7		
2006	95,588	27,685	29.0		69,630	50,511	19,119	20.0		16,911	17.7		10,774	11.3		2,208	2.3		
2007	111,456	34,669	31.1		82,315	63,834	18,481	16.6		7,530	6.8		27,138	24.3		10,950	9.8		
2008	157,026	55,503	35.3	22.1	116,941	75,231	41,710	26.6	13.2	23,241	14.8	14.9	32,262	20.5	7.2	18,470	11.8	-1.7	
2009	130,643	10,952	8.4		98,128	95,774	2,354	1.8		13,471	10.3		-2,519	-1.9		-11,118	-8.5		
2010	162,065	25,063	15.5		118,454	102,687	15,767	9.7		26,253	16.2		-1,190	-0.7		-10,486	-6.5		
2011	217,327	70,223	32.3		161,431	119,015	42,416	19.5		28,235	13.0		41,988	19.3		14,181	6.5		
2012	254,225	72,501	28.5		183,849	143,458	40,391	15.9		38,140	15.0		34,361	13.5		2,251	0.9		
2013	273,588	71,075	26.0	15.3	205,764	153,452	52,312	19.1	12.3	55,037	20.1	19.0	16,038	5.9	-3.7	-2,725	-1.0	-6.7	
2014	266,333	44,965	16.9		198,892	159,983	38,909	14.6		55,837	21.0		-	-10,872		-4.1	-16,929		-6.4
2015	194,681	30,101	15.5		163,374	144,736	18,638	9.6		50,651	26.0		-	-20,550		-10.6	-32,013		-16.4
2016	196,924	17,356	8.8		166,823	148,131	18,692	9.5		28,703	14.6		-	-11,347		-5.8	-10,011		-5.1
2017	221,666	44,682	20.2		184,835	150,202	34,633	15.6		32,330	14.6		12,352	5.6		2,303	1.0		
2018	268,919	82,913	30.8	22.0	219,017	159,785	59,232	22.0	20.3	38,107	14.2	11.3	44,806	16.7	10.7	21,125	7.9	9.0	
2019	276,158	56,490	20.5		224,526	171,998	52,528	19.0		54,580	19.8		1,910	0.7		-2,052	-0.7		
2020	215,662	4,802	2.2		182,029	161,323	20,707	9.6		16,755	7.8		-	-11,953		-5.5	3,952		1.8

2021	301,153	63,571	21.1		239,896	176,535	63,360	21.0		24,825	8.2		38,746	12.9		38,535	12.8
2022	383,064	136,207	35.6		305,302	190,691	114,611	29.9		25,210	6.6		110,997	29.0		89,401	23.3
Compound growth rate (%)		13.0					26.2			11.6			13.3	-1.0		-222.9	
Average ratios (%)			25.2					14.9			13.8			11.3			1.1

Source: The table and extracting percentages from the researcher's work based on data from the Ministry of Planning - the Central Bureau of Statistics - the Directorate of National Accounts - the National Income Department, as well as the reports of the Fixed Capital Formation Department for several years (2003-2022).

## 2.5 Measuring and analyzing the impact of local savings in financing one of the indicators of sustainable development (average per capita income from gross domestic product) in Iraq for the period (2003-2022)

The research assumes that the efficiency of local saving is represented by the local resources gap and the financing gap as an independent variable that affects some sustainable development indicators, including the average per capita GDP as a dependent variable. Due to the small size of the study sample (annual) for the period (2003-2022), the data was converted to quarterly by relying on the exact data for the second semester to convert low frequencies (annual) to high frequencies (quarterly) using the standard program (Eviews12) and will be used. And the regression model. Independent Distributed Lag (ARDL) for cointegration, bounds testing, and finding the short- and long-run relationship whether the variables have a degree of integration (0)I, integration of order (1)I, or a combination of them.

