

The role of bank credit in alleviating the housing problem in Iraq for the period (2004–2021)

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Abstract: It is no secret that bank credit plays an effective role in the economic and social life of all societies, especially in terms of stability and prosperity through the necessary financing for investors and individuals seeking their needs for housing units. The research was based on the financing provided by the relevant authorities in Iraq, such as the Real Estate Bank and the Housing Fund, with the support of the Central Bank through its well-known initiatives. The importance of the research lies in the ability of banks and relevant authorities to provide an appropriate climate for those concerned with the housing problem and meet their need to reduce this problem as much as possible if the required capital is available. As for the aim of the research, it revolves around the extent to which bank credit has an impact on reducing and effectively influencing the housing problem in Iraq. The research concluded that credit is linked to the housing problem through the existence of an inverse relationship between the housing problem as a dependent variable and bank credit directed to the housing sector, whether cash or pledged, as independent variables. The researcher reached important recommendations for a solution, the most prominent of which is the necessity for the state to adopt a new strategy to eliminate the housing crisis, which includes a specific and well-studied timetable to come up with unconventional solutions and not be satisfied with patchwork solutions and policies. The role of the private sector must also be activated in investing in the housing sector and providing all types of support and incentives to it, in addition to working to increase investment financial allocations directed to the housing sector. From the federal budget in order to meet as much as possible the need for housing units to alleviate the housing crisis, not to mention reviewing the laws and legislation related to the housing sector in a way that leads to making the housing sector an attractive sector for investment to attract the necessary capital for it.

Keywords: Credit, Housing, Iraq.

1. Introduction

The housing problem in all societies has become a real dilemma that most classes and categories of people suffer from. It is a complex problem that has serious repercussions on the lives and stability of most countries, with economic, social, health, security and structural consequences, whether those countries are developing or developed. It has become one of the first tasks of those in charge of economic affairs (financial or monetary) to address this serious problem because of its repercussions and results that are directly reflected on the stability and development of all classes of any society because it fundamentally affects human dignity. Therefore, all effective and influential treatments must be sought by all means. Therefore, in this research, we will try to analyze the reality of credit policy in Iraq and its repercussions in addressing as much as possible the housing problem in light of what is now known as banking reforms, expanding lending outlets, and working to provide housing loans that are appropriate in terms of quantity, cost (interest rate), repayment period, and required guarantees. All of this must be

within a timetable that is adhered to, otherwise the situation will be catastrophic because the population of Iraq has increased and doubled during the last six decades in a steady manner and in the form of a geometric numerical sequence, starting with seven million people and crossing over to more than forty million people. This noticeable population increase was not accompanied by an increase in parallel momentum in the required infrastructure and housing that keeps pace with the need and purpose. The reasons for this backwardness are many and complex, such as the complexity of the political, security, and social situation and its ramifications that Iraq has experienced for years.

1.1. *The Importance of the Research*

The importance of the research stems from addressing two basic variables that have a close relationship with the life of Iraqi society, its stability and well-being, which are: Housing and what it means and the importance of working to provide it as much as possible by all means to reach an acceptable percentage if we cannot eliminate it because it is related to reaching a decent life and the required civil peace, bank credit and its impact on contemporary life for all societies through the services it provides that support all steps to serve the limited-income classes in Iraq and then proceed on the path of progress and growth and reduce the percentage of housing problems.

1.2. *The Research Problem*

It can be summarized in that important segments of Iraqi society in general have been suffering for many decades and until now from the housing crisis and the exacerbation of the housing need at a rate that exceeds the limits that should not be exceeded because of what Iraq possesses of appropriate and important components. The failure of the credit granted to keep pace with the growing need for decent housing and the provision of housing units that reduce the problem of scarcity of housing units as much as possible.

1.3. *Research Objective*

1.3.1. *The Research Aims To:*

1. Identify the reality and truth of bank credit indicators and analyze them in Iraq.
2. Shed light on the indicators, truth and secretions of the housing problem in Iraq for the period (2004-2021).

1.4. *Research Hypothesis*

Bank credit policies in the Iraqi economy suffer from problems related to housing policies, but these problems can be corrected and solved in the medium term.

1.5. *Research Limits*

1. Spatial limits: Bank credit and housing in Iraq.
2. Temporal limits: It is represented by the time period covered by the research (2004-2021).

