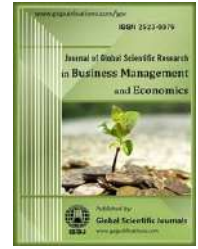




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Financial Inclusion and Its Impact on Supporting Tax Revenues in Iraq (An Econometric Study)

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ABSTRACT

Financial inclusion is regarded as one of the most essential pillars supporting Iraq's long-term development, particularly the attainment of a diverse and competitive economy. Financial inclusion aims to expand financial services to individuals who have limited access, especially in rural and distant places. It also seeks to improve the financial literacy and financial capabilities of the populace, thereby facilitating access to the actual tax base and reducing tax evasion. This, in turn, aids in the ease of tax revenue collection from taxpayers and the development of innovative financial products to meet their needs. Robust consumer protection systems dealing with the tax system are also established. This study employed a descriptive approach and utilized econometric statistical analysis methods to build and analyze a model using Fully-Modified OLS (FMOLS) and Dynamic Ordinary Least Squares (DOLS). The results of the econometric model estimation indicated no mutual effects of variables on each other. On the other hand, shock analysis results revealed both positive and negative mutual effects between model variables. The study concluded with a number of significant findings and suggestions, including the important relationship between financial inclusion determinants and the Iraqi tax system. It also emphasised the need for people to become more financially informed and to end financial illiteracy. The government and the central bank should provide resources to financial education initiatives, such as public service announcements, classroom instruction, and the opening of new bank branches in underserved regions.

1. Introduction

Financial inclusion refers to the availability and utilization of low-cost and beneficial financial products and services provided by firms or individuals to meet needs such as transactions, credit payments, and savings. The responsible and sustainable provision of these services enhances the effectiveness and availability of financial

services, while guaranteeing their safety, accessibility, security, and cost-efficiency.

The Iraqi economy has faced various economic challenges in recent decades, including inefficiencies in the public sector, declining labor and capital productivity, weak internal linkages

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between different economic sectors, and a budget deficit due to an imbalance between general budget revenues and expenditures. Additionally, there has been a trade deficit resulting from reliance on a single commodity or a limited number of export goods. This has led to an increase in external debt and its servicing burden, deterioration in infrastructure, education, and healthcare, a decrease in income levels, the absence of proper strategies, deterioration in trade terms, a global food crisis followed by food price hikes, and a simultaneous sharp drop in oil prices. The global increase in interest rates also exacerbated Iraq's economic problems.

The Central Bank of Iraq has formulated its strategic plans to enhance financial inclusion. This has been carried out in collaboration with the Arab Monetary Fund and their strategic partners, including the World Bank and the Alliance for Financial Inclusion (AFI), along with the German Development Cooperation (GIZ) within the Arab Monetary Fund's initiative to enhance financial inclusion in Arab countries (FIARI). A plan for national financial inclusion has been devised, responsibilities have been identified, and a roadmap has been developed. The Central Bank intends to include both the public and commercial sectors in the creation and execution of the policy by forming committees. In addition, the bank has focused on infrastructure improvements, such as modernizing payment systems and constructing nationwide switches, data centers, and disaster recovery centers. In the financial and banking sectors, infrastructure development, governance, and institutional management of information and communication technologies have been created in line with worldwide best practices. A consumer protection statute is being drafted by the Central Bank, which has also given priority to legal and legislative foundations for consumer financial protection.

Study Hypotheses:

The following are the fundamental hypothesis of the current investigation:

Null Hypothesis: The activation of financial inclusion programmes has a statistically significant influence on tax responsibility.

Alternative Hypothesis: Activating financial inclusion measures and expanding tax administration have a statistically significant relationship.

2. Previous Studies:

Financial inclusion is a crucial policy instrument for enhancing welfare, reducing poverty, and promoting economic stability as a whole. Financial inclusion is defined in numerous ways. Financial inclusion, for example, is defined by Sinclair (2001) in his research "Financial Exclusion: An Introductory Survey" as the "inability to access necessary financial services appropriately." Financial inclusion is considered a crucial policy tool for policymakers. According to Mohan's (2006) research titled "Economic Growth, Financial Deepening, and Financial Inclusion," it is posited that the inclusion of individuals and businesses in the financial system might potentially expedite economic growth and foster financial development. Sarma (2008) defines financial inclusion in his study "Index of Financial Inclusion" as "the ease of access to, availability, and usage of the formal financial system by all individuals within the economy." Chibba (2009) emphasizes in a study titled "Financial Inclusion, poverty reduction, and the Millennium Development Goals" that financial inclusion is crucial in combating poverty. Financial inclusion improves financial stability, according to Hannig and Jansen's 2010 paper, "Financial inclusion and financial stability: current policy issues." In "Financial Inclusion and Growth Evidence from African Countries" (2011), Andrianaivo and Kpodar examined the relationship between ICT and economic growth in African countries from 1988 to 2007. They verified that financial inclusion is important in this connection and that increasing financial inclusion contributes to ICT's favorable influence on development.

