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The Impact of Optimal Investment in the Liquidation Sector on Economic Development in Iraq

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Abstract

The study shows the effect of an optimal investment in the oil filter concerning the economic development in Iraq.

The research has found out some most important conclusions that include that one of the most important factors that affecting investment in the Iraqi filtering sector during the study period are the value of Iraq exports of crude oil, Iraq daily production of crude oil, and Iraq reserves of crude oil.

Also, the ratio of the monetary mass growth and domestic product growth are not proved the significance of its statistically significant impact on investment in the filter sector in Iraq during the period of the study. Moreover, the investments in the filter sector in Iraq are not proved the significance of its statistically significant impact on the GDP growth rate in that period.

The study has recommended the need for the Iraqi government to execute more effective policies in the field of benefiting from the filtering sector so that it can influence economic development, and increase government expenditure on the filtering sector. This contributes to rapid economic development also the increase of exporting rates as well ensuring the continuity of the achieved development rates. The need to take advantage of the high oil prices to bring about changes in the economic policy of the Iraqi government makes it more effective, which increases its impact on economic variables that help achieve real economic development for Iraqi society and help achieve goals Iraqi economic policy. The Iraqi government must provide the appropriate investment atmosphere for local and international companies adding to their investment in the sector of filter so that the government will be an effective partner in these investments and projects. These steps may achieve the optimal benefit from investing in the development of the filtering sector. Also, it makes it the locomotive of development through which achieving development in the rest of the various economic sectors in Iraq. All the tables are prepared by the researcher by the use of E. views program.

Keywords: *investment - liquidation sector - economic development – Iraq.*

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Introduction

Oil is one of the most important natural resources in the economies of countries, as it helps in the formation of a powerful economy as a result of the huge returns that accrue to oil-producing countries as a result of exporting it abroad. Therefore, all oil-producing countries try to increase their production capabilities by increasing oil exploration, working to increase investment in the oil environment and the optimum exploitation of the available oil resources. Moreover, oil is also important to non-oil economies in securing energy resources to achieve productivity and achieve the required growth.

Oil is the first source of income on which the Iraqi economy depends, as the percentage of Iraqi oil revenues reaches more than 95% of Iraq total income since its first appearance in 1927. This is done when the production of the Kirkuk field began in northern Iraq. It shows the great importance of investment in this important sector and the necessity of work to increase its production capabilities.

Iraq has the third largest oil reserves in the world following Venezuela and Saudi Arabia. Iraqi oil reserves are about 10% of the total global oil reserves, according to 2013 indicators(Khalifa, 2014 pp 61-64).

Iraq has huge oil potentials. Out of its discovered and existing oil fields, only about 25% of these fields have been exploited economically. The oil fields need large sums of investments and reforms in order to be able to resume full production as it has been in 1990. (Al-Muzaini, 2013: 323)

The problem of the study

Developing countries suffer from many problems such as unemployment, low average per capital income, poverty, weak infrastructure and lack of productivity investments. Investments, whether domestic or foreign, are considered one of the main pillars of the development process. Yet, the issue of attracting these investments requires great efforts to improve the investment climate and work to encourage investors and provide facilities and privileges that help to attract them.

The Iraqi government has taken care of creating the general atmosphere, legislative and regulatory frameworks, and preparing the infrastructure to attract foreign investments and international companies, especially in the field of oil and gas. This is due to the fact that they are more competitive and dynamic than other economic sectors. The government plan contributes to overcoming the challenges of globalization, creating employment opportunities, raising economic performance and improving income and living standards. It illustrates the dynamism of investment activity and its ability to achieve huge leaps in the national economy.

The problem of the research is that it identifies the optimal investment influence in the filtration sector on economic development in Iraq and the most important factors affecting investment in the filtration sector in Iraq.

The importance of the study

The study discusses a topic that has not been sufficiently addressed in research and studies, despite its importance. The research is considered one of the first researches that dealt with the filtration sector and its impact on achieving economic development in Iraq.

The aims of the study

The research identifies the optimal investment influence in the filtration sector on economic development in Iraq. This is done by a set of sub-objectives, which are:

1- Identifying the concepts and terminology that are related to the subject of the study.

2- Studying the most important economic factors that affecting investment in the filtration sector in Iraq.

3- Examining the impact of investment in the filtration sector on economic growth in Iraq.

4- Reaching conclusions and recommendations that can be used to achieve optimal investment in the filtration sector in Iraq.

The methodology of the study

The study uses some compatible approaches that are appropriate with the aim of the study and achieves its purpose. The research utilizes the descriptive approach for its suitability to the subject of the study. The research uses the analysis measure that by using it, we can use the styles and procedures to analyze the data of the research examine by the use of the E. views program for putting results and recommendations that may be useful.

Data Sources

This study depends on the data from reports, bulletins and periodicals from the Organization of the Petroleum Exporting Countries (OPEC), the Arabic Organization of the Petroleum Exporting Countries (OAPEC) and the World Bank.

The Limits of the Study

Objective limits are to identify the impact of optimal investment in the filtration sector on economic development in Iraq.

Spatial boundaries: Iraq is the area of the study.

Time limits: the duration from 2004 to 2018.

Research terminology

- Investment

- May be defined as the purposeful human activity that works to multiply material and moral benefits by investing money in productive projects. These projects take into consideration the priorities of society within the framework of the values and ethics of the nation(BinSalamah, 2014, 27).

It is an expenditure that is necessary for production that results in economic development as it involves exchanging current capital for future revenues whose amount will be greater(Al-Salama, 2014, 174).

- Economic development

Economic development is a complete shift in the lives of the members of society due to the rise real income of individuals because of the best possible exploitation of the economic resources of the society(Al-Masoudi, 2010, 4).

It is the economic and living social standard improvement due to the improvement of goods and services and the rise in production levels and abilities, with a good income distribution among community members(Al-Homsi, 2014, 54-55).

Economic growth

It is the rise in price of the goods and services produced by the society by the available means of production during a certain period, often a year(Al-Masoudi, 2010, 28).

The average real rise per capital income of the society population in a certain period (Ahmed, 2016, 28).