First: The concept of bank credit and its types

A- Bank credit is the trust that the bank provides to a specific person or institution. This trust is represented by lending him an amount of money and exploiting it for specific purposes during a specific period of time agreed upon by the two parties under certain conditions. This lending is in exchange for an agreed-upon material yield, provided that the customer provides guarantees that enable the bank to recover his money in the event that the customer refuses to repay the loan amount (1).

B- Types of Bank Credit

1- Cash Credit: Known as (direct credit facilities) and this type of credit is the most widely used and common activity due to its great importance in the activity of commercial banks. The credit department in the commercial bank provides direct cash amounts to the customer (credit applicant) to be used in financing agreed upon operations specified in the credit contract and the type of required guarantee (2).

2- Promissory Credit: Or what is called (indirect credit facilities) and it does not include the direct provision of funds but rather written pledges by which the bank guarantees its customers towards others.

Second: The concept of housing Housing is defined as the building that houses a person and this shelter includes all the facilities, equipment, necessities and tools that a person desires or needs to ensure the achievement of mental and physical health and social happiness for him and his family (3).

Third: Measuring and analyzing the impact of bank credit on the housing problem in Iraq

(¹) Mr. Muhammad Ahmad Al-Sariti, Muhammad Izzat, Economics of Money, Banks and Financial Markets, Ruya Foundation for Printing and Publishing, 2010, p. 34.

(²) Ali Kanaan - Muhammad Hamza, Banking Management, Dar Al-Malayin, Damascus, 2017, p. 331.

(³) Ahmad Abdullah, Possibilities for Activating the Role of the Private Sector in the Arab Economy, Dar Al-Kutub for Publishing and Distribution, 2010, p. 50.

In order to estimate the relationship between economic variables quantitatively, econometrics is used, and through it mathematical models are built that aim to evaluate the most significant explanatory variables that affect the dependent variables.

2. Description of the Standard Model

2.1. Model Variables

Since we are trying to explore the impact of bank credit in alleviating the housing problem in Iraq, we will have the first independent variable, which is bank credit, the governing independent variables are population, housing loans, real estate loans, and the dependent variable is the number of housing units. Here we have four independent variables, which are (bank credit BC, population PO, housing loans HL, real estate loans RL) and one dependent variable (number of housing units HU).

3. Estimation and Analysis

3.1. Stability of Time Series

It is clear from the results of Table (1) that all variables did not stabilize at the level, as the population variable (PO) was stable at the first difference (I(1)) with the presence of a fixed term, while the real estate loans variable (RL) stabilized at the first difference (I(1)) also but with the presence of a fixed term and the general trend, and the housing loans variable (HL) stabilized at the first difference (I(1)) without the fixed term and the general trend, while the variables (bank credit (BC) and the number of housing units (HU)) stabilized at the second difference (I(2)) with the presence of a fixed term.

Table 1.
Results of time series stability.

Unit root test results table (ADF)						
Null hypothesis: The variable has a unit root						
At level						
		BC	HL	HU	PO	RL
With Constant	t-statistic	-0.1852	-0.4088	1.0355	-0.4289	4.3925
	Prob.	0.9226	0.8869	0.9948	0.8831	1.0000
At first difference						
		No	No	No	No	No
With constant & trend	t-statistic	-3.0536	-2.9501	-1.2661	-2.1193	1.2551
	Prob.	0.1493	0.1744	0.8611	0.4998	0.9997
		No	No	No	No	No
Without constant & trend	t-statistic	0.9997	0.6717	4.1001	5.6045	6.0520
	Prob.	0.9078	0.8511	0.9998	1.0000	1.0000
		n0	n0	n0	n0	n0

		No	No	No	No	No
<u>At First difference</u>						
		d(BC)	d(HL)	d(HU)	d(PO)	d(RL)
With constant	t-Statistic	-2.3975	-2.881	-1.914	-4.1675	-0.9008
	Prob.	0.1576	0.0697	0.3181	0.0062	0.7537
		n0	*	n0	***	n0
With constant & trend	t-Statistic	-2.3408	-2.7888	-1.8344	-4.0232	-9.3834
	Prob.	0.3918	0.2203	0.6403	0.0306	0.0000
		n0	n0	n0	**	***
Without constant & trend	t-Statistic	-1.3669	-2.6475	-0.4	-1.7805	-0.3562
	Prob.	0.1526	0.0117	0.5233	0.0719	0.5364
		No	**	No	*	No
<u>At second difference</u>						
		d(BC)		d(HU)		
With constant	t-Statistic	-3.797702		-4.07178		
	Prob.	0.0153		0.0081		
		***		***		
With constant & trend	t-Statistic	-3.56924		-4.23626		
	Prob.	0.0681		0.0227		
		*		**		
Without constant & trend	t-Statistic	-3.93376		-4.11418		
	Prob.	0.0007		0.0005		
		***		***		

Notes: a: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1% and (no) Not significant
b: Lag Length based on SIC c: Probability based on MacKinnon (1996) one-sided p-values.