### 2.5.1 Study variables and static test results

#### 2.5.1.1 Estimating the short- and long-term relationship according to the ARDL methodology

Advanced standard methods will be used in analyzing the rest of the time series, especially the Autoregressive Automatically Distributed Lag Time (ARDL) methodology, through a set of statistical tests for the time series of the research variables. The study included three dependent (dependent) variables and two independent (influential) variables. It can be clarified through Table (2), as follows:

**Table 2 :** Variables of the standard model

No	Variable symbol	Variable name	Description of the variable
1	Y1	Average per capita GDP	Dependent variable
4	X1	Local resource gap	Independent variable
5	X2	Financing gap	Independent variable

**Source :** From the work of the researcher.

#### 2.5.1.2 Static test results:

The developed Dickey-Fuller test and the Phillips-Perron test were relied upon to determine the degree of stationarity of academic variables (average per capita GDP, Local resource gap, financing gap), as these tests are considered the best in determining the stationarity of variables, and the table shows the results of testing the degree of stationarity of variables. (Developed Dickey-Fuller test) as follows:

**Table 3:** Results of the test for the degree of stationarity of variables (developed Dickey-Fuller test)

Degree of rest at the first difference			Degree of rest at level			Variable name	Variable symbol
without	Constant limit and general trend	Fixed limit only	without	Constant limit and general trend	Fixed limit only		
<b>Moral Prob</b>			<b>Moral Prob</b>				
0.0000	0.0000	0.0000	0.9148	0.4708	0.5254	Average per capita GDP	Y1
0.0000	0.0002	0.0009	0.5825	0.9279	0.6363	Local gap	X1
0.0000	0.0000	0.0000	0.6372	0.9747	0.9464	Financing gap	X2

**Source:** Prepared by the researcher, based on the results of the (Eviews12) program.

It is clear from Table (3) that all variables were stationary at the first difference, based on the significance of each variable, as the variable is considered stationary when its significance is less than 5%, for both cases (level, first difference), and the results of the developed Dickey-Fuller test show, The variables (average per capita GDP, local gap, financing gap) are stationary at the first difference, as shown in Table (4), the results of the test for the degree of stationarity of the variables (Phillips-Perron test), as follows:

**Table 4:** Results of the test for the degree of stationarity of variables (Phillips-Perron test)

Degree of rest at the first difference			Degree of rest at level			Variable name	Variable symbol
without	Constant limit and general trend	Fixed limit only	without	Constant limit and general trend	Fixed limit only		
<b>Moral Prob</b>			<b>Moral Prob</b>				
0.0000	0.0000	0.0000	0.9214	0.4208	0.5254	Average per capita GDP	Y1
0.0000	0.0002	0.0009	0.3166	0.7552	0.3932	Local gap	X1
0.0000	0.0000	0.0000	0.6372	0.9658	0.9224	Financing gap	X2

**Source:** Prepared by the researcher, based on the results of the (Eviews12) program.

As can be seen in Table (4), the results of the test for the degree of stationarity of variables (Phillips-Perron test), and it turns out that the results of the Phillips-Perron test are identical to the results of the developed Dickey-Fuller test, and the variables were (average per capita GDP, local gap, financing gap ) is static at the first difference, and then one can resort to the autoregressive autoregressive distributed lag (ARDL) methodology, which is resorted to if the variables are static at the level or at the first difference or a mixture of static between the level and the first difference.

## 2.5.2 Measuring the impact of overall gaps in the average per capita GDP:

### 2.5.2.1 Preliminary results of model estimation:

The ARDL model is one of the important models in measuring the relationship between economic variables, and the first test in the ARDL model is the initial estimate of the model results to ensure that there is no problem in the model and to interpret the statistical parameters (R-squared) and (F-statistic) and (Durbin-Watson stat) and using the best criterion among the criteria. Table (5) shows the results of the initial estimation of model (Y1), as follows:

**Table 5 :** Results of the initial estimation of model (Y1)

<b>R-squared</b>	0.947410	<b>Akaike info criterion</b>	1.445974
<b>Adjusted R-squared</b>	0.931828	<b>Schwarz criterion</b>	1.841854
<b>F-statistic</b>	60.80112	<b>Hannan-Quinn criter.</b>	1.584147
<b>Prob(F-statistic)</b>	0.000000	<b>Durbin-Watson stat</b>	1.788290

**Source:** Prepared by the researcher, based on the results of the (Eviews12) program.

Table (6) shows the results of the initial estimation of model (Y1), and that the statistical results were as follows:

a. The coefficient of determination was (0.947410), meaning that % changes in the average per capita share of GDP by 94% resulted from changes occurring in the independent variables (the local gap, the financing gap).

