

# The Impact of Crowding Out of the Government Sector on Private Investment: A Case of Iraq

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The Iraqi economy has been suffering from financial pressure since 1991. This pressure comes from an increase in government expenditure. This increase in government expenditure has had many effects on some economic variables, most importantly private investment. By examining the extent to which the public sector is competing with the private sector for the financial resources available for lending, the government expenditure showed no significant impact on the private sector but was complementary to it, and has a positive correlation with other indicators in terms of interest rates and government debt. Whereas GDP is inversely linked to government spending, and therefore government spending does not overwhelm the private sector over financial resource. The results also indicate that there is no competition for resources in the Iraqi economy due to the weakness of the private sector and Iraq's reliance on oil revenues to finance its expenditures as well as the lack of dependence on the financial market to finance its expenditures which reduces competition in the private sector.

**Keywords:** *Crowding Out, Private Investment, Government Sector.*

## Introduction

Economic literature has seen the emergence of what is called the impact of crowding which is intended to exclude the private sector from economic activity. This process assumes that there is scarce funding and government spending financed through taxation or public borrowing and is the transfer of scarce resources from the private sector to the public sector. According to De Wit and Bekkers (2017) this theory is based on several hypotheses, the most important of which are:

- Status of full employment of resources
- The adoption by the government of an expansionary fiscal policy that will lead to higher interest rates and thus lower private investment.
- The return of government consumption or investment projects less than the return in private projects.

The idea of investment crowding was mentioned in the writings of the first classics, as well as the Keynesians' and the monetary theories. The idea is that the application of an expansionary fiscal policy by the government leads to crowding of the private sector in financial markets negatively affects private investment expenditure (Nandu & Lawrence, 2020), (Thia, 2020), (Anyanwu, Gan, & Hu, 2018), (Ali, Hameedi, & Almagtome, 2019). The attitude of the classic approach stems from public borrowing from their basic belief that government is the best to control at least, and the classic approach believes in keeping public projects and borrowing as possible. Because the borrowing of the public authority to finance its expenditure leads to the phenomenon of private investment crowding according to this approach, public expenditure is less productive than private spending, that is, the increase in output as a result of increased public expenditure financed by loans is not fully compensated for the negative impact of the crowding for investment on production and thus reduces Gross Domestic Product, as is the view of Adam Smith and David Ricardo. The British economist Hautry RJ has opposed this view. He told the Macmillan Committee in 1930 that whether spending came from taxes or from loans, government expenditure replaced the private sector (Ryan-Collins, 2017), (Almagtome, Shaker, Al-Fatlawi, & Bekheet, 2019). In contrast, the Keynesians' do not see damage to public borrowing in case of necessity and their argument is based on the principle of the multiplier, which explains that the change in public spending generates a greater change in production due to the smooth performance and optimal performance of government borrowing activities (Al-Wattar, Almagtome, & AL-Shafeay, 2019). When the government expands its borrowings to finance spending, borrowing leads to higher interest rates by creating greater demand for borrowable funds. Consequently, higher interest rates cause a lower rate of return for the private sector. However, with increased government spending, the private sector market will expand through the multiplier, stimulates fixed investment and the multiplier becomes even more important when a business enterprise suffers from industrial capacity unused during recessions. The Keynesians' concur with the monetary theory that the idea of investment crowding only is when the economy operates at full employment level and the negative effects of this type of crowding on long-term economic growth can be mitigated if the government uses its inability to finance productive investment in education, training, health and research (Wu, Li, Nie, & Chen, 2017), (Ali, Almagtome, & Hameedi, 2019). The conclusions of both schools are based on a variety of assumptions. For example, the classic assumes full employment of resources and wage flexibility so that no unemployment is left within the time horizon. While the Keynesians' allow for unemployment in the economy even

in the long term and the economy works at a lower level than full employment (Tily, 2016), (Akerlof, 2019). The monetary school, which was consistent with the classic school, in that the application of the policy of expansionary financial by the government leads to compete with the private sector in financial markets, which adversely affects private investment spending and thus reduces the effectiveness of the expansionary fiscal policy. However, the effect of investment crowding from the point of view of the monetary approach is summarized in two cases: -

- The central bank follows an expansionary monetary policy by buying government bonds in the open market and thus increases the amount of money in circulation. In this case, the increase in the aggregate demand for expansion is attributed to the effect of the increase in the quantity of money traded, which is supported by the monetary school.
- Private investment spending is less elastic for interest rate changes and the rise in the interest rate resulting from the expansionary fiscal policy will only slightly affect private investment spending, limiting the leverage crowding. The fiscal policy is effective and effective in aggregate demand, supported by the Keynesian school (Bieler, Jordan, & Morton, 2019).