The practical framework

First: The development of the most important economic indicators that are related to the filtration sector in Iraq from)2004-2018)

The value of Iraq exports of crude oil. By analyzing the data in table (1) shows the value of Iraq exports of crude oil from 2004 to 2018 had witnessed a continuous increase and ranged between two limits, the lowest amounting to about $17.75 billion in 2004 and a maximum of about $94.26 billion in 2012. The annual average value during the study period amounted to about $51.55 billion, and the annual increase rate is about 41.5% at a significant level of 0.01.

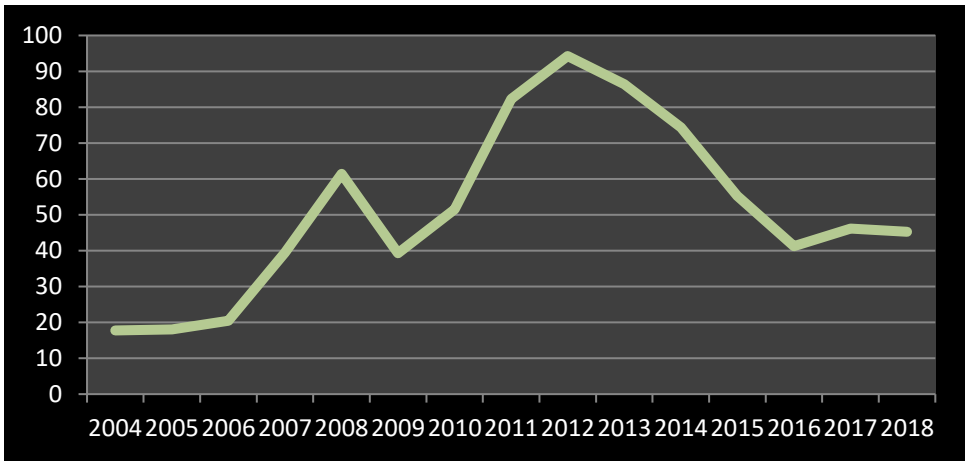

Figure No. (1) The value growth of Iraq exports of crude oil in 2004-2018

The table is done by the researcher due to data of table NO.1

Iraq daily production of crude oil:

By studying the data in table No.1 reveals that Iraq daily production of crude oil from 2004 to2018 is ranged between two limits. The lowest of which is about 2.10 million barrels / day in 2007. A maximum of production is about 3.40 million barrels / day in the year 2016. The annual average value during the study period is about 2.92 million barrels / day. The annual increase rate is about 11.60% at a significant level of 0.01.

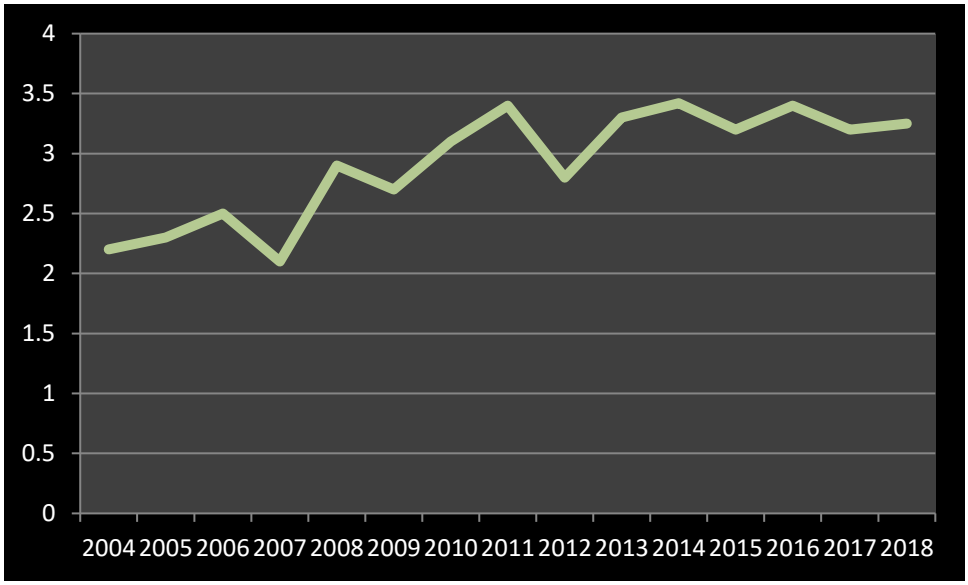

Figure No. (2) The development of Iraq daily production of crude oil from 2004 to 2018

This figure is prepared by the researcher depending on data on figure NO.1

Iraq reserves of crude oil:

By studying the data in table (1) makes clear that Iraqi reserves of crude oil from 2004 to2018) is ranged between two limits. The lowest of which is amounted to about 111.50 billion barrels in 2004. A maximum is of about 121.20 billion barrels in 2017. Also, the value of the annual average during the study period is about 116.29 billion barrels, and the annual increase rate is about 49.30% at a significant level of 0.01.

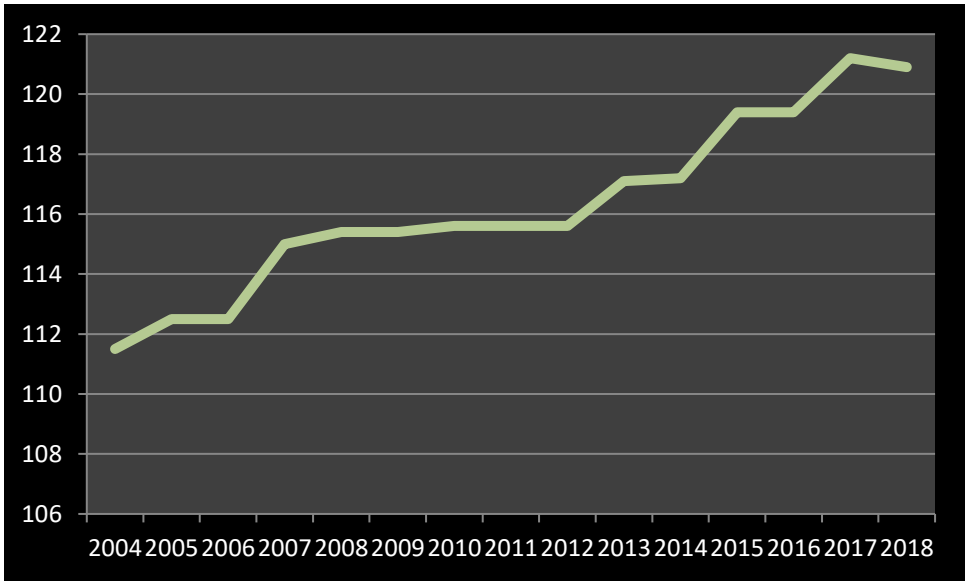

Figure No. (3) The evolution of Iraq reserves of crude oil during the period 2004-2018

