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Assessing the impact of credit granted to the private sector on investment in Iraq from 2004 to 2021

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Abstract
Studying the relationship between the variable of credit granted to the private sector and the private investment index in the Iraqi economy from 2004 to 2021 using the statistical program (Eveiws 12), this paper seeks to study and explain the impact of this variable on private investment. The study's findings were derived from the research's use of both descriptive and quantitative methods. Both the short- and long-term relationships between were supported by the research findings. With its focus on the private sector loan-to-GDP ratio, the indicator aims to at the 5% level of significance, the private investment index the proportion of fixed capital formation by the private sector to GDP indicates that a rise in the index proportion results in a rise in the dependent indicator proportion. The importance of the private sector in helping to fund and encourage investment in Iraq's economy, as well as in creating rules and regulations that facilitate investment projects, was highlighted in the research, which concluded that the government should lend its support to the private sector.

Keywords: Investing in Iraq, private sector loans, and the country of Iraq

Introduction
For the state, investment is a major concern because new projects boost the economy through creating jobs, reusing and recycling materials, and reducing reliance on foreign suppliers. This, in turn, helps fund domestic production and reduces the need for credit. Funding private investment is crucial to the private sector because a well-developed and efficient private sector has access to more capital, which in turn increases the rate of private investment. We find that the private sector in Iraq's economy receives far less support than it does in neighboring nations, with public sector support being far higher. Low levels of private investment in Iraq's economy are a direct result of this. The private sector is crucial to economic development and progress, so it is imperative that the government invest in and foster its expansion. In this study, we aim to discover there is some wiggle room in the relationship between the private sector, variable private investment, and the percentage of credit given to that sector.

Importance of studying
This study is significant because it examines the effects of private investment on the Iraqi economy, the role that the private sector is given credit for, and how this variable affects economic growth and development.

Study Problem
The study attempts to answer the following question
For the Iraqi economy, is there a positive correlation between the private investment index and the increase in GDP from 2004 to 2021? This index measures the percentage of credit that the private sector receives and invests.

Study hypothesis
The research is based on a basic hypothesis: The index and the index's morality are positively related. During the years 2004-2021, the private investment index and local taxes were both affected by the percentage impact of the effectiveness of private investment loans.

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Study goal
The purpose of this research is to quantify and examine the dynamics between the private investment index and the private sector credit-to-GDP ratio in Iraq's economy from 2004 to 2021.

Scientific study methods
Study relied on the descriptive technique and the quantitative (standard) approach to understand the relationship between the study variables; these methods helped prove the research hypothesis, meet the objectives, and acquire useful results.

Limits of the study
In this case, the study's geographical borders are the Iraqi economy, and its temporal boundaries are the years 2004-2021.

Structure of the study paper
Three primary parts made up the study. Both the first and second parts focused on the theoretical underpinnings of local lending; the latter also addressed the theoretical underpinnings of private investment. In Section 3, we discussed how to calculate and analyze the private investment index as a percentage of the efficiency of private investment loans relative to GDP. Within the Iraqi economy from 2004 until 2021.

Literature review: The theoretical framework of local credit
The concept of local credit
It is a system for controlling financial institutions and determining where the government's money should go in order to boost the economy. The private sector has access to domestic credit in the form of loans, securities, receipts, and trade facilities from the World Bank in return for payment guarantees. Alternatively, it's the method by which commercial banks lend money to their customers (whether individuals or businesses) for a certain amount of time using debit accounts, overdrafts, or direct grants. By collecting the agreed-upon returns at the conclusion of the term, the borrower has satisfied his commitment. Mortgage lenders are aware of market interest rates (Maitha, 2012-24) [5].

Credit granted to the private sector
The many forms of credit can be classified according to their respective uses: investment, production, commercial, personal (consumption, medium-term, long-term debt guarantee, and credit in kind), and personal credit. Two distinct forms of credit exist. (Tandoh, 2015: 1,2) [3].
1. The state, governorates, and other administrative units that represent the state are all considered public persons with debts that are represented by public credit. When people in a community have faith in both the government and financial institutions, they are more likely to be able to get the loans they need.
2. All loans owed by private legal entities, including individuals, are examples of private credit. A borrower's capacity to repay a loan on time depends on their faith in the lender, which is typically based on their projected future income.

The importance of local credit
Because they are the initial point of contact for most people seeking loans, as well as the primary source of credit for many different industries and demographics, banks play a key role in the economy. This is the driving force behind the expansion and modernization of economies around the globe. The significance and character of credit's function change depending on the specifics of the situation. Economic, political and social prevailing in countries.

