

-RESEARCH ARTICLE-

THE RELATIONSHIP BETWEEN MONETARY POLICY AND FINANCIAL INCLUSION IN IRAQ: IMPACTS AND DEVELOPMENT PATHS

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—Abstract—

This paper measures and examines the connection between financial inclusion metrics and monetary policy, and investigates the advantages and difficulties of achieving it, especially regarding access to banking services. The study addresses a gap in a literature

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concentrated on advanced economies, which offers limited evidence from oil-dependent, post-conflict banking systems. the study employs a quantitative approach using quarterly data from 2015 through 2023 (a total of 36 time series) and modern econometric techniques including error correction and autoregression distributed lags. the results indicate that banking density was significantly lower than the international norm of one bank branch per 10,000 people; in fact, there were approximately 480,000 people per bank branch. however, bank penetration exceeded 2 percent over the course of the study. While efforts made by the central bank to encourage the use of bank accounts failed to result in a sufficient increase in the number of bank accounts or bank cards issued, bank account depth as a share of GDP peaked at just 13%, further illustrating the limited contribution credit has toward GDP. Both an improvement in the index for financial inclusion and an increase in the narrow money stock (M1) are positively correlated at a statistically significant level: specifically, for every 1% increase in M1, the index for financial inclusion will rise by .87%. Similarly, the index for financial inclusion will rise by 2.5% for every 1% growth in the broad money supply (M2). Furthermore, the error correction term (-.147) indicates that approximately 15% of short-run disequilibria associated with financial inclusion are corrected each quarter under a stable long-run equilibrium.

Keywords: Monetary Policies, Financial Technology, Banking Sector, Iraqi Economy, FinTech.

INTRODUCTION

Financial inclusion has been taken up as a major focus area by global financial institutions and central banks, in part because they believe that there will be no way to avoid digitalization within the financial sector. The main driver of this trend is new technology-based solutions in finance to enable central banks to carry out monetary policy better than before (Al-Smadi, 2023). As stated by Kebede et al. (2024) an inclusive financial system is one in which all types of customers – companies and households alike – have equal access to available financial services and products; accessible and affordable. Therefore, based upon the number of customers using formal financial products, financial inclusion represents the growth both quantitatively and qualitatively that allows for greater numbers of investors to use financial products and services. An inclusive financial system is also critical to a country's ability to implement good monetary policy and allow policymakers to forecast inflation accurately (Pesqué-Cela et al., 2021).

Iraqi authorities have implemented numerous advancements related to financial and monetary services that align with international trends toward achieving higher levels of financial inclusion (Emara & El Said, 2021). Unfortunately, these efforts were hindered significantly by the weak state of Iraq's banking sector along with the public's distrust of banking and financial institutions. Additionally, the banking sector had very poor

financial inclusion. This is why the Central Bank plays such an important role via monetary policy to ensure that Iraqi banks maintain the required minimum levels for banking sector stability. This provides a foundation for banking that may endure during times of financial crisis and prevent them from occurring or limit their impact when they do occur on both the banking industry and the economy overall. This foundation is established by the banking industry providing customers with access to the means to achieve financial inclusion.

The primary objective of monetary policy is to influence the quantity and price of credit through various tools such as setting the prime lending rate, the reserve requirement ratio, engaging in open-market purchases/sales and/or the provision of liquidity (Bernanke, 2020). The tools used to implement monetary policy provide benefits toward the goals of achieving financial inclusion since lower interest rates, smaller reserve requirements, increased availability of external liquidity tends to either decrease the costs associated with borrowing or increases the availability of bank credit. Achieving financial inclusion provides individuals and businesses with the opportunity to engage in deposit activities, loan activities, payment activities, and risk management activities. It is a key mechanism for expanding economic opportunities for individuals/businesses who are currently outside the reach of financial services. Moreover, financial inclusion stimulates domestic consumption, job creation, enhances the productive capacity of the private sector and provides confidence in future prospects (Arshad et al., 2021).

The theoretical case for treating financial inclusion as a monetary policy concern rests on the transmission mechanism itself. Monetary policy operates through the banking system, and the proportion of the population connected to that system determines how much of the real economy a central bank can actually reach. Where large segments of households and firms hold no accounts and obtain no formal credit, changes in the policy rate, in reserve requirements, or in liquidity provision are transmitted to only a fraction of aggregate expenditure, and the interest rate channel is correspondingly attenuated (Kebede et al., 2024). Financial inclusion therefore enlarges the effective base of monetary transmission: as more agents hold deposits and borrow formally, the responsiveness of consumption and investment to policy signals rises, and the central bank's capacity to stabilise output and prices improves (Arshad et al., 2021). Evidence from Sub-Saharan Africa supports this reading, with panel analyses showing bidirectional causality between inclusion and the conduct of monetary policy, so that the two evolve jointly rather than sequentially (Anarfo et al., 2019; Jungo et al., 2022).

