International Journal of Innovation, Creativity and Change. www.ijicc.net
Volume 14, Issue 3, 2020

Measuring the Effect of Financial Policy Tools on the Contribution of the Industrial Sector in Iraq for the Period 1990 - 2018

Salam M. Zamil[a], Hatem K. Al-Quraishi[b], Ghalib S. bahit[c], [a,b,c]Wasit University / College of Administration and Economic/ debt. Of economic, Email: [a]S_samer@mail.ru, [b]hbalhawi@uowasit.edu.iq

The industrial sector in Iraq suffers from many problems, stemming basically from the lack of government support for the purpose of competing with imported industrial goods, especially after 2003 after the opening of borders and trade restrictions related to the import process. This has negatively affected the industrial sector's production and productivity as well as the extent of its contribution to the gross domestic product. The importance of the current research relates to the industrial sector being considered one of the most important sectors of high added value, which contributes to most countries of the world with a high percentage of GDP. Furthermore, the research recognises the role that financial policy and its tools can play in affecting the development and progress of the industrial sector and raising its contribution to GDP within the provision of material support. The research aims mainly at verifying the validity of the hypothesis by clarifying the extent of the contribution of financial policy tools to effecting the productivity of the industrial sector, as well as its contribution to the gross domestic product in the Iraqi economy. The descriptive approach was used to verify the hypothesis by analysing the financial policy tools such as revenues, expenditures and the general budget, and their relationship to the extent of the industrial sector's contribution to the gross domestic product. We adopted the quantitative method by building a standard model for the relationship between financial policy tools (public revenues, public expenditures, the general budget, industrial investment spending), and the contribution of the industrial sector to the gross domestic product by the Eviews9 program for the period 1990 – 2018. The research reached several conclusions and recommendations. The most important of these is that there is an inverse relationship between the financial policy tools and the contribution of the industrial sector in Iraq,

because of a lack of government support supplied to the industrial sector. This has led to a decrease in production and productivity, which is reflected in the decline in its contribution to the gross domestic product. There is a necessity for economic diversity as well as interest in the industrial sector. There is also a need to increase government support to the sector through financial policy tools and to not depend on a single resource in financing the public budget, which exposes the national economy to many financial problems.

Key words: *Financial policy, Overhead, Public Revenue Public Budge, The Industrial Sector, Gross Domestic Product.*

Introduction

Financial policy is defined as the method taken by any country using financial tools from public expenditures, public revenues and a general budget for the purpose of confronting and remedying economic crises, and achieving the economic, social and political objectives that the state aspires to, on the other hand. The objectives of financial policy differ in accordance with the prevailing economic nature and the most significant objectives that can be summed up are optimal distribution of income, achieving economic stability, achieving a level of full employment, as well as achieving economic development (Amin et al. 2012).

Financial science has developed greatly in its objectives, methods and ideas due to the developments that have happened in societies. Thus, there has been an evolution in the role of the state from the guarding state to the interfering state. Its financial tools are revenues, expenses and budget. The indicator of the industrial output ratio to the gross domestic product expresses the amount of the industrial sector's contribution to the formation of the gross domestic product. In addition to showing the key role of financial policy on the contribution of the industrial sector to the formation of the gross domestic product, we have tried to find a significant relationship between them.

Public spending contributes to forming gross domestic product and increasing the rate of the economic growth and infrastructure development. The indicator of the ratio of public spending to gross domestic product reflects the amount of GDP allocated for public spending purposes. It also indicates the extent of the state’s interference in economic life in general and the social in particular. Therefore, it reflects the key role of the state and its political philosophy; the higher this ratio, the more indicative of a broader intervention, and vice versa. The contribution of public spending, in its current and investment sectors (Hamorabi Centre for Research and Strategic Studies, 2008), to GDP will be clearly indicated. The duration of the research was characterised by an increase in the size of “government spending in general and in current and investment expenditures “in particular, as a result of