Also discussed in Cull, Demirguc-Kunt, and Lyman's (2012) "Financial Inclusion and Stability: What Does the Research Show?" is that financial inclusion can improve the welfare of the small business sector, thereby contributing to economic stability as a whole. Few experimental studies have investigated the connection between financial inclusion and tax revenues. Taha et al. (2013), for example, published a research entitled "Does financial system activity affect tax revenue

in Malaysia? Bounds testing and causality approach" revealed the relationship between direct tax collections and Malaysian financial system activity. They observed a short-term unidirectional causal association between the stock market and direct tax receipts.

The research conducted by Ilievski (2015) investigated the correlation between stock markets and tax revenues across 96 nations from 1990 to 2008. The research revealed a positive correlation between stock markets and tax revenues. Park and Mercado, Jr. (2015) analysed the relationship between financial inclusion and poverty in 37 developing Asian countries. In "Financial Inclusion, Poverty, and Income Inequality in Developing Asia," they concluded that financial inclusion decreases poverty and increases income equality. Increasing financial inclusion brings numerous benefits along with substantial income to the global economy, creating various opportunities and challenges for countries. Financial inclusion presents governments with a chance to raise tax revenues.

From 2006 to 2014, Sagbas and Demirtas (2016), as well as Akçay, evaluated the link between financial inclusion and tax revenues in Turkey. In the research titled "Financial Development and Tax Revenue Nexus in Turkey," their findings revealed that both banking and non-banking financial development contribute to long-term direct tax revenues, whereas banking financial development leads to short-term direct tax revenues. In the study titled "Do financial sector activities affect tax revenue in Pakistan?" Akram (2016) aimed to resolve the question of how financial sector activities influence Pakistan's tax revenues. They reached the conclusion that the financial sector can aid in increasing tax revenues. Research by Bayar, Sasmaz, and Oztürk (2017), titled "Financial development and tax revenues: Evidence from OECD countries," confirmed the impact of financial inclusion on tax collections by analysing the link between financial development and tax collections in developed economies.

From 2006 to 2016, Bayar and Karamelikli (2017) analysed the relationship between economic expansion and tax revenue in Turkey. They measure financial progress by banking and stock market growth. The findings indicate a non-linear positive link between financial development and

tax collections. Maherali (2017) investigates the worldwide link between financial inclusion and tax revenues in his paper "Financial Inclusion, Digital Payments, and Their Impact on Income and Tax Revenue Around the World." By collecting data from all across the globe and using his own methodology, he is able to estimate how much money governments will make off of individual taxpayers thanks to financial inclusion by the year 2020. Income tax revenues are affected by financial inclusion, as stated by Maherali (2017).

Lenka and Sharma (2017) show that financial inclusion has a considerable and favourable influence on economic development in India in both the short and long term. "Does financial inclusion spur economic growth in India?" is the subject of their study, which looks at both the macroeconomic and financial security issues. Also, Bassam Al-Own and Tareq Bani-Khalid's study from 2021, called "Financial Inclusion Indicators Affect Profitability of Jordanian Commercial Banks: Panel Data Analysis," looks into the link between having access to financial services and tax revenues. It does this by using financial inclusion indicators from the Global Findex Database for 28 European countries from 2011 to 2017. The research uses panel data analysis to provide compelling findings that highlight the significant impact of financial inclusion on tax collections within European nations. By attempting to address the fundamental question of whether or not shifts in tax revenues are connected to shifts in financial inclusion in Iraq, the current study aims to fill a vacuum in the literature. The research used a time-series approach to determine if financial inclusion influences tax collections in Iraq.

Econometric Study:

The research adopts a time-series methodology to determine the impact of financial inclusion on tax collections in Iraq from 2011 to 2021. The chosen time frame is based on data availability. The study relies on data compilation from financial inclusion indicators provided by the World Bank for use in the econometric model to estimate the following dynamic equation using the model:

$$\text{taxrevenue}_t (Y) = \alpha (\text{fininclusion}_{i,t}) + \beta X_{i,t} + \varepsilon$$

The following table displays the variables utilised in the econometric model and their sources:

Table number (1) of variables and their sources

source	code	a variable name	variable
the World Bank	TR	Tax Revenues at Current Prices (Variable Dependent)	Y
the World Bank	GDP	Gross Domestic Product (GDP) at (Current Prices)	X ₁
Financial Inclusion at the World Bank	ALB	Number of Account Owners in the Labor Force (% of population aged 15 and above)	X ₂
Financial Inclusion at the World Bank	DP	Number of Electronic Payments (% of population aged 15 and above)	X ₃
Financial Inclusion at the World Bank	UP	Number of Individuals Paying Government Services Using Mobile Phones (% of population aged 15 and above)	X ₄
Financial Inclusion at the World Bank	CC	Number of Credit Card Holders (% of population aged 15 and above)	X ₅
Financial Inclusion at the World Bank	GP	Number of Recipients of Government Payments (% of population aged 15 and above)	X ₆
The global economy	PS	Political Stability Index	X ₇
World Bank	INF	Inflation Rate	X ₈

Figure (1) Variable Pathway at the Level

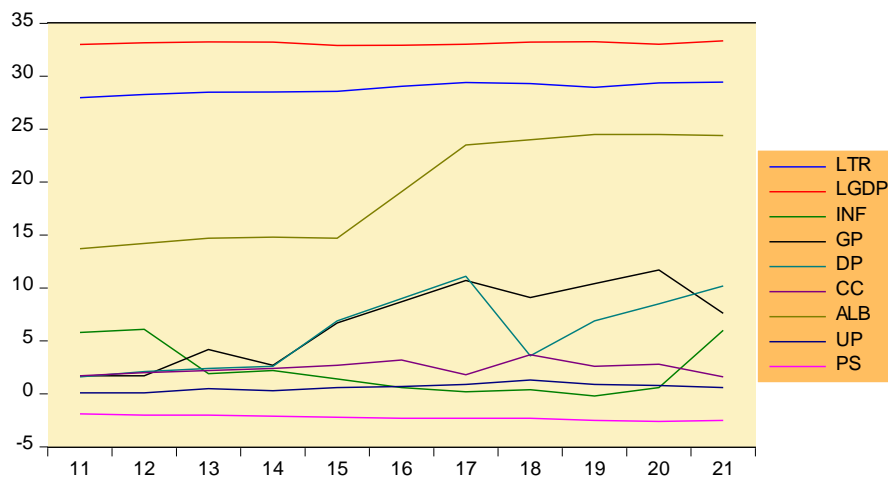


Table 2 shows descriptive statistics, and Table 3 shows correlations, for the variables in the standard model. The correlations in table (3) are very low, indicating that it is unlikely that the multiple linear relationships pose a problem in estimating the model".

Table (2) Descriptive Statistics

	LTR	LGDP	INF	GP	DP	CC	ALB	PS	UP
Mean	28.85	33.12	2.272	6.836	5.900	2.427	19.28	-2.245	0.618
Median	28.94	33.16	1.400	7.600	6.900	2.400	19.10	-2.300	0.600
Maximum	29.44	33.33	6.100	11.70	11.10	3.700	24.50	-1.900	1.300
Minimum	27.98	32.90	-0.20	1.700	1.600	1.600	13.70	-2.6000	0.100
Std. Dev.	0.509	0.148	2.477	3.705	3.539	0.655	4.896	0.229	0.362
Skewness	-0.257	-0.175	0.765	-0.254	0.104	0.488	0.009	-0.035	0.123
Kurtosis	1.731	1.657	1.887	1.584	1.444	2.345	1.129	1.827	2.440
Jarque-Bera	0.859	0.882	1.642	1.037	1.129	0.633	1.603	0.632	0.171

Table (3) of the Correlation Matrix for the Variables

Correlation Probability	LTR	LGDP	INF	GP	DP	CC	ALB	PS	UP
LTR	1.0000								

LGDP	0.1339	1.00000							
	0.6946	-----							
INF	-0.4834	0.25172	1.0000						
	0.1319	0.4552	-----						
GP	0.881868	-0.1278	-0.7170	1.00000					
	0.0003	0.7079	0.0130	-----					
DP	0.803247	-0.22765	-0.3590	0.79683	1.000000				
	0.0029	0.5008	0.2782	0.0033	-----				
CC	0.29399	-0.20215	-0.6683	0.42376	-0.01292	1.000000			
	0.3802	0.5511	0.0246	0.1940	0.96	-----			
ALB	0.917594	0.2509	-0.4362	0.88473	0.6974	0.2483	1.0000		
	0.0001	0.4567	0.1798	0.0003	0.0170	0.4616	-----		
ACLB	0.9038	0.0299	-0.6161	0.9617	0.7634	0.4301	0.9399		
	0.0001	0.9304	0.043	0.0000	0.0063	0.1867	0.0000		
PS	-0.86772	-0.1051	0.4563	-0.8875	-0.776436	-0.29637	-0.8999	1.0000	
	0.0005	0.7583	0.158	0.0003	0.0049	0.3762	0.0002	-----	
UP	0.80992	0.0650	-0.7557	0.8637	0.503860	0.636456	0.80451	-0.6852	1.0000
	0.0025	0.8492	0.0071	0.0006	0.1141	0.0353	0.0028	0.0200	-----

The Augmented Dickey-Fuller (ADF) test revealed that all variables were not stable at the level but became totally stable at the first difference, as shown in the table below.