3.2. Choosing the Optimal Deceleration Period

From the results of the EViews program shown in Table 2 it is noted that the number of optimal deceleration periods for the standard model is two time periods depending on the criteria (Akaike, Schwarz, Hannan Quinn).

Table 2.

Results of the optimal deceleration period test.

VAR Lag Order Selection Criteria						
Endogenous variables: HU RL PO HL BC						
Exogenous variables: C						
Sample: 2004Q1 2021Q4						
Included observations: 66						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-4652.768	NA	1.37e+55	141.1445	141.3104	141.2100
1	-4036.843	1119.864	2.29e+47	123.2377	124.2330	123.6310
2	-3891.154	242.8147*	5.99e+45*	119.5804*	121.4051*	120.3015*
3	-3883.458	11.66015	1.05e+46	120.1048	122.7589	121.1536
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

3.3. Vector Autoregressive Model (VAR)

Table 3 shows the results of the estimation of the autoregressive model. The following is noted from the table results:

Results of the variable of the number of housing units (HU) for the current year: The relationship between (HU) for the previous year and (HU) for the current year is a direct relationship, as a change of one unit for the previous year led to an increase of (2.346) units for the current year, and the calculated value of (t) was (4.171), then the relationship became inverse between (HU) for the second year with the variable (HU) for the current year, and the parameter estimate for this relationship was (1.497-) and the calculated value of (t) was (2.399-). The relationship between (RL) for the previous year and (HU) for the current year is an inverse relationship, as a change of one unit for the previous year in the variable (RL) led to a decrease of (-0.11) units for the current year in the variable (HU), and the calculated value of (t) was (-0.712), then the relationship became direct between (RL) for the second year with the variable (HU) for the current year, and the parameter estimate for this relationship was (0.1511), and the calculated value of (t) was (0.938). It is noted that the relationship between (PO) for the previous year and (HU) for the current year is an inverse relationship, as a change of one unit for the previous year led to a decrease of (-0.087) units for the current year in the variable (HU), and the calculated value of (t) was (-1.055), then the relationship became direct between (PO) for the second year with the variable (HU) for the current year, and the parameter estimate for this relationship was (0.101), and the calculated value of (t) was (1.134). It is also noted that the relationship between (HL) for the previous year and (HU) for the current year is a direct relationship, as a change of one unit for the previous year led to an increase of (0.063) units for the current year in the variable (HU), and the calculated value of (t) was (0.644), then the relationship became inverse between (HL) for the second year with the variable (HU) for the current year, and the parameter estimate for this relationship was (-0.035), and the calculated value of (t) was (-0.354). It is also noted that the relationship between (BC) for the previous year and (HU) for the current year is a direct relationship, as a change of one unit for the previous year led to an increase of (0.0099) units for the current year in the variable (HU), and the calculated value of (t) was (2.172), then the relationship became inverse between (BC) for the second year with the variable (HU) for the current year, and the parameter estimate for this relationship was (0.0093-) and the calculated value of (t) was (1.957-). In the same way, the other results in the table were interpreted and it was found that: The value of the coefficient of determination and the corrected coefficient of determination reached approximately (0.998), which is a very high percentage indicating the efficiency of the model, and the value of (F) was (4971.978), which is also very large, indicating the significance of the model.

Table 3.
Results of estimating the autoregressive model (VAR).