the war conditions that the country went through" and the negative effects that accordingly followed, and the imposition of international economic sanctions against Iraq (Salam, 2011). As public spending increased with high growth rates, and the rate of increase focused on spending, the current one is characterised most of the time as more than investment spending, except in some cases where the tunnels focus on rebuilding what was destroyed by the war, so public spending often reflects the consumer nature of government spending (Central Bank of Iraq, 2008). Public revenue plays a large and clear role in the formation of gross domestic product. When the proportion of the state's dependence on public revenue in the formation of GDP is large, this indicates a decrease in the role of the private sector and an increase in the role of the public sector, and conversely, in the composition of GDP and vice versa if the rate is low. This happens according to the marginal role of the government. Public revenue began to decline in the beginning of the 1990s as a result of the war conditions waged against Iraq, which were represented by the second Gulf War and the economic sanctions imposed on the country, and the security and political turmoil incurred by it. After 2003, general revenue witnessed a significant increase as a result of the increase in the size of oil revenue, which reflects the unilateral nature of Iraq and relying on the oil resource as a primary source for financing public revenue (Lahdan, 2018).

The rate of the net public budget (deficit or surplus) to GDP determines the extent to which the net budget affects a surplus or deficit on the economic activity in the country. Thus, the policy of reducing the size of the financial deficit in the budget works to stimulate investment and revitalise local resources, and increases the productive capacity of the national economy (Sabah, 2012).

The Problem of Study

The industrial sector suffers from a decrease in its production capabilities and a decrease in its contribution to the gross domestic product, additional to the financial policy that is adopted in Iraq that was unable to solve the problems that the Iraqi economy suffered from in general, and the industrial sector in particular.

The Hypothesis of the Study

The study assumes that there is a relationship between the policy tools and the contribution of the industrial sector to the gross domestic product of the Iraqi economy.

1- Standard of Description

The process of characterising the model is characterised on determining the dependent variable and the independent variables in accordance with the logic of economic theory by using the multiple linear regression and the linear equation, described here:

$Y = a + b1X1 + b2X2 + bnXn \ldots + u$

Table 1: Financial policy tools in Iraq for the period 1990 – 2018

Years	Public revenue	Public spending	General budget	Industrial investment spending	Industrial sector contribution to GDP
1990	372	14179	-5688	372	8.2
1991	156.5	17479	-13251	156.5	15.6
1992	1304.4	32883	-27836	1304.4	19.8
1993	4647.6	68954	-59957	4647.6	15.5
1994	8561.3	199442	-173783	8561.3	20
1995	18580	690784	-583798	18580	20.5
1996	12103.4	542542	-364529	12103.4	18.6
1997	18098.1	605802	-195265	18098.1	8.4
1998	17661.9	920501	-400071	17661.9	10.9
1999	26588	1033552	-314487	26588	7
2000	27422	1498700	-365666	27422	4.6
2001	57202.2	2079727	-790481	57202.2	6.9
2002	128502.2	2518285	-547160	128502.2	8.5
2003	15988526	4901960	11083566	15291.9	8.4
2004	3298851	32117491	871360	186100	6.9
2005	40435740	26375175	14060565	198229	6.9
2006	49055545	38806679	10248866	223889.6	5.8
2007	54964850	39031232	15933618	301822	4.9
2008	80641041	59403375	21237666	1511113	3.8
2010	55243526	52567025	2676501	911402.70	5.2
2011	70178223	70134201	44022	864662.6	5.16
2012	103989089	78757666	25231423	1423264	4.5
2013	119817224	105139576	14677648	1448038.372	4
2014	113840076	119127556	-5287480	1374203.345	4.7
2015	105609846	112192126	-6582280	979511	4.9
2016	66470251	70397515	-3927264	477181	4.1
2017	54409269	67067434	-12658165	355984	3.94
2018	77422173	75490115	1932058	412964	2.9

The variables adopted can be explained in the standard form:
1- The dependent variable (dependent) (Y): - Industrial sector contribution (percentage)
2- The independent variable (X1): Public revenues (million dinars)
3- Independent variable (X2): overheads (million dinars)
4- The independent variable (x3) the general budget (million dinars)
5- The independent variable (x4): industrial investment spending (million dinars).