B. The (F) statistic reached (60.80112) and its significance reached (0.00000) and indicates complete acceptance of the model as it is significant and less than 5%.

T. The Durbin-Watson value reached (1.788290) and initially indicates that the model is free of the problem of autocorrelation, as it falls within Durbin-Watson's limits, which range between (1.5-4).

Th. The best criterion for measuring the relationship between the variables in Model (Y1) is the Akaike info criterion, whose value is (1.445974) lower than the other criteria.

C. The model is free of the problem of spurious regression, and the results that will be relied upon are real and not fake. Therefore, we will measure cointegration and then the short- and long-term relationship between the gaps (domestic and financing) and the average per capita GDP. Total as a dependent variable.

### 2.5.2.2 Optimal lag period test results

The Akaike criterion was relied upon to determine the optimal degree of slowness for the variables in the model, as follows:

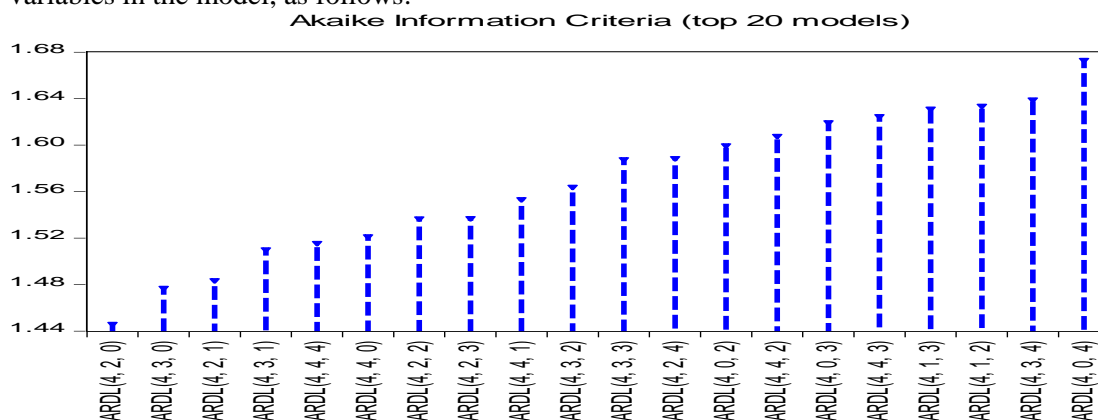


Figure 3 : The optimal degree of slowness

Source: Prepared by the researcher, based on the results of the (Eviews12) program.

It is clear from Figure (2) that the optimal lag periods for the variables using the (Auto) method were (4, 2, 0), which will be relied upon in measuring the relationships between the independent variables (the Local resource gap and the financing gap) and (the average per capita GDP). (gross domestic).

### 2.5.2.3 Short-term relationship outcomes:

The short-term parameters in the autoregressive methodology for automatically distributed lag gaps express the short-term results between the independent variables (domestic gap and financing gap) and the dependent variable (average per capita GDP), as in Table (6):

Table 6: Short-term results of model (Y1)

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X1)	0.05019	0.009345	5.370936	0.0000
D(X2)	-0.023054	0.009796	-2.353339	0.0261

Source: Prepared by the researcher, based on the results of the (Eviews12) program.