This reciprocity matters particularly for economies whose banking systems remain shallow. In such settings, the money supply aggregates M1 and M2 are not merely intermediate targets but also indicators of the depth of the formal financial system, since growth in broad money reflects the accumulation of deposits held by an expanding population of account holders. Comparative work across monetary unions confirms that

the strength of the inclusion–transmission link is conditioned by the institutional quality of the financial sector rather than by the policy stance alone (Kebede et al., 2024). Evidence from the Middle East and North Africa likewise indicates that inclusion translates into growth and stability gains only where governance and regulatory capacity are sufficient to convert access into sustained usage (Emara & El Said, 2021), a qualification of direct relevance to Iraq.

Iraq presents a configuration that the existing literature has rarely examined directly. Its economy is rentier and oil-dependent, its banking sector is dominated by state-owned institutions, cash transactions remain predominant, and public confidence in banks has been eroded by successive episodes of conflict and instability. These conditions plausibly weaken the mechanisms documented elsewhere: where trust in banks is low, expansions in money supply may be absorbed into cash holdings outside the banking system rather than into deposits, and the inclusion–policy relationship may be correspondingly muted (Heyert & Weill, 2025). At the same time, the Central Bank of Iraq has pursued an active agenda of branch expansion, salary domiciliation, and payment-card issuance, which provides a policy setting in which the relationship can be observed and quantified. Whether these interventions have produced a measurable and statistically stable association between monetary aggregates and financial inclusion is an empirical question that has not been answered with contemporary time-series evidence.

Answering it is consequential for both theory and policy. For theory, evidence from a fragile, oil-dependent economy tests whether findings generated in more developed financial systems, where inclusion has been linked to growth, poverty reduction, and stability (Saha & Qin, 2023; Van et al., 2021; Wang & Luo, 2022), extend to environments in which the banking system intermediates only a small share of national income. For policy, quantifying the elasticity of financial inclusion with respect to monetary aggregates indicates how far the Central Bank of Iraq can advance inclusion through monetary instruments alone, and where complementary regulatory, infrastructural, and confidence-building measures are indispensable. This study accordingly applies the autoregressive distributed lag bounds testing procedure and an error correction model to quarterly Iraqi data, treating banking depth as the inclusion indicator and M1 and M2 as the monetary policy indicators, in order to establish whether a stable long-run equilibrium links the two and how rapidly deviations from it are corrected.

Objectives of the Study

The aim of this paper is to measure and analyze the relationship between monetary policy and financial inclusion measures from an economic perspective. It also aims to examine the advantages and problems of financial inclusion, particularly in broadening access to

banking services. Consistent with the results reported in Section 4, these aims are pursued through four specific objectives.

- To describe the evolution of monetary policy in Iraq through the behavior of the narrow (M1) and broad (M2) money supply over the study period.
- To assess the current state of financial inclusion in Iraq through its principal indicators, namely banking density, banking penetration, banking depth, and the growth of bank accounts and payment cards, and to benchmark these against international standards.
- To determine, using the ARDL bounds testing procedure and an error correction model, whether a stable long-run equilibrium relationship exists between monetary policy and financial inclusion, and to estimate both the long-run elasticities and the speed at which short-run deviations are corrected.
- To derive, from the estimated relationship, policy paths through which the Central Bank of Iraq can strengthen financial inclusion.

LITERATURE REVIEW

The Concept and Measurement of Financial Inclusion

Financial inclusion has become a major issue as we begin the twenty-first century. A considerable amount of empirical research has investigated this issue for the most part within developed countries. We are aware of few studies either theoretically or empirically examining financial inclusion from a perspective of less-developed countries where many believe the strength of their banking systems are weak (Fernández-Olit et al., 2020). Financial inclusion refers to the process of providing financial services that are affordable, adequate and timely to the ordinary citizens and the vulnerable groups in the country (Demirgüç-Kunt et al., 2020). In the sense of social and economic inclusion, financial literacy and education are modern approaches to achieve financial well-being. Financial inclusion also involves providing low-cost banking and financial services to under-privileged, marginalised individuals (Saha & Qin, 2023). The other benefits associated with financial inclusion are; reducing poverty, increasing the amount of saving within the community, and creating an increased opportunity for all classes of society to have access to credit. Because inclusion is multidimensional, its measurement requires composite indices that combine access, usage, and depth dimensions rather than any single indicator (Kebede et al., 2024; Pesqué-Cela et al., 2021).

Monetary Policy and Financial Inclusion

The link between monetary policy and financial inclusion includes many facets and is influenced by the socio-political and cultural attributes of each country. Therefore, depending on the specific instruments applied and/or conditions of application, monetary policy can be either favorable or unfavorable to the establishment and

development of financial inclusion services in significant segments of society. Therefore, understanding this link is important for policymakers who wish to create inclusive economic growth. Interest rate, which represents one of the quantifiable monetary policy instruments aimed at encouraging financial inclusion, can either positively influence deposits (at lower interest rates) or negatively influence deposits (higher interest rates), thereby reducing the total number of depositors at commercial banks. Monetary policy expansion can stimulate an increase in the number of commercial bank branches, and therefore provide under-privileged sections of society with improved access to banking and other financial services (Ozili, 2023). Financial inclusion can contribute to lowering inflation levels. In addition, a financially included society can improve the effectiveness of using monetary policy to control inflation. Finally, financial inclusion contributes to an appreciation of domestic currency (Garbobiya et al., 2024). A financially included society refers to a system whereby all individuals and business entities have access to the range of financial services required to meet their financial transactional needs. These include: saving, payment systems, lending, etc. Additionally, a financially included society provides individuals and businesses with infrastructure that is both affordable and accessible (Demirgüç-Kunt et al., 2020). A financially included society also contributes to appreciating domestic currency. Financial inclusion has brought about profound changes in the form of awareness-raising activities concerning financial education/investment options/consumption-smoothing strategies during times of economic shocks (Katnic et al., 2024). Overall, all these factors suggest potential improvements in the overall economic condition, specifically reduction in poverty and income inequalities as well as placing the economy on a trajectory of sustainable development (Ifediora et al., 2022; Kebede et al., 2024).