Vector Autoregression Estimates					
Sample (adjusted): 2004Q3 2021Q1					
Included observations: 67 after adjustments					
Standard errors in () & t-statistics in []					
	HU	RL	PO	HL	BC
HU(-1)	2.345720	-0.057404	5.169323	-0.362037	8.621287
	(0.56229)	(1.36235)	(2.93010)	(0.64646)	(11.8213)
	[4.17169]	[-0.04214]	[1.76422]	[-0.56003]	[0.72930]
HU(-2)	-1.497996	0.737357	-7.295051	0.843434	-9.308455
	(0.62430)	(1.51257)	(3.25318)	(0.71774)	(13.1248)
	[-2.39950]	[0.48748]	[-2.24243]	[1.17512]	[-0.70923]
RL(-1)	-0.113796	1.918856	-1.419449	0.110724	-2.933813
	(0.15963)	(0.38675)	(0.83180)	(0.18352)	(3.35585)

Vector Autoregression Estimates

Sample (adjusted): 2004Q3 2021Q1

Included observations: 67 after adjustments

Standard errors in () & t-statistics in []

	HU	RL	PO	HL	BC
	[-0.71290]	[4.96153]	[-1.70648]	[0.60334]	[-0.87424]
RL(-2)	0.151149 (0.16109)	-1.069048 (0.39029)	1.876641 (0.83941)	-0.189931 (0.18520)	3.002162 (3.38656)
	[0.93831]	[-2.73914]	[2.23566]	[-1.02556]	[0.88649]
PO(-1)	-0.087570 (0.08294)	0.016217 (0.20095)	0.938316 (0.43220)	0.067402 (0.09536)	-0.828077 (1.74369)
	[-1.05582]	[0.08070]	[2.17102]	[0.70685]	[-0.47490]
PO(-2)	0.101188 (0.08915)	-0.108580 (0.21601)	0.305378 (0.46458)	-0.130821 (0.10250)	1.149906 (1.87432)
	[1.13498]	[-0.50267]	[0.65732]	[-1.27631]	[0.61350]
HL(-1)	0.063863 (0.09915)	-0.315754 (0.24023)	1.124490 (0.51668)	1.541376 (0.11399)	2.732046 (2.08453)
	[0.64408]	[-1.31437]	[2.17637]	[13.5215]	[1.31063]
HL(-2)	-0.035155 (0.09914)	0.137457 (0.24020)	-0.522459 (0.51661)	-0.751565 (0.11398)	-2.354704 (2.08425)
	[-0.35460]	[0.57226]	[-1.01131]	[-6.59386]	[-1.12976]
BC(-1)	0.009943 (0.00458)	0.003380 (0.01109)	0.064198 (0.02385)	-0.003574 (0.00526)	1.765398 (0.09623)
	[2.17217]	[0.30474]	[2.69138]	[-0.67908]	[18.3448]
BC(-2)	-0.009312 (0.00476)	0.002266 (0.01153)	-0.071214 (0.02479)	0.007729 (0.00547)	-0.825117 (0.10001)
	[-1.95756]	[0.19659]	[-2.87287]	[1.41315]	[-8.25051]
C	126901.9 (102712.)	337577.3 (248856.)	265854.4 (535229.)	186039.1 (118086.)	-674785.4 (2159354.)
	[1.23551]	[1.35652]	[0.49671]	[1.57545]	[-3.12494]
R-squared	0.998875	0.972571	0.999518	0.991434	0.999591
Adj. R-squared	0.998674	0.967673	0.999432	0.989904	0.999518
Sum sq. resids	1.80E+10	1.06E+11	4.90E+11	2.38E+10	7.97E+12
S.E. equation	17947.86	43484.93	93525.68	20634.36	377324.3
F-statistic	4971.978	198.5607	11621.44	648.1527	13680.91
Log likelihood	-745.3411	-804.6323	-855.9424	-754.6867	-949.3986
Akaike AIC	22.57735	24.34723	25.87888	22.85632	28.66862
Schwarz SC	22.93931	24.70920	26.24084	23.21828	29.03058
Mean dependent	4075176	93837.31	34479723	249595.9	25182752
S.D. dependent	492889.8	241853.7	3925487.	205364.7	17182615
Determinant resid covariance (dof adj.)	2.57E+45				
Determinant resid covariance	1.05E+45				
Log likelihood	-3948.113				
Akaike information criterion	119.4959				
Schwarz criterion	121.3057				
Number of coefficients	55				

3.4. Error Correction Model (VE-CM)

Table (4) shows the results of estimating the error correction model and we found that the value of the adaptation coefficient, i.e. the estimated parameter for the error correction limit, is (-0.173833) which is significant and negative, and dividing (1) by (0.17) gives us the number (5.8), which means that it is possible to correct the errors of bank credit policies to solve the housing problem in Iraq during the research period of (6) years.