The table is done by the researcher due to data of table NO.1

Money supply growth rate:

By studying the data in table (1) shows the growth rate of the money supply from 2004 to 2018 is ranged between two limits. The lowest amounting is about 8.74% in 2014. The maximum amounting is about 17.99% in 2012. The annual average value during The study period is about 13.43%, and the annual increase rate is about 26.70% at a level of significance of 0.01.

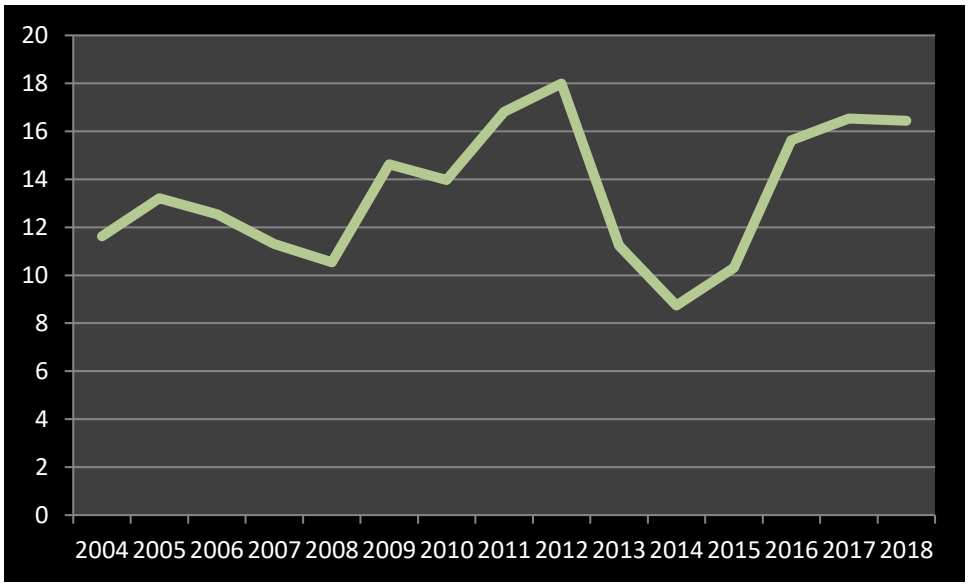

Figure No. (4) The money supply growth rate from 2004 to 2018

The table is done by the researcher due to data of table NO.1

GDP growth rate:

Table (1) shows a GDP growth rate from 2004 to 2018 is ranged between two limits. The lowest amounting is about 0.72% in 2014. In addition, the maximum amounting is about 13.92% in 2012. The annual average value for the research period is about 7.12%, and the annual increase rate is about 18.40% at a level of significance of 0.01 .

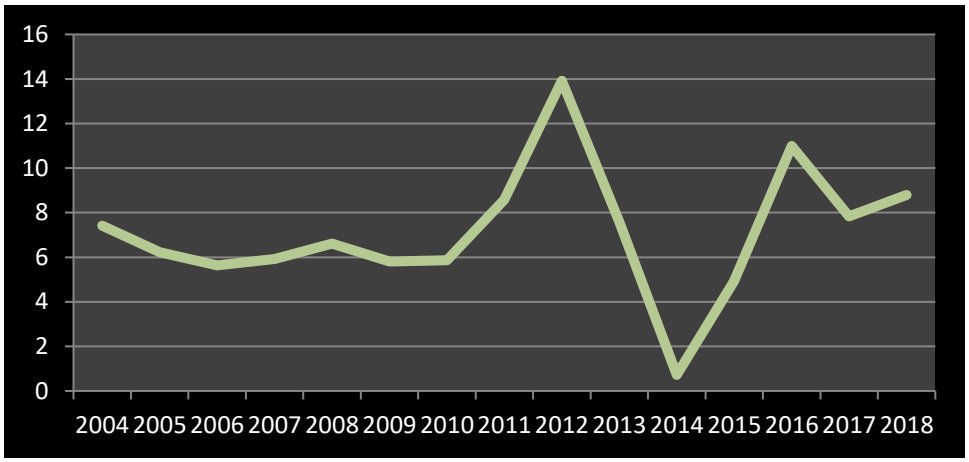

Figure No. (5) GDP growth rate during the period 2004 -2018

The table is done by the researcher due to data of table NO.1

Investment rate in the filtration sector out of total investments:

According to Table (1), the investment rate in the filtration sector out of the total investments from 2004 to 2018 is ranged between two limits. The lowest amounting is about 44.53% in 2010. Moreover, the maximum amounted is about 64.26% in 2006. The value of the annual average during the study period is about 51.77%, and the annual increase rate is about 40.50% at a significant level of 0.01