In all countries with diverse systems, banks play a crucial role in supporting and growing the economy. Bank credit, which is given by these institutions, is very significant. The following helps to clarify the significance of bank credit. (Usman, 2010; 12) [10].
1. For a parallel economy to work, bank credit is crucial because it allows for the efficient allocation of the banking system's financial and economic resources to different industries and economic activities based on their individual needs. Growth that serves both credit and economic policies.
2. By making use of dormant cash, credit aids in the process of functioning unused resources. This is a way to get money quickly, for a limited time. A rise in national income is a direct result of credit since borrowers are able to employ borrowed funds for short-term endeavors that pay off handsomely. The productive ventures that make use of these resources increase the country's economic activity level.
3. Consumer credit helps stimulate demand, and bank credit increases consumption by allowing low-income consumers to buy durable consumer goods and other goods with the promise of repayment with increased income or savings in the future. Purchasing products and services for individual consumption boosts output, expands market share, and bolsters the economy.
4. Bank loans affect the economy's stability and volatility. More credit means more money rushing into the system, which could harm the economic system's state if the policy isn't designed to award credit in line with the needs of economic activity and aims for economic development. Assuming increases in both demand and supply for goods and services do not occur simultaneously, inflation will always occur. Conversely, when banks are unwilling to lend money to the economy, which can happen in both expansionary and contractionary scenarios, the economy might lose its equilibrium. (Mladen, 2015: 26) [6].
5. Financing massive industrial and agricultural projects, both new and old, that require enormous financial resources that surpass the worth of these projects' own resources is another way credit helps increase production volume.
6. Savings are boosted by bank credit because it influences consumption in a direct way. As a result, banks promote various savings initiatives in an effort to reduce consumption by increasing the amount of money available for lending.
7. The availability of documentary credits to dealing parties is one example of how credit facilitates and expands current foreign exchange operations between countries, which in turn helps to grow the amount of international trade.
8. There has to be more investment than saving, and bank lending helps with that. If we don't have enough cash on hand, it could be hard to invest, but if we have bank credit, we can always make up for lost ground. To make

up for the decline in household savings, limits are imposed on the amount of money that can be borrowed. All obstacles to investment, with the exception of risk, can be eliminated through the use of credit. In the context of a business or industrial endeavor, the question arises as to whether or not the organizer is willing to take on the risks connected with emerging markets or technologies. The bank must strike a balance between the interest rate and the level of risk associated with any chosen initiatives, and it must also carry all risk. (Khazal, 2015: 11) [4].

The theoretical framework for private investment
The concept of private investment
The government's contribution is known as "public investment," whereas "private investment" describes investments made by businesses and individuals. Since "private sector" investments are essentially driven by profit, understanding the difference between the two is crucial for macroeconomic theory students. Investments in the "public sector" aim to accomplish social and economic development goals in line with the state's philosophy. These goals may include, but are not limited to, stabilizing general price levels or reaching full employment. Similarly, when private investment falls short, public investment steps in to make up the difference. (Al-Alawna, 2012: 23) [1].

Rather than the government, private entities such as businesses, institutions, or individuals make investments. To rephrase, all investments that do not fall under the purview of the government, (Horowitz, 2010: 40) [2].

The importance of studying private investment comes
Investment is crucial because of the part it plays in economic development and because of the fact that it is a key component in attaining long-term increases in GDP. The capacity to sustain economic development and raise social real income are both improved when the investment rate is raised because a higher investment rate increases production capacity, which enhances the country's ability to produce more products and services. This is why nations of all systems and development levels aim for maximum investment; for developing nations in particular, investment is the single most crucial factor driving economic growth. Here is one way to put the significance of private investment into perspective: (Tung, 2022: 15) [11].

1. Diversification of production structures, rectification of imbalances, diversification of the production, employment, and investment bases, and the degree to which progress has been attained are all indicated by it.
2. The capacity to manufacture a wide range of goods and services in-house in order to keep up with the increasing demand.
3. Importing consumer, intermediate, and capital products can be mitigated by the development of economic activities and the completion of integrated industrial circuit construction.

4. Having the capacity to comprehend and implement technology and scientific developments. How training and developing human resources impacts productivity, and the necessity of such programs for competitive restructuring.
5. Using the project's forward and backward links to encourage investment in other sectors (Shankar, 2021: 22) [9].
6. The capacity to sustain oneself during unemployment while simultaneously providing opportunities to earn money.
7. The factors that contribute to the formation of added value, which is the disparity between the demand for production and the gross product.