Table (6) shows the short-term results of Model (Y1), which show the following:

**a.** An increase in the domestic gap by one unit leads to an increase in the average per capita share of GDP by (0.05) at a significance level of 5%, as the probability reached (0.0000). Still, this result does not match economic theory, as a decrease in the gap contributes to an increase in output. Hence the average per capita output but the gross domestic product in Iraq depends on the oil sector at a rate exceeding the 60% barrier.

**B.** An increase in the financing gap by one unit leads to a decrease in the average per capita share of GDP by (-0.02) at a significance level of 5%, as the probability reached (0.0261), which applies to economic theory.

#### 2.5.2.4 Co-integration test results:

The cointegration test is the first test to measure the long-term relationship, which is the necessary condition for it. This test depends on the limits set by Basran, where the F-statistic is compared with the lower and upper limits. If the value of the F-statistic is greater than the upper limit, this indicates the presence of cointegration, but if the value of (F-statistic) is less than the minimum, this indicates the absence of cointegration. Table (7) shows the results of the cointegration test for model (Y1), as follows:

**Table 7:** Co-integration test results for model (Y1)

Null Hypothesis: No levels relationship		
F-Bounds Test		
Value		Test Statistic
-7.530855		F-statistic
2		K
I(1)	I(0)	Signify.
3.35	2.63	10%
3.87	3.1	5%
4.38	3.55	2.50%
5	4.13	1%

Source: Prepared by the researcher, based on the results of the (Eviews12) program.

It is clear from Table (7) the results of the cointegration test for the model (Y1). It is clear from the results that the value of (F-statistic) reached (7.530855), which is greater than the upper limit of the parameter I (1), which amounts to (3.87) at a significance level of 5. %, and this result indicates a cointegration relationship between the independent variables (the Local resource and financing gap) and the dependent variable (the average per capita GDP). Moreover, we accept the alternative hypothesis that states a cointegration relationship between the variables and reject the null hypothesis.

#### 2.5.2.5 Error correction factor and long-run relationship results:

The error correction factor expresses the possible correction of imbalances in the short term and the return to equilibrium in the long term. One of its conditions is that it is harmful and significant, and its parameter is less than one. Table (8) shows the error correction factor and the long-term results (Y1) as follows:

**Table 8:** Error correction factor and long-term results (Y1)

Error correction coefficient				
Error correction factor				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq (-1)	-0.118339	0.020455	-5.785367	0.0000
Cointegration equation				
EC = Y1 - (0.5281*X1 -0.1948*X2 + 2.1573)				
Long Run Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.528079	0.239033	2.209231	0.0358
X2	-0.194815	0.121253	-1.606679	0.0120
C	2.157281	1.805907	1.194569	0.2426

Source: Prepared by the researcher, based on the results of the (Eviews12) program.

Table (8) shows the error correction factor and the long-term results (Y1). It is clear that the error correction factor parameter reached (-0.118339) and is significant at the 5% level, as its probability reached (0.0000). This means that the imbalances that occur in the average Per capita GDP in the short term can be corrected by economic decision-makers (the government) in the long term by 11.8% each year. Then, it can return to a state of equilibrium within a period of (0.118339/1), that is, within approximately eight years and five months. As shown in Table (8), the long-term results of Model (Y1), which show the following:

**A** - An increase in the Local resource gap by one unit leads to an increase in the average per capita share of GDP by (0.52) at a significance level of 5%, as the probability reached (0.0358). However, this result does not match economic theory, as the decrease in the gap contributes to The output. Then, the average per capita output rises, but the gross domestic product in Iraq depends on the oil sector at a rate exceeding the 60% barrier.

**B** - An increase in the financing gap by one unit leads to a decrease in the average per capita share of GDP by (-0.19) at a significance level of 5% if the probability reaches (0.0120), which applies to economic theory.

#### 2.5.2.6 Results of standard problems (model quality):

In order to ensure the validity of the results of the study model, it must be ensured that the model does not suffer from the problem of autocorrelation, that the model residuals must be normally distributed, and that the model contains variance stability as well as structural stability. The results are as shown in Table (9):

**Table 9:** Results of standard problems (model quality)

Test	Prob. Chi-Square
Serial Correlation LM Test :	0.0875
Test : ARCH	0.9547
Jarque-Bera	0.6908

Source: Prepared by the researcher, based on the results of the (Eviews12) program.