Table 4.

Results of estimating the error correction model (ve-cm).

Vector error correction estimates					
Sample (adjusted): 2004Q4 2021Q1					
Included observations: 66 after adjustments					
Standard errors in () & t-statistics in []					
Cointegrating Eq:	CointEq1				
HU(-1)	1.000000				
	-0.218654				
	(0.04873)				
RL(-1)	[-4.48662]				
	-0.116765				
	(0.00506)				
PO(-1)	[-23.0584]				
	-0.270386				
	(0.06085)				
HL(-1)	[-4.44316]				
	0.003552				
	(0.00141)				
BC(-1)	[2.51401]				
C	-49560.15				
Error correction:	D(HU)	D(RL)	D(PO)	D(HL)	D(BC)
	-0.173833	0.812896	-2.709379	0.683786	0.167229
	(0.14260)	(0.34785)	(0.71842)	(0.16712)	(3.21936)
CointEq1	[-1.21899]	[2.33693]	[-3.77129]	[4.09162]	[0.05194]
	1.341077	0.162535	3.548224	-0.086320	6.397657
	(0.78862)	(1.92365)	(3.97298)	(0.92419)	(17.8035)
D(HU(-1))	[1.70054]	[0.08449]	[0.89309]	[-0.09340]	[0.35935]
	0.417393	-1.593861	6.930076	-1.131236	8.665204
	(0.91235)	(2.22546)	(4.59633)	(1.06919)	(20.5968)
D(HU(-2))	[0.45749]	[-0.71619]	[1.50774]	[-1.05803]	[0.42071]
	-0.090757	0.830693	-0.731039	-0.031722	-1.766886
	(0.24855)	(0.60628)	(1.25218)	(0.29128)	(5.61118)
D(RL(-1))	[-0.36514]	[1.37014]	[-0.58381]	[-0.10890]	[-0.31489]
	-0.113116	0.421198	-1.947779	0.324798	-3.242301
	(0.27287)	(0.66561)	(1.37471)	(0.31978)	(6.16028)
D(RL(-2))	[-0.41454]	[0.63280]	[-1.41686]	[1.01568]	[-0.52632]
	-0.079426	-0.001165	0.214941	0.040300	-0.727889
	(0.10348)	(0.25242)	(0.52133)	(0.12127)	(2.33613)
D(PO(-1))	[-0.76754]	[-0.00461]	[0.41230]	[0.33231]	[-0.31158]
	-0.069994	0.180555	-0.996749	0.125414	-1.061626
	(0.11735)	(0.28625)	(0.59120)	(0.13752)	(2.64924)

Vector error correction estimates					
Sample (adjusted): 2004Q4 2021Q1					
Included observations: 66 after adjustments					
Standard errors in () & t-statistics in []					
Cointegrating Eq:	CointEq1				
	[-0.59645]	[0.63077]	[-1.68599]	[0.91194]	[-0.40073]
	-0.013202	-0.222924	0.268544	0.734276	0.707411
	(0.17941)	(0.43764)	(0.90387)	(0.21026)	(4.05038)
D(HL(-1))	[-0.07358]	[-0.50938]	[0.29710]	[3.49226]	[0.17465]
	0.039891	0.209439	0.077619	0.048881	0.830102
	(0.17974)	(0.43844)	(0.90552)	(0.21064)	(4.05775)
D(HL(-2))	[0.22193]	[0.47770]	[0.08572]	[0.23206]	[0.20457]
	0.005380	-0.008268	0.050983	-0.010365	0.906865
	(0.00714)	(0.01742)	(0.03599)	(0.00837)	(0.16127)
D(BC(-1))	[0.75311]	[-0.47452]	[1.41670]	[-1.23815]	[5.62343]
	0.006301	0.003234	0.039037	0.000347	-0.088986
	(0.00768)	(0.01873)	(0.03869)	(0.00900)	(0.17339)
D(BC(-2))	[0.82038]	[0.17264]	[1.00891]	[0.03861]	[-0.51323]
	4157.332	10237.26	31076.48	8822.859	152912.8
	(5472.86)	(13349.8)	(27571.8)	(6413.72)	(123553.)
C	[0.75963]	[0.76685]	[1.12711]	[1.37562]	[1.23763]
R-squared	0.725928	0.779578	0.655877	0.759343	0.754957
Adj. R-squared	0.670099	0.734677	0.585778	0.710320	0.705040
Sum sq. resids	1.82E+10	1.08E+11	4.62E+11	2.50E+10	9.29E+12
S.E. equation	18368.19	44804.94	92537.23	21525.93	414672.7
F-statistic	13.00262	17.36224	9.356437	15.48962	15.12447
Log likelihood	-735.0406	-793.8927	-841.7620	-745.5107	-940.7540
Akaike AIC	22.63759	24.42099	25.87158	22.95487	28.87133
Schwarz SC	23.03571	24.81911	26.26969	23.35299	29.26945
Mean dependent	30775.02	21755.88	206657.3	12794.37	825892.9
S.D. dependent	31979.72	86983.85	143780.5	39994.74	763526.7
Determinant resid covariance (dof adj.)	4.40E+45				
Determinant resid covariance	1.61E+45				
Log likelihood	-3903.373				
Akaike information criterion	120.2537				
Schwarz criterion	122.4102				
Number of coefficients	65				