Financial Exclusion and the Transmission Mechanism

Conversely, if financial exclusion occurs at a high rate within a nation it will lead to a situation where nearly all of the populations within that nation will be excluded from accessing a variety of financial services (Vo et al., 2021). These financial services are vital in promoting both savings and investments within the community formally or informally. Financial exclusion is detrimental to the economies because it hinders the effects of monetary policy implemented by central banks to encourage economic development or stabilize prices in the real world. As those who do not have access to various financial services have extremely limited means of influencing their consumption decisions (Caplan et al., 2021), the overall effects of monetary policy are delayed until they reach the real economy. The relationship between monetary policy and financial exclusion can be attributed to the causality present among the two. The financial system acts as a mirror reflecting the successes of monetary policy, while providing substantial assistance with the dissemination of its effects to the real economy (Anarfo, 2019). Research studies conducted in this area show that in developing/emerging market countries, there is a lack of clarity regarding the inter-

relationship between the structural characteristics of the financial sector and the effectiveness of monetary policy. Most research conducted in this area has concentrated upon particular channels through which monetary policy is transmitted e.g. credit, and have identified no more than a couple of aspects related to this relationship (Jungo et al., 2022). Because many banks are liquidly constrained, a cut in interest rates by a central bank has a significant effect on bank deposits by increasing lending. A narrow focus exists due to the dominance of financial markets in these countries and poor regulation of these markets (Feghali et al., 2021).

A wide array of financial and economic factors influences this complex process. One example includes lower costs for credit that exist when interest rates are lowered by a central bank. Lower costs increased borrowing opportunities for individuals and businesses, which leads to increased spending through increased investment and subsequently creates increased demand for goods and services. Positive trends occur within economic growth indicators based on this. An additional method that banks and credit unions provide to disseminate the effects of monetary policy include lowering loan rates to consumers and businesses. Expectations concerning future inflation rates and interest rates also contribute to how monetary policies are responded to by financial institutions operating in the banking sector. Overall, monetary policy directly affects the financial systems that can either support or stabilize the economy.

Digital Financial Services and Emerging Evidence

A rapidly expanding strand of the literature examines how digital financial services alter the inclusion–policy relationship. Digital channels lower the marginal cost of serving remote and low-income clients, and evidence from the MENA region indicates a significant positive association between digital finance and inclusion outcomes (Al-Smadi, 2023). Cross-country analyses similarly find that digital financial inclusion is associated with improvements in the quality, not merely the rate, of economic growth (Xi & Wang, 2023), while fintech has been shown to complement rather than substitute for conventional inclusion in developing economies (Azmeah & Al-Raei, 2024). Inclusion has further been linked to bank stability and profitability in emerging markets, although the relationship is conditioned by market structure and institutional quality (Feghali et al., 2021; Wang & Luo, 2022; Yakubu & Musah, 2024). Firm-level work indicates that the determinants of inclusion differ systematically between enterprises and households, implying that inclusion policy must be differentiated by client segment (Oshora et al., 2021). Taken together, this literature establishes that the inclusion–monetary policy nexus is empirically robust but institutionally contingent, which motivates country-specific estimation of the kind undertaken here.

METHODS

Data Collection

The monetary policy variables and financial inclusion in Iraq were measured and evaluated by turning the monetary data (the wide money supply) and financial inclusion data from 2015 to 2023 into quarterly data. This resulted in 36 observations that satisfied the econometric model's requirements.

Model Variables

The following are some of the research variables:

1. Independent Variables: (M1, M2) stand for the monetary policy variables.
2. Dependent Variables: Since banking depth (FI) best captures the evolution of the banking system, these are the financial inclusion variables.

The two variable groups are described in turn in the subsections that follow, so that every model variable is defined and its measurement documented before estimation. Section 3.3 sets out the measurement of the independent variable, the monetary policy indicator represented by the money supply, and Section 3.4 sets out the measurement of the dependent variable, the financial inclusion indicators from which banking depth is derived. The descriptive behaviour of these variables is reported in [Tables 1 and 2](#) within this section, while the estimation output obtained from them is reported separately in Section 4. Stating the mapping explicitly avoids the ambiguity that arises when the independent and dependent variable groups are presented without being tied back to the estimated model.