It is clear from Table (8) that all diagnostic tests do not contain problems based on their probability value, and the results were as follows:

**A** - Autocorrelation test: It is clear from Table (9) that there is no problem with autocorrelation because the chi-square probability of autocorrelation reached (0.0875), which is greater than 5%. Therefore, we accept the alternative hypothesis, which states that the model does not contain an autocorrelation problem, and it turns out that the model is free of the problem of homoscedasticity (Test: ARCH) because the chi-square probability of homoscedasticity reached

(0.9547), which is greater than 5%. Therefore, we accept the alternative hypothesis that the model does not contain the Homogeneity stability problem.

B - Testing the normal distribution of the residuals: It is clear from Table (9) and Figure (3) that there is no problem in the normal distribution of the residuals of the model because the probability (Jarque-Bera) reached (0.6908), which is greater than 5%, and then we accept the alternative hypothesis. Which states that the model does not contain the problem of normal distribution of residuals.

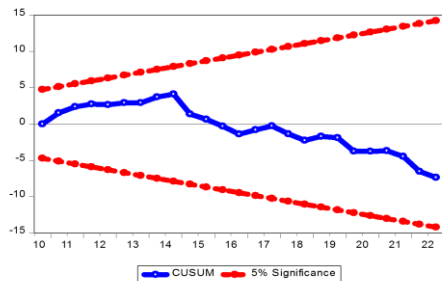


Figure 5 : Structural Stability Test (CUSUM)

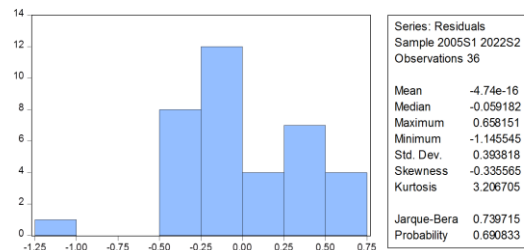


Figure 4: Jarque-Bera test for normal distribution of residuals

**Source:** Prepared by the researcher, based on the results of the (Eviews12) program.

C. Structural stability tests: The structural stability test (CUSUM) is shown in Figure (4), and it appears that the model was stable, meaning that it contains structural stability because the cumulative sum of the residuals (red line) falls within the confidence limits (blue) during the study period.

### 3. Discussion of Results :

The results of research showed the following:

**First**, local savings are of great importance as they are the force with which one will face needs, difficulties and crises. Through the size of those savings and at any sectoral level, it is possible to plan, implement and develop any development project that will lead to increased capital accumulation, increased economic growth and the achievement of sustainable development indicators.

**Second**, in light of the increasing economic and social challenges, the efficiency of domestic saving appears to play a crucial role in achieving sustainable development. Efficient savings management can be a driver for enhancing average per capita income from GDP and thus supporting the achievement of sustainable development indicators.

**Third**, the efficiency of local savings enhances the Iraqi economy and creates job opportunities, thus increasing individuals' incomes, as the efficiency of local savings contributes to directing investment towards sectors with a high impact on development, which contributes to raising the level of income.

Fourth, the greater the gaps (local, financing), the higher the public debt. That is, there is a direct relationship between indicators of the efficiency of local savings and public debt

### 4. Conclusion:

A. An increase in the local resource gap by one unit leads to an average per capita GDP increase by 0.05 at a significant level of 5%, with a probability of (0.0000). However, this result does not align with economic theory. In reality, a decrease in the resource gap contributes to an increase in output and, consequently, the average per capita GDP. It is worth noting that Iraq's GDP relies heavily on the oil sector, accounting for over 60%.



B. An increase in the financing gap by one unit leads to a decrease in the average per capita GDP by 0.02 at a significant level of 5%, with a probability of (0.0261). This aligns with economic theory.