3.5. Diagnostic Tests

3.5.1. Autocorrelation Test

According to the results of the EViews program shown in Table (5), it is noted that the value of (Prob) for the (LM) test reached (0.9987) at (Lag=2) which is greater than (0.05), i.e. accepting the null hypothesis (H₀) and rejecting the alternative hypothesis which states that there is no autocorrelation problem.

Table 5.
Autocorrelation test results.

VEC residual serial correlation LM tests						
Sample: 2004Q1 2021Q4						
Included observations: 66						
Null hypothesis: No serial correlation at lag h						
Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	14.36313	25	0.9550	0.559874	(25, 168.7)	0.9554
2	8.910406	25	0.9987	0.342055	(25, 168.7)	0.9987
Null hypothesis: No serial correlation at lags 1 to h						
Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	14.36313	25	0.9550	0.559874	(25, 168.7)	0.9554
2	57.07497	50	0.2289	1.161792	(50, 185.8)	0.2368

*Edgeworth expansion corrected likelihood ratio statistic.

3.5.2. Testing the Stability of the Model as a Whole

It is noted from the figure below that all the roots lie inside the unit circle, which means that the first standard model is stable

Inverse Roots of AR Characteristic Polynomial

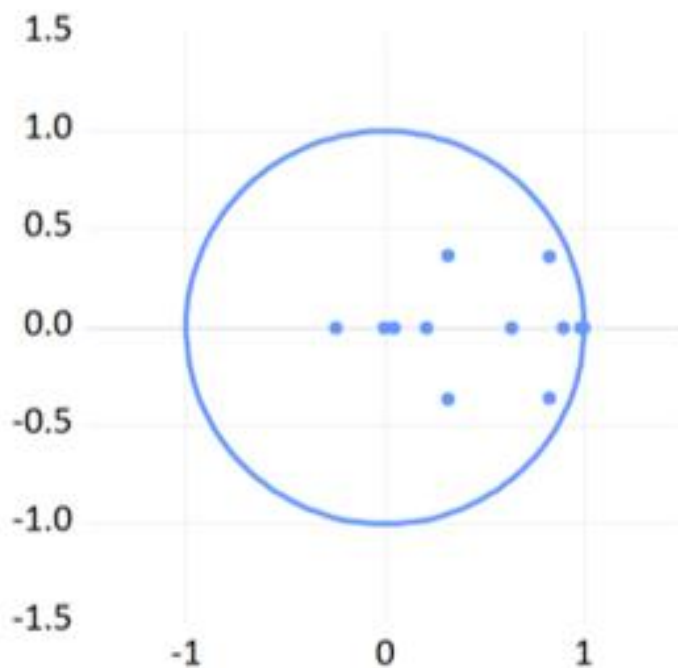


Figure 1.

3.5.3. Causality Test

A. The results of the causality test showed that there is no causal relationship between the independent variables (bank credit, population, housing loans, and real estate loans) and the dependent variable (number of housing units) in the long run

B. The results of the causality test showed that there is no causal relationship between the independent variables (number of housing units, bank credit, population, and housing loans) and the dependent variable (real estate loans) in the long run

C. The results of the causality test showed that there is a causal relationship between the independent variables (number of housing units, bank credit, housing loans, and real estate loans) and the dependent variable (number of population) because the probability value (Prob) for the independent variables reached (0.034) less than the significance level (0.05), so we reject the null hypothesis and accept the alternative hypothesis that states that there is a causal relationship between the independent variable and the dependent variable.