Measurement of the Independent Variable: Monetary Policy Indicators

Monetary Policy's expression was the broad money supply (M2), shown in [Table 1](#) for the time span of 2004 to 2024. At the beginning of that time frame, the M2 stood at around 11,498,148 million dinars. That year's highest percentage increase in M2 was 43.5%, or \$21,050,249 million in 2006. M2 continued its upward trend at a growth rate of 3.48% per annum until it reached approximately \$90,566,930 million in 2014. After that year, however, M2 began to decline and reached approximately \$84,527,272 million. The reasons for this decline were; a downward trend in the value of foreign assets due to reduced oil revenue, increasing net government debt and additional government debt issued to the public sector, private sector and other sectors. Then M2 rose sharply from 2016 through 2022 with an overall increase of 20.3% when M2 reached approximately \$168,291,372 million. According to [Table 1](#), a large portion of the rise in domestic liquid assets (M2) can be attributed to an increase of about 22.1%; this rise in domestic liquid assets (M2) is attributable to an increase in the narrow money supply (m1) and other forms of deposits such as fixed, savings, postal and insurance deposits.

Table 1: The assessment of the money supply in Iraq.

Year	M1	Growth rate (%)	M2	Growth rate (%)
2004	10,148,626	—	11,498,148	—
2005	11,399,125	12.3	14,659,350	27.4
2006	15,460,060	35.6	21,050,249	43.5
2007	21,721,167	40.4	26,919,996	27.8
2008	28,189,934	29.7	34,861,927	29.5
2009	37,300,030	32.3	45,355,289	30.0
2010	51,743,489	38.7	60,289,168	32.9
2011	62,473,929	20.7	72,067,309	19.5
2012	63,735,871	2.0	75,336,128	4.5
2013	73,830,964	15.8	87,526,585	16.1
2014	72,692,448	(1.5)	90,566,930	3.4
2015	69,613,150	(4.2)	84,527,272	(6.6)
2016	75,523,952	8.4	90,466,370	7.0
2017	76,986,584	1.9	92,857,047	2.6
2018	77,828,984	1.0	95,390,725	2.7
2019	86,771,000	11.4	103,441,131	8.4
2020	103,353,556	19.1	119,906,201	15.9
2021	119,944,017	16.0	139,885,978	16.6
2022	146,487,925	22.1	168,291,372	20.3
2023	164,917,643	39.6	188,991,439	12.3

Note: M1 = narrow money supply; M2 = broad money supply. Figures in parentheses denote negative growth. Em dashes indicate that a growth rate is not defined for the base year. Source: Central Bank of Iraq, Annual Statistical Bulletins, various years.

Measurement of the Dependent Variable: Financial Inclusion Indicators

Seven indicators will be used to assess the extent that all individuals in society have equitable access to banking services. These include indicators relating to access to financial services, use of financial services and cost of financial services. Below are the indicators that relate to the Iraqi context. First is the adult bank account percentage since there is nothing better than defining "financial inclusion" as being able to open and maintain a bank account at a formal financial institution. As the total number of adults with a bank account grows so too should the opportunity for increased financial inclusion. Second is the percentage of the population that utilize digital financial services (e.g. make on-line purchases, pay bills via phone). Third is credit access, i.e. the ability of both individuals and businesses to receive loan or credit facility from banks and/or other types of financial organizations. Fourth is the percentage of the population that utilizes insurance services. Utilizing insurance services (e.g. health, life insurance) provides an indicator of the overall state of financial inclusion. Finally, geographic accessibility of financial products is also indicative of whether there are sufficient branch locations or other forms of financial service delivery point within rural or isolated communities. Sixth is the availability of financial products to customers (both individual consumers and small business owners), including savings, investment,

insurance, and loan products. Seventh is the percentage of citizenry utilizing electronic payment cards indicating how often citizens use bankcards, particularly credit cards. Lastly is the cost of financial services measuring the cost of financial services provided by banks and other organizations, e.g., commissions and fees, which impacts whether or not people want/need them.

Of this set, banking density, banking penetration, and banking depth are the indicators observable for Iraq on a consistent basis across the study period, and they are reported in Table 2. Banking depth is adopted as the dependent variable (FI) in the econometric model for the reason stated in Section 3.2, namely that it best reflects the development of the banking system.

Table 2 provides information about the current state of the indicators of financial inclusion. Banking density showed extremely low values (the ratio of one bank for every 100,000 persons) was not achieved. At the end of 2015, bank branch penetration (i.e., how many individuals are served by one bank branch) was only 42.62%, or roughly one bank branch serving 42,620 individuals. As can be inferred from this data, the number of bank branches continues to shrink, as indicated by the number of bank branches decreasing throughout the next few years; even with 865 bank branches present in 2018, the banking density was still very weak. Because of the poor banking density in the country, most citizens have limited, if any, access to financial services.