C. An increase in the local resource gap by one unit leads to an increase in the average per capita GDP by 0.52 at a significant level of 5%, with a probability of (0.0358). However, this result does not align with economic theory. In reality, a decrease in the resource gap contributes to an increase in output and, consequently, the average per capita GDP. It is worth noting that Iraq's GDP relies heavily on the oil sector, accounting for over 60%.

D. An increase in the financing gap by one unit leads to a decrease in the average per capita GDP by 0.19 at a significant level of 5%, with a probability of (0.0120). This aligns with economic theory.

### **5. Acknowledgments:**

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### **Authors Declaration:**

Conflicts of Interest: None

-We Hereby Confirm That All The Figures and Tables In The Manuscript Are Mine and Ours. Besides, The Figures and Images, Which are Not Mine, Have Been Permitted Republication and Attached to The Manuscript.

- Ethical Clearance: The Research Was Approved By The Local Ethical Committee in The University.

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## كفاءة الادخارات المحلية وأثرها في متوسط نصيب الفرد من الناتج المحلي الاجمالي في العراق للمدة (2003-2022)

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هذا العمل مرخص تحت اتفاقية المشاع الابداعي تُنسب المُصنّف - غير تجاري - الترخيص العمومي الدولي 4.0  
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### مستخلص البحث:

تعد الادخارات المحلية مصدر أساس لتمويل التنمية المستدامة ، وإن البحث يستند على التحليل الدقيق نظراً لأهمية الادخارات المحلية في الاقتصاد العراقي للمدة (2003-2022) لتوفير التمويل المحلي الضروري واللازم للاستثمارات التنموية في البنى التحتية والاستثمارات التي تعزز النمو الاقتصادي و تعزز الإنتاجية وتوليد فرص العمل وتحقيق أهداف ومؤشرات التنمية المستدامة ومدى كفاءة تلك الادخارات المحلية وأثرها على متوسط نصيب الفرد من الناتج المحلي الاجمالي ، و يهدف البحث إلى فحص تأثير كفاءة الادخارات المحلية على مستوى دخل الفرد من الناتج المحلي الاجمالي . وتحليل التأثير المحتمل على توزيع الدخل في المجتمع المحلي. ويتبنى البحث منهجاً متعدد الأوجه يتضمن استخدام البيانات الكمية لتحليل العلاقات الإحصائية بين مستوى كفاءة الادخارات المحلية ومتوسط دخل الفرد من الناتج المحلي الاجمالي. إذ إن البحث يستهدف دراسة أثر الادخارات المحلية على متوسط نصيب الفرد من الناتج المحلي الاجمالي ، إذ تشكل الادخارات المحلية جزءاً مهماً من الاقتصاد المحلي والقومي ، وينطلق البحث من فرضية أن كفاءة الادخارات المحلية متمثلة بكل من الفجوة المحلية والفجوة التمويلية لها أثر في متوسط نصيب الفرد من الناتج ويرتبط بعلاقة سببية مع كفاءة الادخارات المحلية، وأهمية هذا التأثير الكبير على متوسط نصيب الفرد من الدخل ، حيث تم تحليل معدلات الادخارات المحلية وكفاءة هذه الادخارات وفجوات الادخار المحلية والتمويلية في العراق بتحليل التكامل المشترك . وأظهرت أهم النتائج أن زيادة كفاءة الادخار المحلي ترتبط بزيادة في الاستثمارات المحلية، وبالتالي تحسين مستوى دخل الفرد وأن هناك علاقة طردية ما بين الفجوة المحلية ومتوسط نصيب الفرد وعلاقة عكسية ما بين الفجوة التمويلية ومتوسط نصيب الفرد من الناتج المحلي الاجمالي.

### نوع البحث: ورقة بحثية<sup>1</sup>

المصطلحات الرئيسية للبحث: الادخارات المحلية ، متوسط نصيب الفرد من الناتج المحلي الاجمالي ، الفجوة المحلية، الفجوة التمويلية ، النمو الاقتصادي ، الاستثمار .