2- Standard Variables Test

- The dependent variable (Y), the contribution of the industrial sector to the GDP: The chain of the dependent variable (Y) was drawn as it was found to be stable around its mean. In order to make sure of the stability of the time series, we test the unit root through a Dickey-Fuller test. This is shown by comparing the table (t) of (-6.811899) as being greater than (-3.004861) calculated under the level of significance (0.05). Also the value of (p-value) is less than (0.05). This means that we accept the alternative hypothesis that there is no unit root in the time series, that is, it is stable. KPSS has also been tested as it is noted that the statistical value of the KPSS test was (0.433440) smaller than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000). This means that we accept the null hypothesis that decides that there is no unit root, that is, the chain is stable. It is also noticed that the value of the statistical test (PP) was (-3.581664) greater than the critical value (Mackinnon) at the level of significance (5%), which is (-3.580623). Also, the value of (p-value) is less than (0.05). This means that we accept an alternative hypothesis which determines the absence of a unit root, that is, the chain is stable.

- The independent variable (X1) General revenues: - The variable chain (X1) was drawn and found to be unstable over time. In order to ensure the instability of the time series, we test the unit root (ADF). This is evident by comparing the tabular (t) of (-0.500691) that it is smaller than (-2.971853), calculated under the level of significance (0.05) and the value of (p-value) is greater than (0.05). This means that we accept the null hypothesis that the unit root exists in the time series, that is, it is unstable. It has also been tested (KPSS), noting that the statistical value of the KPSS test was (0.599817) greater than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000). This means we accept the alternative hypothesis that determines the existence of a unit root. That is, the chain is unstable. It is also noticed that the value of the statistical test (PP) was (-0.271049) smaller than the critical value (Mackinnon) at the level of significance (5%) of (-2.971853) and the value of (p-value) greater than (0.05). This means that we accept the null hypothesis determining that a unit root exists, meaning that the chain is unstable.

- The independent variable (x2) overhead: -: The variable chain (x2) was drawn and it was found to be unstable over time. In order to ensure the stability of the time series, we test the unit root (ADF), which is evident by comparing the tabular (t) of (-1.521331) that it is smaller than (-2.971853) calculated under the level of significance (0.05). Also the value of (p-value) is greater than (0.05). This means that we accept the null hypothesis that the unit root exists in the time series, that is, it is unstable. KPSS has also been tested as it is noticed that the statistical value of the KPSS test was (0.478264) greater than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000). This means that we accept the alternative hypothesis that determines the existence of a unit root, that is, the chain is unstable. It is also noted that the value of the statistical test (PP) was (-1.463401) smaller than

the critical value (Mackinnon) at the level of significance (5%) and the amount (-2.971853) also the value of (p-value) greater than (0.05). This means that we accept the null hypothesis that determines that a unit root exists, meaning that the chain is unstable.

- The independent variable (X3). The general budget: - The chain of the variable (X3) was drawn and turned out to be stable over time. In order to ensure the stability of the time series, we test the unit root (ADF). It is clear by comparing the tabular (t) of (-3.262880) that it is greater than (-2.971853) calculated under the level of significance (0.05) also the value of (p-value) is less than (0.05). This means that we accept the alternative hypothesis that the unit root does not exist in the time series, that is, it is stable. KPSS has also been tested as it is noticed that the statistical value of the KPSS test was (0.161464) smaller than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000). This means that we accept the imposition of nothingness which decides that there is no unit root, that is, that chain is stable. It is also noticed that the value of the statistical test (PP) was (-3.200186) greater than the critical value (Mackinnon) at the level of significance (5%) of (-2.971853) and the value of (p-value) is less than (0.05). This means that we accept an alternative hypothesis that there is no unit root, that is, the chain is stable.