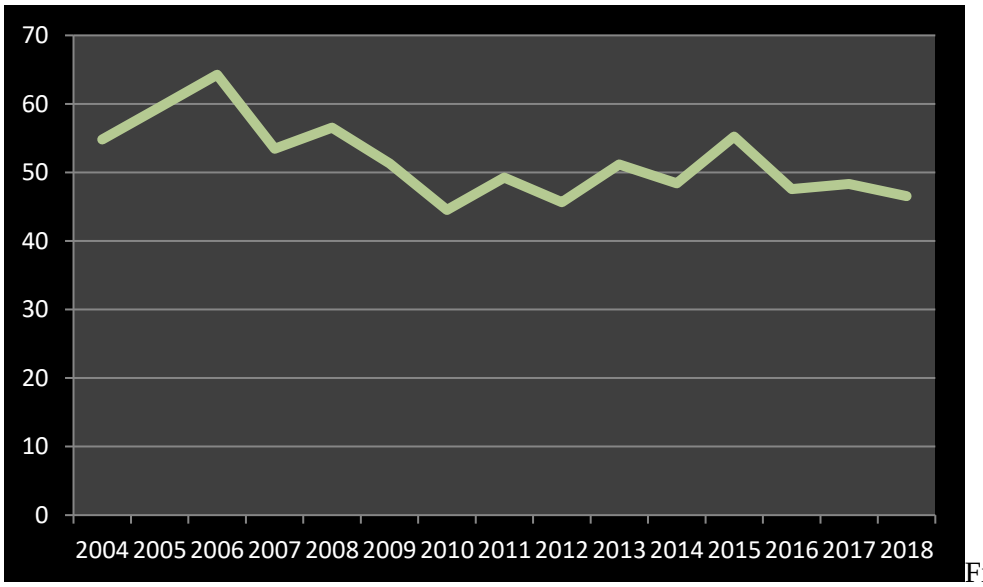

Figure No. (6) The investment rate evolution in the filtration sector from the total investments from 2004 to 2018.

The table is done by the researcher due to data of table NO.1

Table (1) The development of the most important economic indicators related to the liquidation sector in Iraq (2004-2018)

year	The value of Iraq exports of crude oil (Billion dollar)	Iraq production of crude oil (million barrels/day)	Iraq crude oil reserves (billion barrels)	Money supply growth rate %	GDP growth rate %	Investment rate in the liquidation sector out of total investments, %
2004	17.75	2.20	111.50	11.62	7.42	54.82
2005	18.06	2.30	112.50	13.21	6.22	59.55
2006	20.46	2.50	112.50	12.54	5.64	64.26
2007	39.43	2.10	115.00	11.30	5.92	53.48
2008	61.45	2.90	115.40	10.54	6.61	56.53
2009	39.31	2.70	115.40	14.62	5.81	51.29
2010	51.49	3.10	115.60	13.97	5.86	44.53
2011	82.34	3.40	115.60	16.82	8.58	49.27
2012	94.26	2.80	115.60	17.99	13.92	45.66
2013	86.42	3.30	117.10	11.23	7.61	51.17
2014	74.36	3.42	117.20	8.74	0.72	48.39
2015	55.22	3.20	119.40	10.31	4.93	55.22
2016	41.21	3.40	119.40	15.63	11.00	47.56
2017	46.19	3.20	121.20	16.53	7.83	48.33
2018	45.29	3.25	120.90	16.44	8.79	46.55
Average	**51.55**	**2.92**	**116.29**	**13.43**	**7.12**	**51.77**
Annual rate of change %	**41.50**	**11.60**	**49.30**	**26.70**	**18.40**	**40.50**

This table is prepared by the researcher based on (OPEC) (Organization of Arab Petroleum Exporting Countries), 2004-2018; The World Bank Group, 22, 2018; Trading Economics)

Second: The standard relations between investment in the liquidation sector and the most significant economic indicators in 2004-2018:

In order to measure and analyze the relationship between investment in the liquidation sector and the most significant economic indicators in the period 2004-2018, the standard relationships were calculated between the percentage of investment in the liquidation sector out of the total investments of the college (dependent variable). Also, the most important economic indicators represented in the value of Iraq's exports of crude oil, Iraq's daily production of crude oil, Iraq's reserves of crude oil, the Iraqi monetary mass growth rate, the Iraqi GDP growth rate (independent variables) and a set of standard tests such as the expanded Dickey-Fuller test and the co-integration test were used to test the relationship between the variables. This is by the use of the error correction model to identify the relationship type between the variables in the long and short run by E-Views.

• The standard model for the relationship between the percentage of investment in the liquidation sector of the total investments of the college and the value of Iraq's exports of crude oil:

Unit Root Test:

When using the expanded Dickey-Fuller test(Dickey & Fuller, 1979), it was found that the investment ratio series in the liquidation sector Y) was unstable at its level and stability occurred upon the first difference. So, the series turned into the first degree integrated. It also shows the instability of the value chain of Iraq's exports of crude oil (X10) at its level and stability happened upon first difference and making the chain integrating first degree. As the two chains are complementary to the same extent, it is possible to conduct a joint integration test between them using the autoregressive methodology for time gaps ARDL Distributor (Johansen, ,1991)

Table (2) Results of the Extended Dickey-Fuller Test

Consistency test									
Variables	Level			1st Difference			2st Difference		
	ADF	Sig.	Result	ADF	Sig.	Result	ADF	Sig.	Resul
Y	-1.5262	0.760	No stationary	-5.4616	0.005	stationary	----	-----	-----
X10	-0.2219	0.586	No stationary	-2.5244	0.016	stationary	----	-----	-----

Choose the number of time lags

Table (3) shows that the optimal amount of slowdown periods (Narayan, 2005)is two time periods for percentage of investment in oil (Y) and three time periods for the value of Iraq's exports of crude oil (x10).