Post-Keynesian scholars argue that government bond sales have a real impact on lowering interest rates rather than raising them as the short-term interest rate is always determined by central banks. In addition, private credit does not limit the money supply because banks lend to any creditworthy customer regardless of the level of capital and risk regulations. The resulting loan creates a deposit at the same time which increases the amount of internal money. The idea of investment crowding emerges when the economy is at full employment. The government's expansionary fiscal policy increases prices, which leads to increased demand for money, which in turn leads to higher interest rates (with other factors remaining constant) and thus any increase in government purchases shifts resources away from the private sector (Sudmant, Colenbrander, Gouldson, & Chilundika, 2017).

### **Crowding in the Long and Short Term**

A - The impact of crowding in the short term: The increase in government spending in the case of full employment will lead to a reduction in private spending within the framework of inflation and any interference by the government is an intervention and is irrational because the intervention must be in the framework of unemployment. In addition, in the case of stable money supply, the public and private sectors are considered a competing site for lending money, which leads to higher interest rates (Almagtome & Abbas, 2020). This situation leads to the loss of competitiveness of national commodities and a trade balance deficit (Bardazzi & Ghezzi, 2018).

B - Long-term crowding: The intervention of the government through the expansion of government spending in the long term has negative effects in the case of increasing employment in the public sector, which is characterised by inefficiency, which negatively affects the productive and export capacities of the national economy (Lin et al., 2018).

### **Factors That Limit the Amount of Investment Crowding**

The extent to which interest rates can be adjusted to increase output resulting from increased government spending is determined by DeMiguel, Martin Utrera, and Uppal (2019), Minor and Kobe (2019) and Farla, De Crombrugghe, and Verspagen (2016):

- Income increases more than the interest rate increases if the curve (LM) (money supply curve) is more simplified, and this means that the increase in government spending has less impact on the private sector.
- Increase in income is less than the increase in interest rates if the investment curve is steeper and this means that increased government spending has a greater impact on the private sector.
- The higher the income and the interest rates, the greater the multiplier, and consequently the horizontal trend will shift towards (IS).

### **Presentation and Analysis of the Results of the Standard Model**

The statistical program EViews7.1 will be used to analyse the effect of government debt, government spending, interest rate and gross domestic product on private investment. The analysis includes the following variables:

- variable government spending GE
- variable internal government debt GD
- variable GDP
- variable interest rate IR
- variable private investment PI

The data for these variables is from 1990 to 2015. The data will be analysed according to the VAR model as well as the causal approach to show the type of relationship between the variables. According to the VAR model, the variables of government expenditure, GDP, interest rate, government debt and private investment are internal variables. The relationship can be characterized by the following equations:

$$PI = B_0 + B_1GD + B_2IR + B_3GDP + B_4GE$$

### Test Stationary Stability Variables

The first step should be to test the stability of the model variables and determine the rank of the joint integration of the time series to see if the variables are stable or not. This is done by applying the unit root test to the extended ADF. Table 1 shows the results after the extended root unit (ADF) test.