- The variable (X4) industrial investment spending: - The chain of variable (X4) was drawn and it was found to be unstable over time. In order to ensure the stability of the time series, we test the unit root (ADF). This is evident by comparing the tabular (t) of (-1.702718) that it is smaller than (-2.971853) calculated under the level of significance (0.05) also the value of (p-value) is greater than (0.05). This means that we accept the null hypothesis that the unit root exists in the time series, that is, it is unstable. It has also been tested (KPSS), noting that the statistical value of the KPSS test was (0.513988) greater than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000). This means that we accept an alternative hypothesis that determines the existence of a unit root, that is, the chain is unstable. It is also noted that the value of the statistical test (PP) reached (-1.690769) is smaller than the critical value (Mackinnon) at the level of significance (5%) and which is (-2.971853). Also, the value of (p-value) is greater than (0.05). This means that we accept the null hypothesis determines that a unit root exists, meaning that the chain is unstable

In order to make an estimate of the model, consideration must be given to achieving stability in time series by taking the differences as follows: -

-The independent variable (X1) General revenues: - The variable chain (X1) was drawn and found to be stable at the first difference. In order to ensure the stability of the time series, we test the unit root (ADF). This is evident by comparing the tabular (t) of (-3.604700) as being greater than (-2.976263) calculated under the level of significance (0.05) and the value of (p-value) is smaller than (0.05). This means that we accept the alternative hypothesis that the

unit root does not exist in the time series, that is, it is stable. KPSS has also been tested as it is noted that the statistical value of the KPSS test was (0.178326) smaller than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000). This means that we accept the imposition of nothingness which decides that there is no unit root: that is, that chain is stable. It is also noticed that the value of the statistical test (PP) was (-3.429992) greater than the critical value (Mackinnon) at the level of significance (5%), which is (-2.976263). Also, the value of (p-value) is less than (0.05). This means that we accept, an alternative hypothesis determining the absence of a unit root, that is, the chain is stable.

- The independent variable (X2) overhead: The chain of the variable (X2) was drawn and found to be stable at the first difference. In order to ensure the stability of the time series, we test the unit root (ADF). This is evident through a comparison of the table (t) and the amount (-5.744864) as greater than (-2.976263), calculated under the level of significance (0.05). Also the value of (p-value) is less than (0.05) and this means that we accept the alternative hypothesis that there is no unit root in the time series, that is, it is also stable. (KPSS) was also tested. Noting that the value of the KPSS statistic value was (0.169704) less than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000) This means that we accept a hypothesis to impose the non-determination of the absence of the unit root, that is, the chain is stable. It is also noted that the value of the PP test statistic was (-5.744864) greater than the critical value (Mackinnon) at the level of significance (5%) of (-2.976263). Also the value of (p-value) is less than (0.05). This means that we accept an alternative hypothesis that determines that there is no unit root, that is, the chain is stable.

- The variable (X4) industrial investment spending: - The chain of variable (X4) was drawn and found to be stable at the first difference. In order to ensure the stability of the time series, we test the unit root (ADF). This is evident by comparing the tabular (t) of (-5.670564) that is greater than (-2.976263) calculated under the level of significance (0.05) also the value of (p-value) is less than (0.05). This means that we accept the alternative hypothesis that there is no unit root in the time series, that is, it is stable. KPSS has also been tested as it is noticed that the statistical value of the KPSS test was (0.131397) smaller than the critical value (Kwiatkowski) at the level of significance (5%) of (0.463000). This means that we accept the null hypothesis that decides that there is no unit root, that is, that chain is stable. It is also noted that the value of a statistical test (PP) was (-5.697330) greater than the critical value (Mackinnon) at the level of significance (5%) and which is (-2.976263). Also, the value of (p-value) is less than (0.05). This means that we accept, an alternative hypothesis that determines the absence of a unit root, that is, the chain is stable.