Table (3) test of time deceleration periods

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	0.469079	0.186530	2.514757	0.0657
Y(-2)	1.097425	0.200956	5.461023	0.0055
X10	0.014868	0.058198	0.255475	0.8110
X10(-1)	0.315768	0.066736	4.731630	0.0091
X10(-2)	-0.186715	0.060095	-3.107028	0.0360
X10(-3)	0.180685	0.047016	3.843055	0.0184
C	-50.35735	21.93974	-2.295258	0.0834
R-squared	0.910347	Mean dependent var		50.13000
Adjusted R-squared	0.775866	S.D. dependent var		3.814063
S.E. of regression	1.805683	Akaike info criterion		4.280881
Sum squared resid	13.04196	Schwarz criterion		4.534087
Log likelihood	-16.54485	Hannan-Quinn criter.		4.121270
F-statistic	6.769372	Durbin-Watson stat		2.901007
Prob(F-statistic)	0.042655			

Cointegration Test (Bounds Test)

When conducting the co-integration test(Pesaran & Shin, 1995), It appears from Table (4) that there is a co-integration between the percentage of investment on oil from the total investment of the college and the value of Iraq's exports of crude oil at a significant level of 0.01

Table (4) Cointegration Test

F-Bounds Test

Test Statistic	Value	Sign if.	I(0)	I(1)
F-statistic	13.89576	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

The error correction vector model for the long-run and short-run relationship:

For the purpose of determining the value of the parameters of such relationship, the error correction vectors are estimated (Pesaran & Shin, 1995). Table (5) shows that the error limit correction coefficient amounted to 0.5665, which is significant at a significant level 0.01 entailing correction from the short term to the long term at a speed of 0.5665, yet the long term equation (X) is an correction effect in the long term because X is significant at the 0.05 level.

Table (5) Error Correction Vectors Test Results

	ECM Regression Case 2:Restricted Constant and No Trend			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-1.097425	0.093481	-11.73957	0.0003
D(X10)	0.014868	0.041510	0.358175	0.7383
D(X10(-1))	0.006030	0.032515	0.185460	0.8619
D(X10(-2))	-0.180685	0.030230	-5.976987	0.0039
CointEq(-l)*	0.566504	0.071640	7.907649	0.0014
R-squared	0.963273	Mean dependentvar		-1.448182
Adjusted R-squared	0.938788	S.D. dependent var		5.959045
S.E. of regression	1.474334	Akaike info criterion		3.917245
Sum squared resid	13.04196	Schwarz criterion		4.098106
Log likelihood	-16.54485	Hannan-Quinn criter.		3.803237
Durbin-Watson stat	2.901007			
* p-value incompatible with t-Bounds distribution.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X10	-0.572999	0.191533	-2.991649	0.0403
C	88.89149	13.10446	6.783299	0.0025

The impact of the value of Iraq's exports of crude oil on the percentage of investment in Iraqi oil from the total investments of the college during the period 2004-2017:

To know the effect of the value of Iraq's exports of crude oil (the independent variable) on the percentage of investment in Iraqi oil from the total investment of the college (the dependent variable) during the period 2004-2017, a simple regression equation was calculated for the relationship between the two variables, and the results were as follows:

X = 58.94 - 0.13 Y1

(20.18)** 2.57-))*

F= 6.61* R = 0.30

Here:

X = value of Iraq's exports of crude oil

Y1 = the percentage of investment in Iraqi oil from the total investments of the college

It is clear from the previous equation the model significance as a whole, in which the value of F was significant at the level of 0.05. It is also clear that the variable value of Iraq's exports of crude oil explains 30% of the changes that occur in the percentage of investment in Iraqi oil from the total investments of the college, while the rest of the percentage changes are explained by other variables.

The significance of the effect of the value of Iraq's exports of crude oil on the percentage of investment in Iraqi oil from the total investment of the college was shown at a significant level of 0.05. In addition, the relationship was inverse between the two variables, and the effect rate was (13%), meaning that whenever the value of Iraq's exports of crude oil increased by one unit. The proportion of Iraq's crude oil exports increased by one unit. Investment in Iraqi oil from the total investment of the college will be reduced by 0.13 units.

- The relationship standard between the percentage of investment on oil from the total investment of the college and Iraq’s production of crude oil:

Unit Root Test:

When using the expanded Dickey-Fuller test (Dickey D. and Fuller W. (1979,427-43), it was found that the series of investment ratio in oil Y) was unstable at its level and stability happened upon the first variance and thus the series is integrated of the first degree. Also, the instability of Iraq's production chain of crude oil (X1) at its level and stability occurred after taking the first difference and thus the chain becomes integrated of the first degree as the two chains become complementary at the same degree, it is possible to conduct a co-integration test between them using the autoregressive methodology for distributed time gaps (ARDL) Johansen, S.,1991,1551-1580)

Table (6) Expanded Dickey-Fuller test results

Consistency test									
Variables	Level			1st Difference			2st Difference		
	ADF	Sig.	Result	ADF	Sig.	Result	ADF	Sig.	Result
Y	-1.5262	0.760	No stationary	-5.4616	0.005	stationary	----	-----	-----
X1	-3.7166	0.059	No stationary	-4.4778	0.023	stationary	----	-----	-----

The choice of number of time lags

Table (7) shows that the optimal number of slowdown periods (Narayan, 2005) is two periods for percentage of investment in oil (Y) with no slowdown periods for Iraq’s production of crude oil (x1).

Table (7) time lag time test

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	0.139271	0.472390	0.294822	0.7756
Y(-2)	0.248086	0.327515	0.757479	0.4705
X1	-3.088405	6.943513	-0.444790	0.6683
C	40.18614	47.40030	0.847803	0.4212
R-squared	0.291019	Mean dependent var		51.30750
Adjusted R-squared	0.025150	S.D. dependent var		5.464677
S.E. of regression	5.395520	Akaike info criterion		6.470216

Sum squared resid	232.8931	Schwarz criterion		6.631852
Log likelihood	-34.82130	Hannan-Quinn criter.		6.410373
F-statistic	1.094597	Durbin-Watson stat		2.057780
Prob(F-statistic)	0.405700			

3. Cointegration Test (Bounds Test)

When conducting the co-integration test(Pesaran & Shin, 1995), it is clear from Table (4) that there is no co-integration between the percentage of investment on oil from the total investment of the college and Iraq's production of crude oil at a significant level of 0.05

Table (4) Cointegration Test

F-Bounds Test

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	0.794194	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

The error correction vector model for the long-run and short-run relationship:

For the purpose of determining the value of the parameters of the relationship in the long and short run, the error correction vectors were estimated (Pesaran & Shin, 1995). From Table (5), it is clear from the table that the error limit correction coefficient was 0.6126, which is not significant at the level of Significance of 0.05, showing no correction from the short to the long run, while the long-term equation (X) means no effect of the correction in the long term as X is not significant at the 0.05 level.