Although the number of bank branches distributed throughout the study area was never less than two bank branches per 100 people, the branch network of commercial banks did not achieve sufficient geographic distribution to adequately serve all areas of the country. Most commercial bank branches were in specific governorates, particularly Baghdad. Only through 2017 were data regarding the development of bank accounts and credit cards available. However, over time, it was observed that individual banking account growth increased, as did their credit card holding. The percentage increase in individual bank accounts was observed to have a positive trend. In 2017 the average percent increase in individual bank accounts was around 10%. By 2019 this had grown to an approximate percent increase of 20%, in 2022 the average percent increase in individual bank accounts grew to an astonishing 83%. Finally, the average percent increase in individual bank accounts for 2023 was 110% compared with 2017. Such rapid increases demonstrate an increasing willingness among individuals to open bank accounts because of improved operational processes and an increase in confidence within the overall financial system. Credit cards use experienced significant declines and substantial variability during the time frame covered by the study. The percentages of individuals using credit cards rose from 38% in 2018 to 19% in 2019 and then down to 12% in 2020 before dropping again to nine percent in 2022. Finally, credit card usage rebounded in 2023 reaching a high of 22%. Declines in the usage of these cards can be attributed to a variety of issues including lack of security, fear of losing funds invested in them, and failure of services provided.

Finally, the banking depth index rose from 9.63 in 2015 to 13.28 in 2020, as seen in the final column of Table 2. Although the relatively small size of these numbers illustrate how little contribution is made by banking to Gross Domestic Product (GDP), after that point private sector credit-to-GDP ratios declined reaching a value of eight percent eighteen months later (in 2022). This decline is caused because GDP grew at higher rates than growth rates. Therefore, despite having expanded significantly over recent decades, financial inclusion in Iraq has not reached sufficiently high levels internally within the world banking system.

Table 2: Financial inclusion indicators (2015–2023).

Year	Banks No.	Banking density ^a	Banking expansion ^b	Growth of bank accounts	Growth of bank cards	Banking depth index ^c
2015	854	42.62	2.31	—	—	9.63
2016	866	43.74	2.29	—	—	9.73
2017	843	44.06	2.27	10.27	24	9.38
2018	865	44.07	2.26	16	38	9.19
2019	888	44.25	2.25	20.2	19	8.81
2020	891	45.06	2.21	28	12	13.28
2021	905	45.51	2.20	55	27	9.67
2022	876	48.23	2.07	83	9	8.18
2023	890	47.03	2.60	110	22	10.24

Note: ^aBanking density = Population (1,000) / Number of bank branches. ^bBanking expansion (penetration) = Number of bank branches / Population (10,000). ^cBanking depth of deposits = Total private sector deposits / GDP × 100. Em dashes indicate that data were not available. Source: Central Bank of Iraq, Financial Stability Reports, various years.

RESULTS

This section reports the estimation output obtained from the variables defined and described in Section 3. The analysis proceeds from stationarity testing, through cointegration testing and model estimation, to the diagnostic checks that establish the validity of the estimated model.

Stability Test

A Stability Test of a Time Series is done to make sure all the time series in the Variables have no Unit Root. There are several ways to do this; one method is the use of ADF and another is the use of PP. Table 3 illustrates that the Independent Variable (s) had an Integral Degree (0) because they were stable at the 0-1 Level, whereas the Dependent Variable had an Integral Degree (1) because they were stable after being differenced once. Therefore, since both tests resulted in Identical Results, we can say the variables had no Unit Root.

Table 3: Unit root (stationarity) test results.

Test	1st difference		At level		Variables
	prob	Statistic	prob	Statistic	
Panel A. Augmented Dickey–Fuller (ADF) test					
None I~(0)	...	...	0.0046	−2.870	M1
Trend & Intercept I~(0)	...	...	0.0459	−2.942	M2
None I~(1)	0.0259	−2.228	0.0720	−3.319	FI
Panel B. Phillips–Perron (PP) test					
None I~(0)	...	...	0.0285	−2.188	M1
None I~(0)	...	...	0.0329	−2.127	M2
None I~(1)	0.0000	−4.656	0.1770	−2.873	FI

Note: I~(0) denotes stationarity at level; I~(1) denotes stationarity at first difference. Ellipses indicate that the test was not required at that transformation.

Cointegration Test

Given that there is no I(1) for the time series of the study variable(s), then an appropriate cointegration test can be performed to determine whether short- and long-run equilibrium exist among the model's variables. However, since the unit root tests indicated that the variables were of different orders of integration, therefore since one of the requirements for conducting the Johansen test does not apply -- i.e. all of the variables are of the same order of integration -- then it follows that the Bounds Test will be applied using the ARDL model of [Pesaran et al. \(2001\)](#); which incorporates both autoregressive models and distributed interval models. In such a framework, every time series behaves as a function of decreasing values of itself at present times as well as those of the explanatory variables currently acting on it over some period. This form of testing procedure allows for varying orders of integration due to stationarity of the variables. Similar testing techniques have also been utilized by researchers to examine many additional issues related to financial inclusion in similar economies in the Arab region([Amaira, 2023](#)).

Table 4: Bounds test for cointegration.

Test statistic	Value	Significance	I(0) bound	I(1) bound
F-statistic	3.799935	10%	2.63	3.35
K	2	5%	3.10	3.67
		2.5%	3.55	4.38
		1%	4.13	5.00

Note: Null hypothesis: no levels relationship. k = number of regressors.

[Table 4](#) displays that because the calculated F-statistic (3.799935), is larger than each of the lower and upper bound values at the specified significance levels (i.e., 5% and 10%) we have enough evidence to reject the null hypothesis and accept the alternative hypothesis; therefore, we can conclude that there exists cointegration among the

variables contained within our model, which further supports our belief that an existence of a long-run relationship exists among the variables in the model.