**Table 1:** Expanded Dicky Fuller test for unit root

First differences				the level				Delays	Variables
b		a		b		a			
(t) Table	1. (t) Calculated	(t) Table	2. (t) Calculated	(t) Table	(t) Calculated	(t) Table	(t) Calculated		
3.67-	0.03	3.02-	*0.07	- 3.6	-3.68	3.01-	1.58	1	LOGGD
3.64-	8.48-	3.01-	*8.86-	-3.64	-1.84	3.01-	-0.13	1	LOGGDP
3.61-	5.48-	2.99-	*5.53-	-3.60	- 2.15	2.98-	-0.54	1	LOGGE
3.62-	-6.01	2.99-	*6.09-	3.61-	-5.72	2.99-	-0.52	1	LOGIR
-3.67	-1.87	-3.02	*-0.43	-3.65	1.55	-3.02	2.67	1	LOGPI

The source is prepared by the researcher based on the standard appendix

A means the gradient contains a cut-off and a general direction

b means the gradient contains only a breaker

\* Morality at the level of 5%

We note from the table that the original strings were unstable at the level; Therefore, the unit root test was done. The first-difference of the original series showed that all the variables stabilised at a significant level (5%). Therefore, the variables are integrated (co-integration) of the first degree I (1) with the existence of a cutter and a general trend.

### Co-Integration Test

It is noted that joint integration shows the long-term equilibrium relationship between the variables. Joint integration will be tested using the Johansen cointegration test. Since the analysis contains five internal variables, if these variables are integrated together, there are at

least four common integration paths. The joint integration test of the model variables was conducted and the results are shown in Table 2.

**Table 2:** Johansen cointegration test

Critical Value	Statistic Value	Alternative Hypothesis	The null hypothesis
Trace test			
69.81	189.87*	$r > 1$	$r = 0$
47.85	111.65*	$r > 2$	$r \leq 1$
Maximum test			
33.87	78.22*	$r = 1$	$r = 0$
27.58	44.86*	$r = 2$	$r = 1$

\* Meaning at a significant level 5%

Source of the researcher's preparation

In Table 2 the results of the Johansson integration test indicate that there are two common integration pathways according to the tracking test. Hence the null hypothesis that there is no common integration at large level (5%) is rejected. The maximum value of Johansen cointegration test indicates the presence of vectors at a significant level (5%), which confirms the existence of a long-term balance between the variables of research. This means the possibility of the existence of false regression as well as the results indicating a causal relationship between these variables.

### Granger causality test

The Granger causality test is used to determine the direction of causation between the study variables. This test shows the causal direction whether it is one-way or two-way, or that both variables are independent. The results are as shown in Table 3:

**Table 3:** Granger causality test

Pairwise Granger Causality Tests				
Date: 10/12/14 Time: 19:21				
Sample: 1990 – 2013				
Lags: 1				
Null Hypothesis:		Obs	F-Statistic	Prob.
LOGGDP	LOGGD	25	2.47038	0.1303
LOGGD	→ LOGGDP		3.31833	0.0821
LOGGE	LOGGD	25	2.50797	0.1275
LOGGD	→ LOGGE		3.24025	0.0856

<b>LOGIR</b>	<b>25</b>	<b>3.10000</b>	<b>0.9956</b>
<b>LOGGD</b>			
<b>LOGGD</b>	<b>LOGIR</b>	<b>3.10492</b>	<b>0.0919</b>
<b>LOGPI</b>	<b>LOGGD</b>	<b>25</b>	<b>34.3161</b>
<b>LOGGD</b>	<b>LOGPI</b>	<b>0.29169</b>	<b>0.05946</b>
<b>LOGGE</b>	<b>25</b>	<b>0.01002</b>	<b>0.9212</b>
<b>LOGGDP</b>	<b>LOGGE</b>	<b>4.60084</b>	<b>0.0433</b>
<b>LOGIR</b>	<b>25</b>	<b>1.40664</b>	<b>0.2483</b>
<b>LOGGDP</b>	<b>LOGIR</b>	<b>3.90718</b>	<b>0.0607</b>
<b>LOGPI</b>	<b>25</b>	<b>21.1873</b>	<b>0.0001</b>
<b>LOGGDP</b>	<b>LOGPI</b>	<b>12.8192</b>	<b>0.0017</b>
<b>LOGIR</b>	<b>LOGGE</b>	<b>25</b>	<b>1.23686</b>
<b>LOGGE</b>	<b>LOGIR</b>	<b>2.30139</b>	<b>0.0607</b>
<b>LOGPI</b>	<b>LOGGE</b>	<b>25</b>	<b>7.51929</b>
<b>LOGGE</b>	<b>LOGPI</b>	<b>11.3575</b>	<b>0.0028</b>
<b>LOGPI</b>	<b>LOGIR</b>	<b>25</b>	<b>0.37122</b>
<b>LOGIR</b>	<b>LOGPI</b>	<b>4.30757</b>	<b>0.0498</b>