Table (5) Error Correction Vectors Test Results

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-0.248086	0.271208	-0.914745	0.3871
CointEq(-1)*	-0.612643	0.355000	-1.725754	0.1227
R-squared	0.402632	Mean dependentvar		-0.935000
Adjusted R-squared	0.342895	S.D. dependent var		5.953342
S.E. of regression	4.825900	Akaike info criterion		6.136883
Sum squared resid	232.8931	Schwarz criterion		6.217701
Log likelihood	-34.82130	Hannan-Quinn criter.		6.106962
Durbin-Watson stat	2.057780			
* p-value incompatible with t-Bounds distribution.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X11	-5.041114	8.162380	-0.617603	0.5540
C	65.59468	25.56533	2.565767	0.0333

The impact of Iraq’s production of crude oil on the percentage of investment in the refining sector out of the total investments of the college during the period 2004-2018:

To know the effect of Iraq’s production of crude oil (the independent variable) on the percentage of investment in the refinery sector out of the total investments of the college (the dependent variable) during the period 2004-2018, a simple regression equation was calculated for the relationship between the two variables, and the results were as follows:

X = 71.73 – 6.77 Y1

(8.70)** 2.40-))*

F= 5.77* R = 0.27

where: X = Iraq's production of crude oil

Y1 = the percentage of investment in the liquidation sector out of the total investments of the college

It is clear from the previous equation the significance of the model as a whole, where the value of F was significant at the level of 0.05, that the variable Iraq's production of crude oil stands for 27% of the changes that occur in the percentage of investment in the liquidation sector of the total investments of the college. Yet, the rest of the percentage changes are explained by other variables.

The significant effect of Iraq's production of crude oil on the percentage of investment in the refining sector of the total investment of the college was shown at a significant level of 0.05, and the relationship was inverse between the two variables. Also, the effect rate was (677%), meaning that the more Iraq's production of crude oil increased by one unit, the proportion of investment in The liquidation sector from the total investments of the college will be reduced by 6.77 units.

- The standard model of the relationship between the percentage of investment in the liquidation sector from the total investments of the college and Iraq's reserves of crude oil:

Unit Root Test:

When using the expanded Dickey-Fuller test(Dickey & Fuller, 1979), it was found that the investment ratio series in the liquidation sector Y) was unstable at its level and stability upon the first variance and thus the series is integrated of the first degree. Also, the instability of the Iraqi reserve series of crude oil (X2) was unstable at its level and stability upon the first variance and thus the series is integrated of the first degree, and because the two series are complementary at the same degree. It is possible to conduct a joint integration test between them using the autoregressive methodology for distributed time gaps ARDL (Johansen, S. ,1991,1551-1580)

Table (6) Expanded Dickey-Fuller Test Results

Consistency test									
Variables	Level			1st Difference			2st Difference		
	ADF	Sig.	Result	ADF	Sig.	Result	ADF	Sig.	Result
Y	-1.5262	0.760	No stationary	-5.4616	0.005	stationary	----	-----	-----
X2	-2.4704	0.332	No stationary	-4.6852	0.015	stationary	----	-----	-----

2. The choice of the number of time lags

It is evident from Table (7) that the optimal number of slowdown periods(Narayan, 2005)is three time periods for the variable percentage of investment in the liquidation sector (Y) as well as for the variable Iraq's reserves of crude oil (x2)

Table (7) time lag time test

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	-0.537072	0.119931	-4.478188	0.0208
Y(-2)	-0.288616	0.139895	-2.063095	0.1311
Y(-3)	0.379976	0.278828	1.362760	0.2662
X12	5.028647	1.394385	3.606355	0.0366

X2(-1)	-1.431673	1.351046	-1.059678	0.3671
X2(-2)	-3.322545	0.907214	-3.662362	0.0352
X2(-3)	-1.841651	1.247945	-1.475747	0.2365
C	246.6053	79.10154	3.117579	0.0526
R-squared	0.963186	Mean dependent var		50.13000
Adjusted R-squared	0.877286	S.D. dependent var		3.814063
S.E. of regression	1.336087	Akaike info criterion		3.572629
Sum squared resid	5.355381	Schwarz criterion		3.862008
Log likelihood	-11.64946	Hannan-Quinn criter.		3.390217
F-statistic	11.21292	Durbin-Watson stat		2.125530
Prob(F-statistic)	0.036295			

Cointegration Test (Bounds Test)

When conducting the co-integration test(Pesaran & Shin, 1995), it appears from Table (8) that there is a co-integration between the percentage of investment in the liquidation sector of the total investments of the college and Iraq's reserves of crude oil at a sig

nificant level of 0.01

Table (8) Cointegration TestF-Bounds Test

Test Statistic	Value	Sign if.	I(0)	I(1)
F-statistic	35.41738	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

The error correction vector model for the long-run and short-run relationship:

For the purpose of determining the value of the parameters of the relationship in the long and short run, the error correction vectors were estimated (Pesaran & Shin, 1995)Table (9). It is clear from the table that the error limit correction coefficient amounted to 1.4457, which is significant at the level of significance. 0.01 meaning that there is a correction from the short term to the long term at a speed of 1.4457, while the long term equation (X) indicates that there is an effect of the correction in the long term because X is significant at the 0.05 level.