Model Estimation

Optimal Lag Period

Figure 1 shows that the optimal lag periods for the model are (2, 2, 1), which is equivalent to two periods for the dependent variable. These may therefore be used to determine the lag periods of the model.

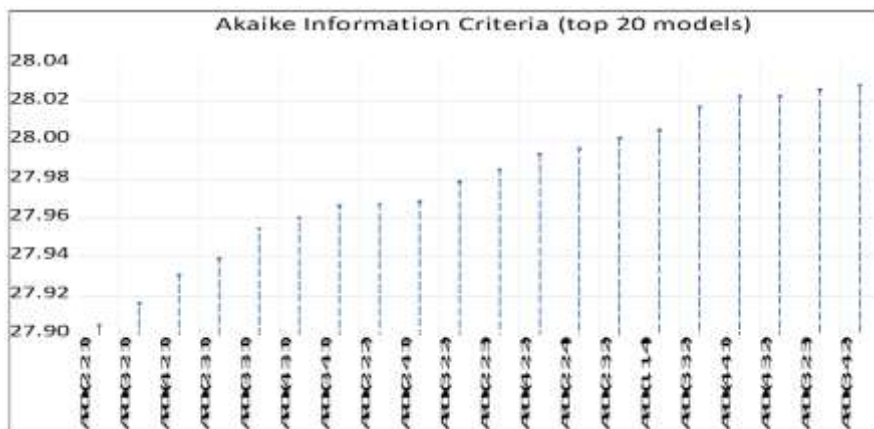


Figure 1: The ARDL Model's Ideal Lag Periods

Source: developed by the authors in the statistical program EViews 12

The ARDL Model

Table 5 shows the statistical significance of the regression equation and the model's goodness-of-fit. Specifically, there is a good fit with a high R^2 value of approximately 90.91%, which suggests that 91% of the total variability of financial inclusion can be explained by the variability in the monetary policy variable. Conversely, this would suggest that the remaining 9% variability could be attributed to variation in the stochastic terms. Furthermore, the results from the F-test were statistically significant ($p = .000$), supporting that the model was statistically valid at $\alpha = .05$.

Table 5: ARDL model estimation results.

Variable	Coefficient	Std. error	t-Statistic	Prob.*
FI(-1)	1.290586	0.151514	8.517938	0.0000
FI(-2)	-0.437511	0.138235	-3.164980	0.0039
M1	1.099716	0.050070	21.96379	0.0000
M1(-1)	-1.460189	0.222595	-6.559857	0.0000
M1(-2)	0.488943	0.172791	2.829687	0.0089
M2	171266.0	62499.89	2.740260	0.0109
M2(-1)	-208744.3	66040.36	-3.160860	0.0040
C	-413270.2	927621.8	-0.445516	0.6596

R-Squared = 0.939958, Adjusted R Squared = 0.909946, F-statistic = 88023.04, Prob
(F-statistic) = 0.000000

Note: Dependent variable: FI. Method: ARDL. Sample (adjusted): 2015Q3–2023Q4. Included observations: 34 after adjustments. Fixed regressors: C. Number of models evaluated: 100. Selected model: ARDL (2, 2, 1).

Error Correction Model

Using a standard Error Correction Model (ECM) we have tested the relationship of the variables over time. The results in [table 6](#) shows that there was a statistically significant negative correlation ($p=0$; -0.146925) between the error terms of ECM-1. This provides evidence that the model is valid. These findings support the fact that the model has merit. They also suggest that long run (through monetary policy) corrections in excess of 15 percent of short run errors in financial inclusion are possible. Additionally, since the number of quarters required to reach equilibrium is estimated at 6.835 or one and a half years, we can say that the speed of long run adjustments is relatively slow.

Table 6: ARDL error correction regression.

Variable	Coefficient	Std. error	t-Statistic	Prob.
D(FI(-1))	0.437511	0.109147	4.008457	0.0005
D(M1)	1.099716	0.044944	24.46857	0.0000
D(M1(-1))	0.488943	0.133301	3.667967	0.0011
D(M2)	171266.0	51614.76	3.318159	0.0027
CointEq(-1)*	-0.146925	0.035683	-4.117470	0.0003

Note: Dependent variable: D(FI). Selected model: ARDL(2, 2, 1). Case 2: restricted constant and no trend. Sample: 2015Q1–2023Q4. Included observations: 34. *CointEq(-1) is the error correction term. Source: EViews 12 statistical software was used by the authors to prepare.

Long-Run Relationship

[Table 7](#) depicts an associated relationship with financial inclusion as well as a narrow money supply (M1) as shown in [Table 7](#). Financial inclusion index shows that for a 1% increase in the narrow money supply (M1) there is a 0.87 percentage point increase.

Table 7: Long-run (levels) equation.

Variable	Coefficient	Std. error	t-Statistic	Prob.
M1	0.874389	0.025941	33.70645	0.0000
M2	-255084.1	372424.7	-0.684928	0.0499
C	-2812787.6	5043533.	-0.557702	0.0218

Note: Case 2: restricted constant and no trend. Estimated levels equation: $FI = 0.8744 \times M1 - 255084.0754 \times M2 - 2812787.6203$. Source: created by the authors using the statistical program EViews 12.