Table (4) Unit Root Test for Model Variables

Test Variables	ADF	
	level	First difference
LTR	-1.435310 C 1	-3.254848 C**1
LGDP	-2.150311 C 1	-2.846858 N**1
INF	-1.637608 C1	-1.652083 N* 1
GP	-1.532683 C1	-3.060257 C*1
DP	-1.507907 C1	-3.449762C**1
CC	-0.060870 N1	-6.438456 N***1
ALB	-0.633119C1	-25.73615C***3
UP	-1.704206C1	-3.206821C**1

Notes: In the context of time series analysis, "t" represents the time trend, while "c" represents the constant term. "N" indicates the non-effect of the series (*), and (***) denotes that the variable is stable at the 1% and 5% levels, respectively. The number following the critical values represents the lag order.

Cointegration techniques are employed to test for long-term relationships between integrated variables, where the variables are not stable at the level. The Engle and Granger (1987) test is used to test for cointegration, relying on examining the residuals of the augmented regression performed with the variables. The cointegration test results are shown in the table below.

Table number (5) presents the results of the cointegration test.

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
LTR	-4.748111	0.6304	-31.39302	0.9997
LGDP	-5.854396	0.3686	-45.19126	0.9971
INF	-3.946096	0.8317	-12.97922	0.9677
GP	-5.481493	0.4471	-33.09774	0.9997
DP	-4.547934	0.6820	-32.55934	0.9997
CC	-5.146000	0.5269	-70.28034	0.0000
ALB	-4.842140	0.6054	-31.56800	0.9997
PS	-4.008485	0.8161	-17.30672	0.9705
UP	-6.333180	0.2638	-15.70708	0.9641

According to the prior cointegration findings, the variables exhibit a long-term connection. As a result, the Fully Modified OLS (FMOLS) and Dynamic OLS (DOLS) techniques may be used to estimate the model.

Table number (6) displays the results of the cointegration test.

Variables	FMOLS	DOLS
LGDP	0.878562*** (0.0102)	0.878352*** (0.0002)
INF	0.029138 (0.3618)	0.031392 (0.2240)
GP	0.032116 (0.4931)	0.033291 (0.3702)
DP	0.135285** (0.0704)	0.137235*** (0.0104)
CC	0.304351 (0.1173)	0.303360** (0.0351)
ALB	0.083672 (0.1294)	0.081879* (0.081879)
PS	-0.013724 (0.9748)	-0.100762 (0.7702)
UP	0.767071 (0.1937)	0.853183* (0.0617)
R-squared	0.971024	0.980326
Adjusted R-squared	0.739213	0.901631
S.E. of regression	0.226368	0.159938
Long-run variance	0.002684	0.002844

3. Results and Recommendations

Results

After applying both the Fully-Modified OLS (FMOLS) and Dynamic-OLS (DOLS) models, the results are as follows:

The explanatory power (R-squared) of the models is 97% and 98%, respectively. Regarding the independent variables (financial inclusion determinants) as defined by the World Bank and their impact on the dependent variable (tax revenues) in Iraq, the relationships appear as follows:

1. In Iraq, the gross domestic product (GDP) has a considerable positive association with tax revenue.
2. The inflation rate (INF) has a non-significant relationship with tax revenue, meaning that the inflation rate does not affect tax revenues.
3. Government payments (GP) have a non-significant relationship with tax revenue, indicating that government payments do not influence tax revenues.
4. Digital payments (DP) have a significant positive relationship with tax revenue in Iraq, indicating that electronic payments contribute to increased tax revenues.
5. Credit card ownership (CC) has a significant positive relationship with tax revenue in Iraq, suggesting that owning credit cards contributes to higher tax revenues.
6. In Iraq, having a bank account among the working population (ALB) has a substantial positive link with tax income, meaning that having a bank account among the workforce helps to enhance tax revenue.
7. Political stability (PS) has a non-significant relationship with tax revenue, meaning that political stability does not affect tax revenues.
8. In Iraq, mobile phone government service payments have a substantial positive link with tax income, implying that using mobile phones to pay for government services helps to increasing tax collections.

Recommendations

According to the findings of the standard model, the research proposes the following recommendations:

1. To assure the incorporation of financial inclusion into the Iraqi economy, a gradual approach is necessary.
2. Increasing financial awareness and fostering financial literacy among individuals are indispensable, especially in the absence of financial constraints.
3. The government and central bank are responsible for directing investments towards financial education campaigns, such as television advertisements and educational programs, and expanding bank branches to reach both urban and rural citizens.
4. Establish mechanisms and supportive laws to achieve financial inclusion and promote digitization in government institutions.

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