Table 1: Results of the Dickey Fuller test of the studied variable

Pro	At the first difference		Pro	The original chain		Variable
	T .tab 5% level	T.cal		5% T .tab level	5% T .tab level	
			0.0000	3.004861	3.004861	y
-3.604700	-2.976263	0.0125	0.8768	-2.971853	-2.971853	X1
-5.744864	-2.976263	0.0001	0.5083	-2.971853	-2.971853	X2
			0.0267	-2.971853	-2.971853	X3
-5.670564	-2.976263	0.0001	0.4190	-2.971853	-2.971853	X4

Table 2: Results of the KPPS test of the studied variable

At the first difference		The original chain		Variable
Kwiatkowski 5% level	LM Statistic	Kwiatkowski 5% level	Statistic LM	
		0.463000	0.433440	y
0.463000	0.178326	0.463000	0.599817	X1
	0.169704	0.463000	0.478264	X2
0.463000		0.463000	0.161464	X3
0.463000	0.131397	0.463000	0.513988	X4

Table 3: Results of the PP test of the studied variable

Pro	At the first difference		Pro	The original chain		Variable
	Mackinnon 5% level	PP Statistic		Mackinnon	PP Statistic	
			0.0499	-3.580623	-3.581664	y
0.0186	-2.976263	-3.429992	0.9174	-2.971853	-0.271049	X1
0.0001	-2.976263	-5.744864	0.5369	-2.971853	-1.463401	X2
			0.0306	-2.971853	-3.200186	X3
0.0001	-2.976263	-5.697330	0.4248	-2.971853	-1.690769	X4

3- Estimating the ARDL Form

Consequently, the estimation of the ARDL model, which depends on estimating the self-regression radius of a group of variables, will continue to extend slowdowns. This is because the dependent variables are explained by the dependence of their past, adding other variables behind the slowdowns, so the optimum delay degree must be determined, so it is possible to estimate ARDL model. The ARDL model can be estimated according to the slowdown period test criteria and for all variables as shown in Figure 1.

Figure 1. Estimation of the ARDL model for the short and long term of the studied variables

Dependent Variable: Y
Method: ARDL
Date: 04/14/20 Time: 12:30
Sample (adjusted): 1991 2018
Included observations: 28 after adjustments
Dependent lags: 1 (Fixed)
Dynamic regressors (1 lag, fixed): X1 X2 X3 X4
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	0.693115	0.170229	4.071669	0.0007
X1	-3.35E-08	6.50E-08	-0.515018	0.6128
X1(-1)	-1.40E-08	7.98E-08	-0.174924	0.8631
X2	-1.33E-08	4.01E-08	-0.332240	0.7435
X2(-1)	-9.49E-09	4.54E-08	-0.208863	0.8369
X3	-5.64E-09	1.28E-07	-0.043965	0.9654
X3(-1)	-6.47E-09	1.04E-07	-0.062290	0.9510
X4	1.16E-06	3.61E-06	0.322544	0.7508
X4(-1)	2.22E-06	4.41E-06	0.503707	0.6206
C	3.859689	2.367322	1.630403	0.1204

R-squared	0.751887	Mean dependent var	8.367857
Adjusted R-squared	0.627831	S.D. dependent var	5.705424
S.E. of regression	3.480630	Akaike info criterion	5.604757
Sum squared resid	218.0662	Schwarz criterion	6.080544
Log likelihood	-68.46659	Hannan-Quinn criter.	5.750210
F-statistic	6.060859	Durbin-Watson stat	1.594987
Prob(F-statistic)	0.000599		

Economic, Statistical and Standard Interpretation

Economic Interpretation

There is a negative impact, that is, an inverse relationship between (X1) public revenues and (Y) the contribution of the industrial sector to the gross domestic product. This means that increasing public revenues by one unit leads to a decrease in the contribution of the industrial sector to the gross domestic product by (1.40). This corresponds to the actual reality in the Iraqi economy where it is not allocated to a very small percentage of public revenues for spending on the industrial sector, and Iraq relies on imports to cover the requirements of public consumption. There is a negative impact, that is, an inverse relationship between (X2) public expenditures and (Y) the contribution of the industrial sector to the gross domestic product, and this means that an increase in public expenditures by one unit leads to a decrease in the contribution of the industrial sector to the gross domestic product by (9.49). This corresponds to the reality of the Iraqi economy, where it is not allocated to a very small percentage of public spending to develop the industrial sector, and is reflected negatively in the duration of its contribution to the gross domestic product.