Source: Prepared by the researcher based on the output of the statistical program

The conclusions of the Granger causality test are as follows:

- One-way causal relationship between LOGGD and LOGGDP means that previous changes in LOGGD explain the current changes in LOGGDP, as the increase in government debt leads to GDP change.
- One-way causal relationship between LOGGD and LOGGE means that previous changes in LOGGD explain the current changes in LOGGE, as the increase in government debt leads to a change in government spending.
- One-way causal relationship between LOGGD and LOGIR means that previous changes in LOGGD explain current changes in LOGIR, as the increase in government debt leads to interest rate changes.
- There is a one-way causal relationship between LOGGD and LOGPI. The previous changes in LOGGD explain the current changes in LOGPI, as the increase in government debt leads to a change in private investment.
- One-way causal relationship between LOGGDP and LOGGE is that previous changes in LOGGDP explain the current changes in LOGGE, as the increase in GDP leads to a change in government spending.

- One-way causal relationship between LOGGDP and LOGIR means that previous changes in LOGGDP explain the current changes in LOGIR, as the increase in GDP leads to a change in the interest rate.
- There is a two-way reciprocal causal relationship between LOGGDP and LOGPI. The previous changes in LOGGDP explain the current changes in LOGPI and vice versa. The increase in GDP leads to a change in private investment and then a change in GDP and vice versa.
- One-way causal relationship between LOGGE and LOGIR means that previous changes in LOGGE explain the current changes in LOGIR, as increased government spending leads to a change in the interest rate.
- There is a two-way reciprocal causal relationship between LOGGE and LOGPI. The previous changes in LOGGE explain the current changes in LOGPI and vice versa. The increase in the expenditure of the controls leads to a change in private investment and then government expenditure and vice versa.
- One-way causal relationship between LOGIR and LOGPI means that previous changes in LOGIR explain the current changes in LOGPI as an increase in the interest rate leads to a change in private investment.

We conclude from the above that some variables one-way relations between them, for others the relationship between them is reciprocal, that is, one affects the other.

### Analysis of the Results of the VAR (Vector Autoregression Estimates)

Before analysing the VAR model for model variables, the number of optimal delay times for these variables should be known. After the test, the results are as shown in Table 4. The optimum delay times, based on the AIC norm, the SCWS and the Hanan-Quinn norm, are calculated mainly as the length of the delay, which has the lowest value, for the following criteria:

**Table 4:** Number of delays or losses for the VAR model of the variables

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1746.682	NA	4.98e+54	140.1346	140.3783	140.2022
1	-1598.374	25.4288*	2.72e+50*	130.2699*	131.7325*	130.6756*

\* Indicates the optimal number of delays or delays, and all tests at a significant level (5%).

LR: LR test.

FPE: Final Predictive Error.