Additionally, at the 0.05 level, the M2 demonstrated a statistically significant positive correlation. The financial inclusion index increased by 2.5% for every 1% increase in the broad money supply (M2), demonstrating the close relationship between the two.

The Validity Tests of the Estimated Model

Autocorrelation Test

Table 8 shows that the test's F-value is more than 0.05, requiring a p-value greater than 0.05. This may be seen as supporting the null hypothesis and demonstrating that there are no autocorrelation problems with the model.

Table 8: Breusch–Godfrey serial correlation LM test.

Statistic	Value	Test	Prob.
F-statistic	0.382634	Prob. F(2,24)	0.6861
Obs*R-squared	1.050628	Prob. Chi-Square(2)	0.5914

Note: Null hypothesis: no serial correlation at up to 2 lags. Source: created by the authors using the statistical program EViews 12.

Homogeneity of Variance Test

Table 9 shows that the test's p-value is greater than 0.05, thus we should accept the alternative hypothesis, which suggests that the model's equal variance assumption is satisfied.

Table 9: Residual diagnostic test of variance homogeneity.

Statistic	Value	Test	Prob.
F-statistic	0.382634	Prob. F(2,24)	0.6861
Obs*R-squared	1.050628	Prob. Chi-Square(2)	0.5914

Note: Values transcribed exactly as reported in the source manuscript. Source: created by the authors using the statistical program EViews 12.

Normality Test

Figure 2 shows that the residuals have a normal distribution since the Jarque-Bera test probability value is greater than 0.05.

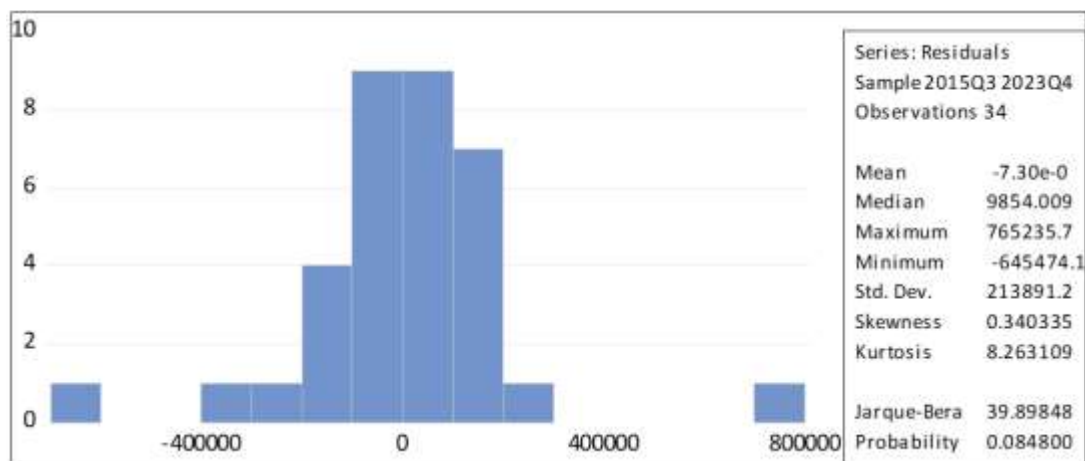


Figure 2: Results of Normal distribution test (Jarque–Bera)

Source: created by the authors using the statistical program EViews 12

Summary of Findings

The information clearly illustrates the relationship between the Index of Financial Inclusion and the Index of Monetary Policy (based on Money Index) so as to infer that Monetary Policy is one of the key factors contributing to the extent of Financial Inclusion in Iraq. Additionally, these results show that there are nearly 480 banks for every 10,000 people or alternatively put, an average number of banking branches per 10,000 people. These numbers are less than those in many other countries. Therefore, the large variation in the availability of banking services across Iraq is one of the factors affecting the ability of consumers to access their banking services effectively. Nevertheless, compared with other countries, the percentage of adult population having a bank account in Iraq has grown significantly during the last ten years and exceeded 2%, which is a result of the efforts made by the central bank to encourage citizens to open bank accounts and to implement a new process where employees receive their salaries directly into these accounts. Even though official incentives were provided to stimulate the growth of credit card usage and bank accounts, their growth rates were lower than expected. Hence, it may be inferred that there exist institutional barriers or obstacles within the society including political, social, cultural and education-related constraints leading to either lack of knowledge about financial issues or distrust towards the banking system. Additionally, since the credit to GDP ratio, which is referred to hereafter as the financial inclusion index, was at its peak (i.e., 13%) during the period under consideration; therefore, it indicates a minor contribution of credit to the economy of Iraq. It should be noted that such low contribution could be attributed to two main reasons: first, weak demand for credit by the private sector. Second, both political/security instability and reliance of Iraq's economy on rentier oil revenues hindered development of private sector and consequently reduced the need for credit.