Foreign and domestic private investment is crucial for developing nations, particularly Arab nations, because it helps alleviate unemployment, transfers technology and technical know-how, and provides much-needed capital to countries with little financial resources. Most developing nations have enacted policies to attract investment because of the important role it plays in driving economic growth and ensuring a balanced distribution of resources. In an effort to entice international investment, it sought to reform its policies. This is particularly true in light of the long-held belief in the significance of economic reforms and their engagement with data generated by global shifts in economic development, particularly in the area of welcoming foreign investment. The result of this is that emerging nations have seen a dramatic rise in capital flows throughout the previous 20 years. (Omitogun, 2018:20) [8].

Investment characteristics
There is a set of traits that define investment, the most prominent of which are (Nguyen, 2018:44) [7].
1. The foundation of decision making is its relationship to the future, and thus the aspect of probabilities.
2. When you commit resources to one project at the expense of another, you're creating an opportunity cost.
3. There is a potential for profit, but the exact timing is uncertain and fraught with peril.
4. Before deciding to approve, reject, or make changes to the investment, consider all relevant aspects.
   The third part of the report covers the Iraqi economy from 2004 to 2021 and measures and analyzes the relationship between the private investment index and the size of the ratio of private sector loans to GDP.

Determine the model variables
Two economic factors were incorporated into the conventional model; the percentage an independent variable is the proportion of credit extended to private companies, and a dependent variable is the share of fixed capital formation in GDP attributable to private companies. Table (1) displays the variables, together with their types, symbols, and values.

Table 1: Description of the research variables

Its type	Code	Variable name
Independent	X1	The efficiency of the asset-to-GDP ratio of private investment loans
Continued	Y1	A measure of how efficient private sector capital formation is relative to GDP

Source: Table prepared by the researcher.

Results of the stability test for time series

Using the program (Eviews12) to determine if the study variables are stable or unstable and if there is a unit root, we will conduct stability tests. Consequently, to tackle the spurious regression issue and others like it, stability testing is essential prior to estimating the standard model. Following our tests for time series stability, we found that stable variables eventually revert to their initial values.

Table 2: Results of the Phelps-Perron (PP) test for the research variables at level

Unit Root Test Table (PP), At Level			
	Variables	**Y1**	**X1**
With Constant	t-Statistic	-0.8708	-0.4967
	Prob.	0.7920	0.8850
	Morale level	n0	n0
With Constant & Trend	t-Statistic	-2.4395	-1.7699
	Prob.	0.3567	0.7089
	Morale level	n0	n0
Without Constant & Trend	t-Statistic	0.3936	2.0358
	Prob.	0.7948	0.9895
	Morale level	n0	n0
Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant			

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

It is evident from Table 2 that the research variables do not exhibit level stationarity as per the Phelps-Perron test.

Table 3: Results of the Phelps-Perron (PP) test for the research variables at the first difference

Unit Root Test Table (PP), At First Difference			
	Variables	**d(Y1)**	**d(X1)**
With Constant	t-Statistic	-5.4482	-4.2796
	Prob.	0.0000	0.0010
	Morale level	***	***
With Constant & Trend	t-Statistic	-5.4217	-4.2311
	Prob.	0.0001	0.0068
	Morale level	***	***
Without Constant & Trend	t-Statistic	-5.0980	-3.7191
	Prob.	0.0000	0.0003
	Morale level	***	***
Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant			

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

All data stabilized, as shown in Table (3). We will apply the Autoregressive Distributed Lag test after the first team takes the collaboration as required test (Phillips-Perron). Because the first difference is good for everyone, it's called the ARDL technique.

Standard model nominal estimate

The results of the study's initial estimating model (ARDL) for the association between the index of private investment in Iraq's economy and the index of the percentage of credit granted to the private sector from 2004 to 2021 are shown in Table 4.

Table 4: Initial estimation of the ARDL model for the relationship between the research variables