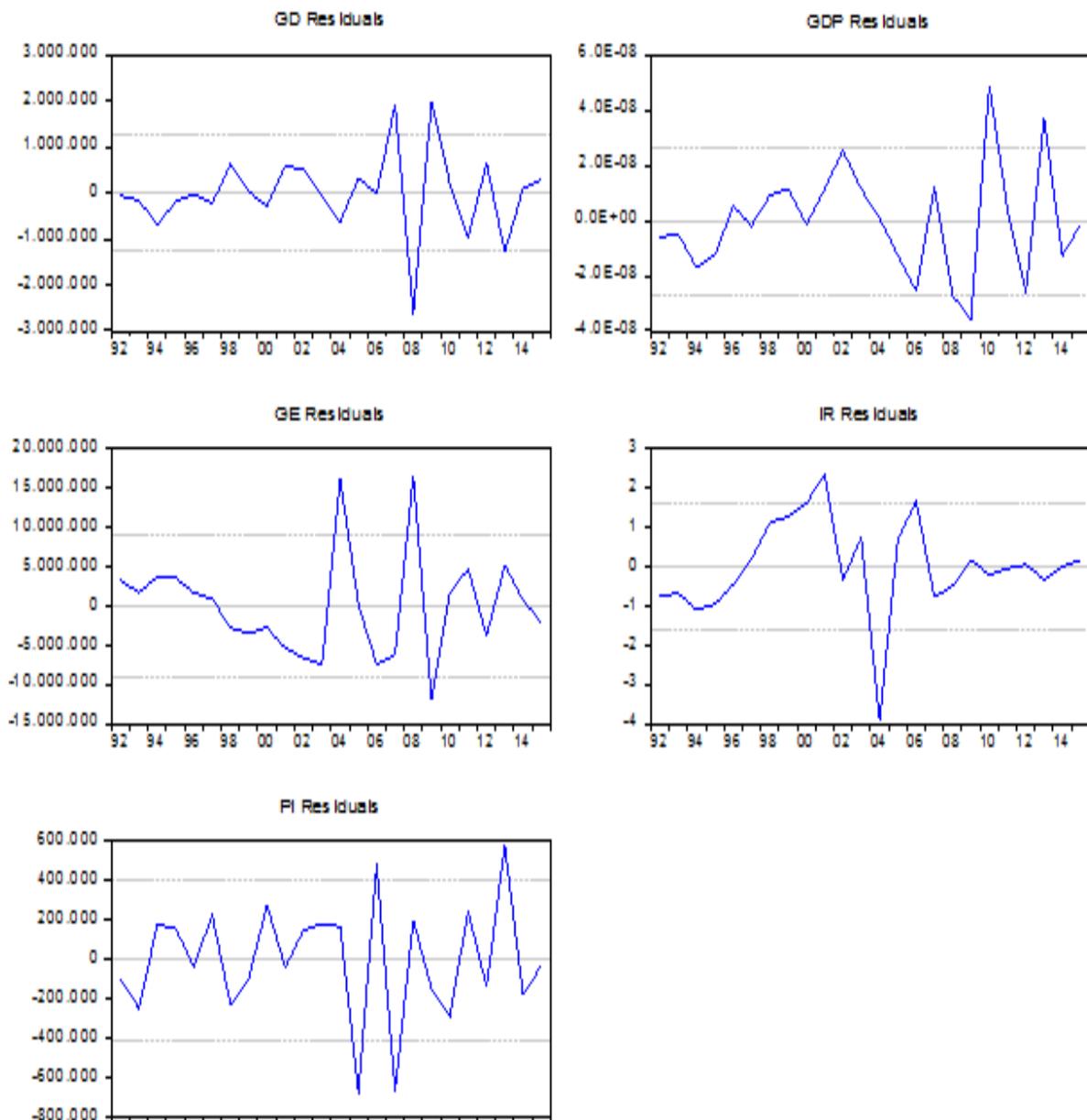
AIC: Standard Akek.

SC: Standard Squares.

HQ: Standard Hanan Quinn.

From the table above we conclude that the number of deceleration times is one period based on the AIC and SC Schwarz criteria. The defaults of the variables were tested based on the above indicators which have the lowest value.