There is a negative impact, that is, an inverse relationship between (X3) the general budget and (Y) the contribution of the industrial sector to the gross domestic product. This means that an increase in the public budget by one unit leads to a decrease in the contribution of the industrial sector to the gross domestic product by (5.64). This corresponds to the reality in the

Iraqi economy, and despite the existence of a surplus in the public budget for some years during the study period, this surplus is not reflected in the high extent of the contribution of the industrial sector to the gross financial product.

There is a negative impact, that is, an inverse relationship between (X4) agricultural investment spending and (Y) the contribution of the agricultural sector to the gross domestic product. This means that the increase of industrial investment spending by one unit leads to a decrease in the industrial sector's contribution to the gross domestic product by (2.22). This is because of the lack of investment allocations to develop the reality of the industrial sector in Iraq, which is reflected negatively in the extent of its contribution to the gross domestic product.

- **Statistical and Standard Interpretation**

The coefficient of determination that is equal to (R2 = 0.75), that is, 75 percent of the resulting changes in the contribution of the agricultural sector to the GDP, explained by the change in the independent variables (X1, X2, X3, X4). The remaining 25 percent is explained by variables other than input in the standard model included in the random variable u.
As the (F) test indicates the overall significance of the model, we find that: F - stat = 6.060859 is greater than the tabular (F). This indicates that the overall model is statistically significant. Thus, it can be said in general that the model is statistically significant because the value of (Prob. (F-statistic) is equal to (0.000599) less than (5%)). This means that the model is statistically acceptable and thus the estimated form of the model is as follows:

Y = 3.859689 -1.40 X1 (-1) - 9.49 X2 (1 -) - 5.64 X3 - 2.22 X4

Standard tests indicated that the model is free of the problem of correlation between the values of the random variable (5%). We note that all calculated values are located in the rejection region, that is, there is no self-correlation, which confirms the integrity of the models from the problem of self-correlation.

Conclusions and Recommendations

Conclusions

1-Within the analytical aspect and the applied aspect, for the p-purpose of verifying the hypothesis, it has been proven that there is an inverse relationship between the financial policy tools and the contribution of the industrial sector to the gross domestic product.
2-The industrial sector in Iraq suffers from many problems, foremost among which is the lack of government support, which has led to the sector's weak contribution to GDP.
3-Despite the financial abundance that has occurred in Iraq for many years, it is not being used to develop the industrial sector.

Recommendations

1-The necessity of economic diversification and attention to the industrial sector as a basic resource in financing the general budget and the extent of its contribution to the gross domestic product so as to not rely on the oil sector as a single resource for providing financial resources.
2-Harnessing the surplus financial resources in building strategic plans in the development of the industrial sector.
3-Providing appropriate government support, whether material or moral support, from evidence to improve the reality of the industrial sector.

REFERENCES

Al-Mashhdani, A. K. Mahmood, Z. H. (2019). Estimating profit, cost function and technical Efficiencies of rice production in Nejaf for season 2016, The Iraqi journal of agricultural science. 50 (5): 1237-1246

AL-Enizy, L. D and Ali, E. H. (2017). An economic analysis of barley production function in Wasit province for 2014. The Iraqi Journal Agricultural Science , 48(4).pp: 1040-1056.

Amin, M. S Al-Idrisi, Sabah, S. Muhammad, K. (2012). Measurement and analysis of the economic role of the budget in Iraq for the Period (1988-2007), Journal of Karbala University, Volume 10, Issue 1, 2012, p. 34-37.

Hamorabi Centre for Research and Strategic Studies. (2008). Iraqi Strategic Report, p. 274.

Michael, P. M. (2006). Econometrics: A modern introduction, Pearson International, Edition 2, p.446-451.

Salam, K. S. (2011). Analysis of the relationship between the general budget and the gross domestic product in iraq for the period (1988-2004), Master Thesis, College of Administration and Economics, University of Karbala, p. 83.