Dependent Variable: Y1				
Method: ARDL				
Selected Model: ARDL (2, 0)				
Variable	**Coefficient**	**Std. Error**	**Std. Error**	**Prob.***
Y1(-1)	1.281777	0.111204	11.52631	0.0000
Y1(-2)	-0.414049	0.104697	-3.954724	0.0002
X1	0.090185	0.028635	3.149511	0.0025
C	-0.110810	0.134803	-0.822018	0.4140
R-squared	0.970216	Mean dependent var		3.907708
Adjusted R-squared	0.968863	S.D. dependent var		2.975098
S.E. of regression	0.524980	Akaike info criterion		1.604532
Sum squared resid	18.18986	Schwarz criterion		1.733017
Log likelihood	-52.15862	Hannan-Quinn criter.		1.655568
F-statistic	716.6605	Durbin-Watson stat		2.029064
Prob(F-statistic)	0.000000			
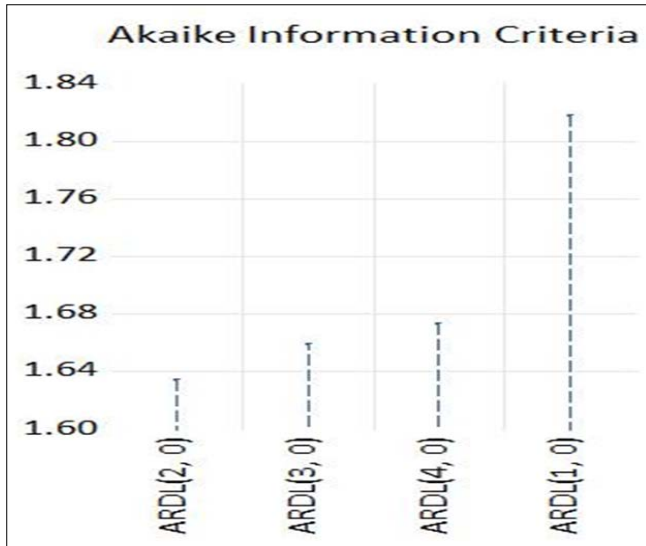
Source: Prepared by the researcher based on the outputs of the (Eviews12) program.

Fig 1: The best lag period for the relationship between the research variables.

Based on the data in Table (4) and Figure (1), it seems that the optimal lag period for the (ARDL) model (2.0) to establish the correlation between the index is the proportion According to the (AIC) standard, the private investment index is affected by the relationship between the percentage of credit given to private investment and local governmental income. Correlation coefficient of determination of 0.97 indicates that independent variable influences dependent variable by 0.97 percentage points; the remaining 3% is attributable to This results in the impact of research factors that were not originally included when developing the model. As the corrected coefficient of determination ratio reached (0.96) and the Durbin-Watson test ratio reached (2.03), we see that the Durbin-Watson statistic is lower than that as compared to the percentage of the test. This allows us to discover the variables' long-term association since the calculated model does not contain false regression.

Results of the cointegration test
Finding the long-term relationship between the independent variable of the study problem and the dependent variable, the private investment index, was done using the cointegration test. The results of the bounds test are shown in the table. The independent variable is the ratio of the effectiveness of credit granted to the private sector to GDP.

Table 5: Results of the boundary test between the research variables

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.165853	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

It should be mentioned that at the 5% significance level, the computed value of F exceeds its tabular value. In other words, we can see that there is a cointegration relationship, which indicates that the two variables are in a long-term equilibrium state, and thus we can accept the alternative

hypothesis and reject the null hypothesis, indicating that the relationship between the variables is significant.

Table 6: Results of estimating the short-term response among the research variables

Short run coefficients				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(Y1(-1))	0.414049	0.100316	4.127448	0.0001
CointEq(-1)*	-0.132272	0.036861	-3.588353	0.0006

Based on Table (6), it is evident that the ratio of the error correction vector coefficient reached (-0.132) at a probability value of (0.0006), indicating the presence of a long-term balanced relationship between the two variables. One requirement for this balanced relationship is the statistical significance of the vector, and the other is a negative value of the line correction vector coefficient, which means that the error can be corrected in the long run to reach equilibrium.

Table 7: Shows the estimate of the long-term relationship between the research variables

Long run coefficients				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
X1	0.681818	0.119242	5.717912	0.0000
C	-0.837747	0.993353	-0.843353	0.4021
EC = Y - (0.6818*X1 - 0.8377)				

Table 7 displays the estimated long-term association, which demonstrates a direct and statistically significant relationship between the index and the dependent variable at a level lower than 1%. During the study period, the Iraqi economy's private investment index and the efficiency ratio of loans made to private investors were measured.

Here shows the results of the autocorrelation and non-stationarity of homoscedasticity test:

Table (8: Results of the autocorrelation test for the relationship between the research variables

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	1.238221	Prob. F(2,64)	0.2967
Obs*R-squared	2.607705	Prob. Chi-Square (2)	0.2715

Due to the probability values indicating acceptance of the null hypothesis and rejection of the alternative hypothesis, Table (8) reveals that the calculated standard model is free from the problem of autocorrelation.

Table 9: Results of the non-stationarity of homogeneity of variance test for the relationship between the research variables

Heteroskedasticity Test: ARCH			
F-statistic	0.002139	Prob. F (1,67)	0.9632
Obs*R-squared	0.002203	Prob. Chi-Square (1)	0.9626

The probability values support the null hypothesis and refute the alternative hypothesis, so the estimated standard model does not suffer from non-stationarity or homogeneity of variance, as shown in Table (9).