**Figure 1.** Residual oscillation



**Table 5:** Results of VAR model analysis:

<b>variable</b>	<b>LOGPI</b>	<b>C</b>	<b>5737694</b>
<b>LOGGDP(-1)</b>	<b>-0.306498</b>		<b>(1695253)</b>
	<b>(0.14734)</b>		<b>[3.38457]</b>
	<b>[-2.08023]</b>	<b>R-squared</b>	<b>0.990431</b>
<b>LOGGDP(-1)</b>	<b>0.031177</b>	<b>Adj. R-squared</b>	<b>0.983071</b>
	<b>(0.01603)</b>	<b>Sum sq. resids</b>	<b>4.04E+12</b>
	<b>[ 1.94449]</b>	<b>S.E. equation</b>	<b>557188.4</b>
<b>LOGGE(-1)</b>	<b>-0.038027</b>	<b>F-statistic</b>	<b>134.5613</b>
	<b>(0.02171)</b>	<b>Log likelihood</b>	<b>- 334.2331</b>
	<b>[-1.75131]</b>	<b>Akaike AIC</b>	<b>29.60276</b>
<b>LOGIR(-1)</b>	<b>-121322.0</b>	<b>Schwarz SC</b>	<b>30.14270</b>
	<b>(58457.1)</b>	<b>Mean dependent</b>	<b>2241776</b>
	<b>[-2.07540]</b>	<b>S.D. dependent</b>	<b>4282387</b>
<b>LOGPI(-1)</b>	<b>0.931960</b>		
	<b>(0.28658)</b>		
	<b>{3.25196}</b>		

### Estimating the Function of Study Indicators in Iraq

The Statistical Program (SPSS) was used to estimate the impact models of government debt, government spending, interest rate and gross domestic product (GDP) as independent variables in private investment as a variable for the period (1990 - 2015).

$$PI = -4.3 + 0.34GD + 0.97IR - 0.015GDP + 0.098GE$$

(0.00)      (3.6)      (1.04)      (-0.43)      (1.23)

$$R^2 = 0.74 \quad F = 15.6 \quad DW = 1.82$$

We observe from the model that independent variables are associated with a positive correlation with the variable of private investment, which means that the rise of independent variables leads to higher value of the dependent variable, except GDP. GDP is linked to a reverse relationship with private investment, ie, an increase in GDP leads to a decline in private investment.

- The t-test showed significant significance of the regression coefficient of government debt on private investment. The value of (t) calculated in model 3.6 is greater than the tabular value of 1.72. The rest of the variables did not prove their significance on the private investment variable because the value of t is calculated less than t tabular.

- R<sup>2</sup> coefficient of determination: On the basis of the coefficient of determination, the independent variables affect 74% of the dependent variable and the residuals by 26% on a variety of other factors not included in the model.
- F-test: The F test indicates the significance of the model's statistic as the calculated F value of 15.6 is greater than its tabular value of 2.68.
- DW test: The model did not suffer from the self-correlation problem because the DW value is located in the critical resolution area of 1.82.

What can be seen from the regression equation is that private investment is linked to a direct relationship with the interest rate, government spending and government debt in Iraq (Khaghaany, Kbelah, & Almagtome, 2019). This means that these variables do not affect private investment, while private investment is linked to the inverse relationship with the gross domestic product. This means that private investment is affected by the gross domestic product. In contrast, the increase in gross domestic product leads to a decline in private investment and vice versa, due to the underdevelopment of the private sector in Iraq and low levels.

## Conclusions

The impact of crowding is evident in the case of the closed economy more than the state of the open economy. It is evident from the extended Dicky Fuller test that the time series of the variables are not stable at all levels, but all stabilised at the first difference at a significant level of 5%. The results of the study indicate a positive relationship between government spending, interest rate, government debt and the size of private investment in Iraq during the period of study and shows through the positive reference to the coefficients of independent variables. The coefficient of GDP is negative and not statistically significant in the interpretation of the behaviour of private investment in Iraq and this is evident in the test (t). This is due to the adoption of domestic output on oil revenues at the base level. The significance of the regression coefficient of the government debt on private investment was proved by test (t). The other variables did not prove their significance on the private investment variable. The results of the R<sup>2</sup> test showed that 7 percent of the dependent variable was influenced by the independent variables in the sample and that the remaining 26% was the product of a variety of factors not included in the model. The test (F) indicates a statistical significance in the model as the value (F) calculated is larger than the scale.