Table (9) Error Correction Vectors Test Results

Case 2:	ECM Regression Restricted Constant and No Trend			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-0.091360	0.080557	-1.134105	0.3392
D(Y(-2))	-0.379976	0.101251	-3.752803	0.0331
D(X12)	5.028647	0.594277	8.461782	0.0035
D(X12(-1))	5.164196	0.560621	9.211569	0.0027
D(X12(-2))	1.841651	0.549676	3.350429	0.0440
CointEq(-1)*	-1.445713	0.108640	-13.30740	0.0009
R-squared	0.984919	Mean dependentvar		-1.448182
Adjusted R-squared	0.969838	S.D. dependent var		5.959045
S.E. of regression	1.034928	Akaike info criterion		3.208993
Sum squared resid	5.355381	Schwarz criterion		3.426027
Log likelihood	-11.64946	Hannan-Quinn criter.		3.072183
Durbin-Watson stat	2.125530			
* p-value incompatible with t-Bounds distribution.				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X12	-1.084048	0.249493	-4.345006	0.0225
C	170.5770	29.68401	5.746426	0.0105

• The impact of Iraq's reserves of crude oil on the percentage of investment in the refining sector out of the total investments of the college during the period 2004-2018:

To identify the impact of Iraq's reserves of crude oil (the independent variable) on the percentage of investment in the liquidation sector out of the total investments of the college (the dependent variable) during the period 2004-2018, a simple regression equation was calculated for the relationship between the two variables, and the results were as follows:

X = 177.21 – 1.08 Y1

(3.14)** 2.22-))*

F= 4.92* R = 0.23

where :

X = Iraq's reserves of crude oil

Y1 = the percentage of investment in the liquidation sector out of the total investments of the college

It is clear from the previous equation the significance of the model as a whole, where the value of F was significant at the level of 0.05, that the variable Iraq's reserves of crude oil explains 23% of the changes that occur in the percentage of investment in the liquidation sector of the total investments of the college. Yet, the rest of the percentage changes are explained by other variables.

The significance of the impact of Iraq's reserves of crude oil on the percentage of investment in the refining sector of the total investments of the college was shown at a significant level of 0.05. The relationship was inverse between the two variables, and the effect rate was (108%), meaning that the more Iraq's reserves of crude oil increased by one unit, the proportion of investment in The liquidation sector from the total investments of the college will be reduced by 1.08 units.

• The standard model of the relationship between the percentage of investment in the liquidation sector of the total investments of the college and the growth rate of the monetary mass:

Unit Root Test:

When using the expanded Dickey-Fuller test(Dickey & Fuller, 1979), it was found that the investment ratio series in the liquidation sector Y) was unstable at its level and stability upon the first variance and thus the series is integrated of the first degree, as well as the instability of the money supply growth rate series (X3) at its level and the stability occurred after taking the first difference and thus the series becomes integrated of the first degree. Because the two series are complementary at the same degree, it is possible to conduct a co-integration test between them using the autoregressive methodology for distributed time gaps (ARDL) Johansen, S.,1991,1551-1580)

Table (10) Expanded Dickey-Fuller Test Results

Consistency test									
Variables	Level			1st Difference			2st Difference		
	ADF	Sig.	Result	ADF	Sig.	Result	ADF	Sig.	Result
Y	-1.5262	0.760	No stationary	-5.4616	0.005	stationary	----	-----	-----
X14	0.0771	0.689	No stationary	-2.9413	0.007	stationary	----	-----	-----

The choice of the number of time lags

Table (11) shows that the optimal number of slowdown periods(Narayan, 2005) is two time periods for the investment ratio variable in the liquidation sector (Y) and there are no slowdown periods for the money supply growth rate variable (x3)

Table (11) Testing the time lag periods

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	0.243506	0.291809	0.834472	0.4282
Y(-2)	0.231627	0.299409	0.773614	0.4614
X3	-0.622081	0.530509	-1.172612	0.2747
C	34.65050	20.33323	1.704132	0.1268
R-squared	0.380042	Mean dependent var		51.30750
Adjusted R-squared	0.147558	S.D. dependent var		5.464677
S.E. of regression	5.045415	Akaike info criterion		6.336038
Sum squared resid	203.6497	Schwarz criterion		6.497674
Log likelihood	-34.01623	Hannan-Quinn criter.		6.276195
F-statistic	1.634701	Durbin-Watson stat		2.226521
Prob(F-statistic)	0.256883			

Cointegration Test Bounds Test

When conducting the co-integration test(Pesaran & Shin, 1995), it appears from Table (12) that there is no co-integration between the investment in the liquidation sector from the total investments of the college and the growth rate of the money supply at a significant level of 0.05

Table (12) Cointegration Test F-Bounds Test

Test Statistic	Value	Sign if.	I(0)	I(1)
F-statistic	1.291161	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

The error correction vector model for the long-run and short-run relationship:

For the purpose of determining the value of the parameters of the relationship in the long and short run, the error correction vectors were estimated (Pesaran & Shin, 1995)Table (13). Also, it is clear from the table that the error limit correction coefficient amounted to 0.5248, which is not significant at the level of Significance of 0.05, meaning that there is no correction from the short to the long term, while the long-term equation (X) indicates that there is no effect of the correction in the long term because X is not significant at the 0.05 level.

Table (13) Results of error correction vector test

Variable	Coefficient	Std. Error	t-Statistic	Prob.	
D(Y(-1))	-0.231627	0.247380	-0.936321	0.3765	
CointEq(-1)*	-0.524866	0.238530	-2.200421	0.0590	
R-squared	0.477641	Mean dependentvar		-0.935000	
Adjusted R-squared	0.425405	S.D. dependent var		5.953342	
S.E. of regression	4.512756	Akaike info criterion		6.002705	
Sum squared resid	203.6497	Schwarz criterion		6.083523	
Log likelihood	-34.01623	Hannan-Quinn criter.		5.972783	
Durbin-Watson stat	2.226521				

p-value incompatible with t-Bounds distribution.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X14	-1.185218	1.065344	-1.112521	0.2982
C	66.01775	13.95674	4.730171	0.0015

The impact of the growth rate of the money supply on the percentage of investment in the liquidation sector out of the total investments of the college during the period 2004-2018:

To know the effect of the growth rate of the money supply (the independent variable) on the percentage of investment in the liquidation sector of the total investment (the dependent variable) during the period 2004-2017, a simple regression equation was calculated for the relationship between the two variables.

- The standard model of the relationship between the percentage of investment in the liquidation sector of the total investments of the college and the growth rate of GDP:

Unit Root Test:

When using the expanded Dickey-Fuller test(Dickey & Fuller, 1979), it was found that the investment ratio series in the liquidation sector Y) was unstable at its level and stability upon the first variance and thus the series is integrated of the first degree. It shows the stability of the GDP growth rate series (X4) at its level and thus the series becomes integrated from zero degree, and because the two series are not complementary at the same degree, it is possible to conduct a co-integration test between them using the autoregressive methodology for distributed time gaps ARDL (Johansen, S., 1991).