Conclusion and Recommendation

We draw the following conclusions based on the data presented above:

Conclusion

1. We discover that the time series for the two variables at the original level are non-stationary and unstable according to the study test results. Stability is obtained by taking the initial difference.
2. Private investment in Iraq's economy from 2004 to 2021 was found to have a positive moral effect on the independent variable of the econometric analysis, which is the ratio of the effectiveness of loans given to private investment to GDP.

Recommendation

1. Due to its significant and critical role in the economy, the private sector should get support from the government in the form of higher lending rates.
2. Creating a conducive investment climate through the enactment of investment-friendly rules and regulations is essential to the launch of fruitful investment initiatives.

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Appendices

		At Level		UNIT ROOT TEST TABLE (PP)
			Y	X1
With Con...	t-Statistic		-0.8708	-0.4967
	Prob.		*0.7920*	*0.8850*
			n0	n0
With Con...	t-Statistic		-2.4395	-1.7699
	Prob.		*0.3567*	*0.7089*
			n0	n0
Without C...	t-Statistic		0.3936	2.0358
	Prob.		*0.7948*	*0.9895*
			n0	n0
		At First Difference		
			d(Y)	d(X1)
With Con...	t-Statistic		-5.4482	-4.2796
	Prob.		*0.0000*	*0.0010*
			***	***
With Con...	t-Statistic		-5.4217	-4.2311
	Prob.		*0.0001*	*0.0068*
			***	***
Without C...	t-Statistic		-5.0980	-3.7191
	Prob.		*0.0000*	*0.0003*
			***	***

```
Dependent Variable: Y
Method: ARDL
Date: 04/02/23   Time: 16:27
Sample (adjusted): 2004Q3 2021Q4
Included observations: 70 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (0 lag, automatic): X1
Fixed regressors: C
Number of models evaluated: 4
Selected Model: ARDL(2, 0)
Note: final equation sample is larger than selection sample
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	1.281777	0.111204	11.52631	0.0000
Y(-2)	-0.414049	0.104697	-3.954724	0.0002
X1	0.090185	0.028635	3.149511	0.0025
C	-0.110810	0.134803	-0.822018	0.4140

R-squared	0.970216	Mean dependent var	3.907708
Adjusted R-squared	0.968863	S.D. dependent var	2.975098
S.E. of regression	0.524980	Akaike info criterion	1.604532
Sum squared resid	18.18986	Schwarz criterion	1.733017
Log likelihood	-52.15862	Hannan-Quinn criter.	1.655568
F-statistic	716.6605	Durbin-Watson stat	2.029064
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	4.165853	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

```
ARDL Long Run Form and Bounds Test
Dependent Variable: D(Y)
Selected Model: ARDL(2, 0)
Case 2: Restricted Constant and No Trend
Date: 04/02/23   Time: 16:43
Sample: 2004Q1 2021Q4
Included observations: 70
```

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.110810	0.134803	-0.822018	0.4140
Y(-1)*	-0.132272	0.040206	-3.289871	0.0016
X1**	0.090185	0.028635	3.149511	0.0025
D(Y(-1))	0.414049	0.104697	3.954724	0.0002

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.681818	0.119242	5.717912	0.0000
C	-0.837747	0.993353	-0.843353	0.4021

EC = Y - (0.6818*X1 - 0.8377)

```
ARDL Error Correction Regression
Dependent Variable: D(Y)
Selected Model: ARDL(2, 0)
Case 2: Restricted Constant and No Trend
Date: 04/02/23   Time: 16:45
Sample: 2004Q1 2021Q4
Included observations: 70
```

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	0.414049	0.100316	4.127448	0.0001
CointEq(-1)*	-0.132272	0.036861	-3.588353	0.0006

R-squared	0.294601	Mean dependent var		0.117111
Adjusted R-squared	0.284227	S.D. dependent var		0.611326
S.E. of regression	0.517202	Akaike info criterion		1.547389
Sum squared resid	18.18986	Schwarz criterion		1.611632
Log likelihood	-52.15862	Hannan-Quinn criter.		1.572907
Durbin-Watson stat	2.029064			

* p-value incompatible with t-Bounds distribution.

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	1.238221	Prob. F(2,64)	0.2967
Obs*R-squared	2.607705	Prob. Chi-Square(2)	0.2715

Heteroskedasticity Test: ARCH

F-statistic	0.002139	Prob. F(1,67)	0.9632
Obs*R-squared	0.002203	Prob. Chi-Square(1)	0.9626