DISCUSSION

This research supports other studies on the benefits of monetary policy on promoting financial inclusion, while highlighting the structural and geographical differences present within the unique context of Iraq's economy. This institutional environment has been cited as a reason for the differing levels of financial inclusion. The large size of the informal economy, along with the lack of confidence in Iraq's banking system, creates a liquidity constraint that limits access to credit (Heyert & Weill, 2025). For example, India has experienced greater success with their approach, such as the Jan Dhan initiative reaching over 80% account penetration versus 2% in Iraq. Additionally, although the Iraqi government has attempted to provide support to the industry, its efforts were unsuccessful. The use of fintech has increased the accessibility to credit, and thus increased the ability of monetary policy to achieve its goals (Mittal et al., 2023). The relationship between M1 and financial inclusion was found to be less robust for this country, as indicated by Demirgüç-Kunt et al. (2020); a 1% increase in M1 resulted in an approximate 0.5-0.7% increase in the financial inclusion index, whereas it was found to be approximately 0.87% for this study. A study conducted by Ozili et al. (2023) found a positive correlation between the level of inflation/growth rate of money supply and financial inclusion in well-established financial systems. However, they reported an inverse relationship between financial inclusion and financial stability in these same systems. Conversely, in underdeveloped financial systems, an increase in financial inclusion corresponds to an increase in financial stability and a reduction in inflation.

Three implications follow from the comparison. First, the magnitude of the M2 elasticity reported in Table 7 (2.5) substantially exceeds the M1 elasticity (0.87), indicating that inclusion in Iraq responds more strongly to the accumulation of quasi-money—term, savings and insurance deposits—than to transactional balances. This is consistent with the interpretation that deposit mobilization, rather than currency in circulation, is the operative channel through which monetary expansion translates into measurable inclusion. Second, the error correction coefficient of -0.147 in Table 6 implies an adjustment horizon of roughly seven quarters, which is slow relative to economies with deeper financial systems and suggests that structural frictions—branch concentration, cash preference, and limited trust—delay the transmission of monetary impulses into inclusion outcomes (Feghali et al., 2021; Wang & Luo, 2022). Third, the persistence of a low banking depth ratio despite rising account numbers indicates that access has expanded faster than usage, a divergence documented in other emerging markets and one that cautions against inferring financial deepening from account penetration alone (Sarpong & Nketiah-Amponsah, 2022; Van et al., 2021). Together these findings suggest that monetary instruments are necessary but not sufficient for inclusion in Iraq, and that digital delivery channels may offer a faster route to usage than continued branch expansion (Al-Smadi, 2023; Azmeh & Al-Raeei, 2024).

CONCLUSIONS

This study focuses on monitoring and assessing relationships among monetary policy tools and financial inclusion indicators in Iraq and how monetary policies could be used to enhance financial inclusion. The results indicate that monetary policy has a positive effect on financial inclusion indicators for the period under investigation. Furthermore, this research demonstrates that the monetary policy implemented by the Central Bank of Iraq positively affected the levels of financial inclusion, since it supports enhancing users' access to bank accounts, bank cards and insurance products as well as increasing the availability of new financial instruments. Banking density in Iraq is significantly lower than international standards. Approximately 480,000 people are serviced per bank branch. Banking penetration in Iraq is higher than the international standard of 2% and remained at those levels during the examination. However, rates of bank account growth and bank card usage have been at less-than-ideal levels. Therefore, the central bank encouraged opening a larger number of bank accounts. Consequently, banking depth was only able to reach about 13% of GDP, which reflects the small contribution of lending to GDP formation. There is a significant positive correlation between financial inclusion and narrow money supply (M1), i.e., if M1 increases by 1%, then the financial inclusion index also increases by 0.87%. In addition, there is a positive statistical relationship demonstrated with M2 at a 0.05 confidence level. For example, if M2 increases by 1%, the financial inclusion index increases by 2.5%. Thus, all evidence demonstrates that monetary policies contribute to increasing financial inclusion.

POLICY RECOMMENDATIONS

Financial inclusion is an extremely important area for policy making by the central bank because of their duty to provide basic banking services to all members of the population, including the millions who are currently unbanked. The laws regulating the provision of banking services also need to be reviewed to improve the speed at which individuals can obtain credit cards or open bank accounts. This will allow many additional people to use electronic banking facilities. Banking services should be made more accessible to the public through simplification of processes inside the Iraqi banking systems; this would be especially beneficial to customers living in rural areas. Financial inclusion has played a vital role in developing the banking sector and therefore should be one of the main goals of monetary policy.

LIMITATIONS AND FUTURE RESEARCH

The study is subject to limitations that qualify its conclusions. The analysis relies on aggregate quarterly series over a nine-year window, and the interpolation of annual indicators into quarterly observations may smooth genuine short-run variation. Banking depth, while the most reliable available proxy, captures only the depth dimension of a multidimensional construct, and no household-level usage data were available. Future

studies can investigate the effect that the finance sector has upon overall development after a participant is engaged in the finance sector for an extended period. Additionally, studies of the long-term effects of financial access on economic growth in Iraq would be beneficial. Studying how financial institutions vary in their contribution to economic growth will aid policy makers in understanding this area and provide them with policy options for promoting financial development. The connection between investment trends and economic growth should be studied as well. Studies focusing specifically on improving the level of gross fixed capital formation to achieve higher levels of output are warranted.

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