D. The results of the causality test showed that there is no causal relationship between the independent variables (number of housing units, bank credit, population, and real estate loans) and the dependent variable (housing loans) in the long run.

C. The results of the causality test showed that there is no causal relationship between the independent variables (number of housing units, population, housing loans, and real estate loans) and the dependent variable (bank credit) in the long run.

Table 6.

VEC granger causality/block exogeneity wald tests			
Sample: 2004Q1 2021Q4			
Included observations: 66			
Dependent variable: D(HU)			
Excluded	Chi-sq	Df	Prob.
D(RL)	1.174106	2	0.5560
D(PO)	2.243591	2	0.3257
D(HL)	0.085273	2	0.9583
D(BC)	4.169115	2	0.1244
All	7.479078	8	0.4859
Dependent variable: D(RL)			
Excluded	Chi-sq	Df	Prob.
D(HU)	0.795864	2	0.6717
D(PO)	0.598310	2	0.7414
D(HL)	0.270399	2	0.8735
D(BC)	0.276380	2	0.8709
All	2.131870	8	0.9767
Dependent variable: D(PO)			
Excluded	Chi-sq	Df	Prob.
D(HU)	8.835739	2	0.0121
D(RL)	7.925593	2	0.0190
D(HL)	0.420382	2	0.8104
D(BC)	9.953061	2	0.0069
All	16.65055	8	0.0340
Dependent variable: D(HL)			
Excluded	Chi-sq	Df	Prob.
D(HU)	2.284965	2	0.3190
D(RL)	1.950354	2	0.3771
D(PO)	1.965354	2	0.3743
D(BC)	2.900796	2	0.2345
All	4.580452	8	0.8013
Dependent variable: D(BC)			

VEC granger causality/block exogeneity wald tests			
Sample: 2004Q1 2021Q4			
Included observations: 66			
Dependent variable: D(HU)			
Excluded	Chi-sq	Df	Prob.
Excluded	Chi-sq	Df	Prob.
D(HU)	0.921943	2	0.6307
D(RL)	1.378758	2	0.5019
D(PO)	0.611850	2	0.7364
D(HL)	0.400723	2	0.8184
All	2.226133	8	0.9733

From the above table, we note that the independent variables (bank credit, housing loans, population, real estate loans) do not cause the dependent variable (number of housing units), and this is contrary to the logic of economic theory, which states (there is a direct relationship between the size of bank credit and the number of housing units in any country). The reason for the absence of this relationship is due to the following: -

1. The size of bank credit directed to the housing sector (housing loans, real estate loans) constitutes only (1%) of the total bank credit as an average for the period (2004-2021), which means that there is no impact of bank credit on the housing sector in Iraq during the period (2004-2021).

2. The size of bank credit in Iraq during the period (2004-2021) constitutes a very small percentage of the gross domestic product in Iraq, as this percentage constitutes (%) as an average for the research period, and the reason for this is due to the excessive rent that the Iraqi economy suffers from, as the oil sector is the sector that affects the gross domestic product in Iraq.

3. The instability of the political situation in Iraq has led to a significant weakness in the systems, laws and instructions governing the housing sector, through the transformation of most citizens into converting agricultural lands into residential lands without a legal basis. This matter has weakened the issue of transferring a large part of bank credit to the housing sector due to the lack of sufficient guarantees that encourage the banking sector to direct a large part of its funds to invest in the housing sector in the form of loans and advances. This has led to the banking sector not having any influence on the housing sector. 4. The backwardness of the systems, laws and instructions governing banking work, due to the fact that they operate with paper systems and an old beginning, with the absence of automation, in addition to the abundance of administrative routine. This has led to the unwillingness of members of society to resort to the banking sector in order to solve the housing problem in Iraq, and to rely on other illegal methods and patchwork solutions in order to solve this crisis. 5. Lack of accurate data and information on the population size and its divisions, due to the lack of a general population census for more than (25) years, which has led to difficulty in planning by the relevant ministries (Ministry of Planning, Ministry of Housing, Construction and Public Municipalities, Ministry of Finance) in order to find correct solutions to the problem of population growth with the small number of model housing units.