## REFERENCES

- Akerlof, G. A. (2019). What They Were Thinking Then: The Consequences for Macroeconomics during the Past 60 Years. *Journal of Economic Perspectives*, 33(4), 171-186.
- Al-Wattar, Y. M. A., Almagtome, A. H., & AL-Shafeay, K. M. (2019). The role of integrating hotel sustainability reporting practices into an Accounting Information System to enhance Hotel Financial Performance: Evidence from Iraq. *African Journal of Hospitality, Tourism and Leisure*, 8(5), 1-16.
- Ali, M., Almagtome, A., & Hameedi, K. (2019). Impact of accounting earnings quality on the going-concern in the Iraqi tourism firms. *African Journal of Hospitality, Tourism and Leisure*, 8(5), 1-12.
- Ali, M., Hameedi, K., & Almagtome, A. (2019). Does Sustainability Reporting Via Accounting Information System Influence the Investment Decisions in Iraq? *International Journal of Innovation, Creativity and Change*, 9(9), 294-312.
- Almagtome, A., & Abbas, Z. (2020). Value Relevance of Financial Performance Measures: An Empirical Study. *International Journal of Psychological Rehabilitation*, 24(7), 6777-6791.
- Almagtome, A., Shaker, A., Al-Fatlawi, Q., & Bekheet, H. (2019). The Integration between Financial Sustainability and Accountability in Higher Education Institutions: An Exploratory Case Study. *International Journal of Innovation, Creativity and Change*, 8(2), 202-221.
- Anyanwu, A., Gan, C., & Hu, B. (2018). Government domestic debt, private sector credit, and crowding out effect in oil-dependent countries. *Private Sector Credit, and Crowding Out Effect in Oil-Dependent Countries (July 15, 2018)*.
- Bardazzi, R., & Ghezzi, L. (2018). Trade, competitiveness and investment: an empirical assessment. *Economic Systems Research*, 30(4), 497-520.
- Bieler, A., Jordan, J., & Morton, A. D. (2019). EU Aggregate Demand As a Way out of Crisis? Engaging the Post-Keynesian Critique. *JCMS: Journal of Common Market Studies*, 57(4), 805-822.
- De Wit, A., & Bekkers, R. (2017). Government support and charitable donations: A meta-analysis of the crowding-out hypothesis. *Journal of Public Administration Research and Theory*, 27(2), 301-319.
- DeMiguel, V., Martin Utrera, A., & Uppal, R. (2019). Crowding and Liquidity Provision in Factor Investing. *Available at SSRN*.
- Farla, K., De Crombrughe, D., & Verspagen, B. (2016). Institutions, foreign direct investment, and domestic investment: crowding out or crowding in? *World Development*, 88, 1-9.
- Khaghaany, M., Kbelah, S., & Almagtome, A. (2019). Value relevance of sustainability reporting under an accounting information system: Evidence from the tourism industry. *African Journal of Hospitality, Tourism and Leisure*, 8(Special Edition CUT), 1-12.
- Lin, W., Li, L., Chen, J., Li, D., Hou, J., Guo, H., & Shen, J. (2018). Long-term crowding stress causes compromised nonspecific immunity and increases apoptosis of spleen in grass carp (*Ctenopharyngodon idella*). *Fish & shellfish immunology*, 80, 540-545.



- Minor, D. M., & Kobe, R. K. (2019). Fruit production is influenced by tree size and size-asymmetric crowding in a wet tropical forest. *Ecology and evolution*, 9(3), 1458-1472.
- Nandu, S., & Lawrence, A. (2020). INFLUENCE OF CROWDING OUT EFFECT ON PUBLIC-PRIVATE INVESTMENT-AN EVALUATION. *Our Heritage*, 68(16), 140-147.
- Ryan-Collins, J. (2017). Breaking the taboo: a history of monetary financing in Canada, 1930–1975. *The British journal of sociology*, 68(4), 643-669.
- Sudmant, A., Colenbrander, S., Gouldson, A., & Chilundika, N. (2017). Private opportunities, public benefits? The scope for private finance to deliver low-carbon transport systems in Kigali, Rwanda. *Urban Climate*, 20, 59-74.
- Thia, J. P. (2020). Deficits and crowding out through private loan spreads. *The Quarterly Review of Economics and Finance*.
- Tily, G. (2016). *Keynes's General Theory, the Rate of Interest and Keynesian Economics*: Springer.
- Wu, S., Li, B., Nie, Q., & Chen, C. (2017). Government expenditure, corruption and total factor productivity. *Journal of cleaner production*, 168, 279-289.