Table (14) Expanded Dickey-Fuller Test Results

Consistency test									
Variables	Level			1st Difference			2st Difference		
	ADF	Sig.	Result	ADF	Sig.	Result	ADF	Sig.	Result
Y	-1.5262	0.760	No stationary	-5.4616	0.005	stationary	----	-----	-----
X4	-5.1346	0.008	stationary	----	-----	-----	----	-----	-----

The choice the number of time lags

Table (15) shows that the optimal number of slowdown periods (Narayan, 2005)are two time periods for the investment ratio variable in the liquidation sector (Y) and three slow periods for the GDP growth rate variable (x4)

Table (15) test of time deceleration periods

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	-0.014880	0.222930	-0.066746	0.9500
Y(-2)	0.530759	0.256771	2.067054	0.1076
X15	-0.078739	0.654248	-0.120350	0.9100
X15(-1)	0.748030	0.647334	1.155556	0.3122
X15(-2)	-0.224806	0.762648	-0.294771	0.7828
X15(-3)	1.328285	0.687552	1.931904	0.1255
C	10.79293	24.00228	0.449662	0.6762
R-squared	0.682497	Mean dependent var		50.13000
Adjusted R-squared	0.206243	S.D. dependent var		3.814063
S.E. of regression	3.398065	Akaike info criterion		5.545416
Sum squared resid	46.18739	Schwarz criterion		5.798622
Log likelihood	-23.49979	Hannan-Quinn criter.		5.385805
F-statistic	1.433052	Durbin-Watson stat		2.662800
Prob(F-statistic)	0.379280			

Cointegration Test (Bounds Test)

When conducting the co-integration test(Pesaran & Shin, 1995), it appears from Table (16) that there is a co-integration between the percentage of investment in the liquidation sector from the total investment of the college and the growth rate of the domestic product at a significant level of 0.01

Table (16) Cointegration TestF-Bounds Test

Test Statistic	Value	Sign if.	I(0)	I(1)
F-statistic	5.268432	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

The error correction vector model for the long-run and short-run relationship:

For the purpose of determining the value of the parameters of the relationship in the long and short run, the error correction vectors were estimated (Pesaran & Shin, 1995). Table (17) makes it clear from the table that the error limit correction coefficient amounted to 0.4841, which is significant at the level of significance 0.01 meaning that there is a correction from the short term to the long term at a speed of 0.4841, while the long term equation (X) indicates that there is no effect of the correction in the long term because X is not significant at the 0.05 level.

Table (17) test results for error correction vectors

Case 2:	ECM Regression Restricted Constant and No Trend			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	-0.530759	0.142393	-3.727435	0.0203
D(X15)	-0.078739	0.385781	-0.204102	0.8482
D(X15(-1))	-1.103479	0.279354	-3.950116	0.0168
D(X15(-2))	-1.328285	0.482012	-2.755707	0.0511
CointEq(-l)*	-0.484120	0.099427	-4.869080	0.0082
R-squared	0.869932	Mean dependentvar		-1.448182
Adjusted R-squared	0.783220	S.D. dependent var		5.959045
S.E. of regression	2.774509	Akaike info criterion		5.181780
Sum squared resid	46.18739	Schwarz criterion		5.362641
Log likelihood	-23.49979	Hannan-Quinn criter.		5.067772
Durbin-Watson stat	2.662800			
* p-value incompatible with t-Bounds distribution.				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X15	3.661838	4.924343	0.743620	0.4984
C	22.29389	36.59249	0.609248	0.5753

The impact of the GDP growth rate on the percentage of investment in the liquidation sector out of the total investments of the college during the period 2004-2018:

To know the effect of the GDP growth rate (the independent variable) on the percentage of investment in the liquidation sector from the total investments of the college (the dependent variable) during the period 2004-2018, a simple regression equation was calculated for the relationship between the two variables.

The effect of the percentage of investment in the liquidation sector from the total investments of the college on the growth rate of the domestic product during the period 2004-2018:

To know the effect of the percentage of investment in the liquidation sector from the total investment of the college (the independent variable) on the growth rate of the domestic product (the dependent variable) during the period 2004-2018, a simple regression equation was calculated for the relationship between the two variables.

Conclusions

This study came up with the following:

The most important factors affecting investment in the refinery sector in Iraq during the study period were the value of Iraq's exports of crude oil, Iraq's daily production of crude oil, and Iraq's reserves of crude oil.

The value of Iraq's exports of crude oil had an adverse effect on investment in the refinery sector in Iraq during the study period.

The quantity of Iraq's daily production of crude oil had an adverse effect on investment in the refinery sector in Iraq during the study period.

The crude oil reserves of Iraq had an adverse effect on investment in the refinery sector in Iraq during the study period.

The growth rate of the monetary mass did not prove significant of its statistical impact on investment in the liquidation sector in Iraq during the study period.

The GDP growth rate did not prove significant of its statistical impact on investment in the liquidation sector in Iraq during the study period.

Investment in the liquidation sector in Iraq did not prove to have a statistically significant effect on the growth rate of GDP during the study period.

Recommendations

Based on the conclusions above, the study recommends the following:

The need for the Iraqi government to develop more effective policies in the field of benefiting from the liquidation sector so that it can have an impact on economic development.

Increasing government spending rates on the liquidation sector, which contributes to rapid economic development while ensuring the continuity of the achieved development rates.

Benefiting from the rise in oil prices in bringing about changes to the economic policy of the Iraqi government to make it more effective, which increases its impact on the economic variables that help achieve real economic development for the Iraqi society and help achieve the goals of the Iraqi economic policy.

The Iraqi government provides the appropriate investment climate for local and foreign companies. This contributes to their investment in the liquidation sector, so that the government is an effective partner in these investments and projects. It thus achieves the optimal benefit from investment in the development of the liquidation sector and making it the locomotive of development through which development can be achieved in the the various economic sectors in Iraq.

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