3.5.4. Joint Integration Test

The joint integration test of the model variables was conducted using the (Johansson) methodology, and from the results obtained using the EViews program and shown in the table below, it is noted that the methodology discovered the absence of a long-term equilibrium relationship between the model variables.

Table 7.

Results of the joint integration test.

Sample (adjusted): 2004Q4 2021Q1				
Included observations: 66 after adjustments				
Trend assumption: Linear deterministic trend				
Series: HU RL PO HL BC				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical value	Prob.**
None *	0.366475	69.95579	69.81889	0.0488
At most 1	0.291842	39.82972	47.85613	0.2287
At most 2	0.173642	17.05390	29.79707	0.6361
At most 3	0.065426	4.465878	15.49471	0.8626
At most 4	6.21E-11	4.10E-09	3.841465	0.9998
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical value	Prob.**
None	0.366475	30.12607	33.87687	0.1315
At most 1	0.291842	22.77582	27.58434	0.1832
At most 2	0.173642	12.58802	21.13162	0.4908
At most 3	0.065426	4.465878	14.26460	0.8072
At most 4	6.21E-11	4.10E-09	3.841465	0.9998
Max-eigenvalue test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

4. Conclusions

1- The results of applying the standard model through the causality test showed that there is no causal relationship between the independent variables (bank credit, population, housing loans and real estate loans) and the dependent variable (number of housing units) in the long run. This is contrary to economic theory and the reason is the weak volume of credit directed to the housing sector from the total bank credit during the research period, which is estimated at (1%).

2- The backwardness of the banking system in general in Iraq and the banks, especially the specialized ones such as the Real Estate Bank, have turned into purely profitable banking institutions that have no social duties, not to mention that they are scientifically and practically primitive, in addition to the spread of routine and administrative and financial corruption.

3- The housing crisis and the growing housing need in Iraq are not a new problem. The current crisis is an inherited crisis because it is an extension of the housing crisis in previous decades and has worsened in the present due to many reasons, including those related to the absence of housing policy and planning, weak housing financing, high construction costs and housing units, and those related to the general behavior of society, not to mention the political instability that leads to weak laws and the absence of effective scientific planning.

4- The weakness of the role of the public sector in confronting and containing the housing crisis due to the lack of housing financing allocated to the housing sector from the federal budget and the decrease

in housing investment allocations, which led to a scarcity of housing projects due to the state stopping the construction of residential complexes.

5- There are many indicators indicating the depth of the housing crisis in Iraq, represented by overcrowding, the spread of slums, and the lack of preference for vertical housing.

6- The trend of housing need increasing during the research period due to the lack of solutions and a clear housing policy that accommodates the continuous population increase and rapid population growth.

7- The low efficiency of the private sector in establishing residential complexes for low- and limited-income groups, as investment housing projects were directed towards high-income groups due to their high prices, which proved that the contribution of housing projects to solving the housing crisis was low.

5. Recommendations

1- It is necessary for the state to adopt a new strategy to eliminate the housing crisis that includes unconventional solutions and not to be satisfied with patchwork policies and solutions.

2- Activate the role of the public sector represented by the Ministry of Construction and Housing to establish integrated residential complexes at a low cost that is commensurate with the financial capabilities of individuals with limited income, in addition to the necessity of completing housing projects under implementation and those that have been halted to suit decent housing and to alleviate the housing crisis.

3- Work to increase investment financial allocations directed to the housing sector from the federal budget in order to establish housing units, which will then be reflected in alleviating the housing crisis.

4- Review all legislation and laws related to the housing sector in a way that makes this sector attractive for investment and creates opportunities to attract local and foreign capital to invest in this sector.

5- Develop a housing policy that is implemented through strategies that include the public sector, the private sector and investors in order to reach mechanisms for implementing housing projects.

6- Encourage the private sector to invest in building housing units by facilitating procedures for investors with strict government oversight to prevent price increases.

7- Working on issuing laws and instructions that prevent the phenomenon of expanding the exploitation of agricultural lands for residential purposes due to its impact on the urban and urban design of cities and the elimination of green spaces.

8- Working on adopting the Real Estate Bank and the Housing Fund to grant loans to individuals with limited income and for individuals with high incomes to borrow from commercial banks.

9- The possibility of using military efforts to build residential complexes and cities as is the case in the experience of Arab Egypt, which achieved great success and reduced the housing crisis.

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