
MONETARY FINANCE ITS IMPACT ON DOMESTIC PUBLIC DEBT AND INFLATION FOR THE PERIOD (2015-2024)

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Abstract

The implementation of monetary finance policy commenced in Iraq during 2015, marked by the Central Bank of Iraq's (CBI) discounting of treasury transfers. In 2020, substantial pressure from the Ministry of Finance (MoF) led the CBI to convert short-term debt into long-term obligations; this arrangement has persisted until the time of writing, involving annual renewals and periodic partial repayments of the transfers. Consequently, the characteristics of the MF policy in Iraq became clearly defined. Furthermore, the government (MoF) determined both the payment schedule and the interest rate. Notably, the rate, initially around (7.5%) in 2015, was reduced to (2%) after 2020 following an MoF directive, illustrating fiscal dominance over the central bank's independence. This signifies that the monetary authority financed government expenditures at reduced costs, constituting MF proper. The significance of the study relates to the contribution of monetary financing in addressing crises impacting the Iraqi economy, such as fiscal deficits and high public debt levels. Conversely, monetary financing carries significant consequences, notably inflation, if not applied judiciously and targeted towards planned real investments. An NARDL model was employed to delineate the positive and negative effects among the selected variables. The study found that MF positively aided in monetizing public debt in Iraq. However, it concurrently led to an expansion of the country's money supply, causing inflation, particularly after 2020. This necessitates careful consideration when resorting to MF, limiting its use to exceptional times and for funding the investment component of the Iraqi public budget.

Keywords: Iraqi Economy, Monetary Financing, Domestic Public Debt, Inflation, NARDL Model.

Introduction

Problem: The crises of 2008 and 2020 exacerbated public debt in global economies, as responding required increased government expenditures. Amidst funding shortages, MF emerged as the ultimate recourse for governments seeking to restore their economies. Similarly, Iraq, solely reliant on oil revenues for budget financing, resorted to MF to counter the health and political crises affecting the country, leading to adverse consequences manifested in increased debt volume and inflation.

Hypothesis: An impact exists from MF on public debt and inflation in Iraq during the period (2015-2024).

Objective: To clarify the relationship between MF policy, as implemented by the CBI, and its effect on the exacerbation of domestic public debt and the rise of inflation levels in Iraq.

1. Impact of Monetary Financing on Public Debt and Inflation

1.1 Monetary Financing and its Relationship with Domestic Debt

MF is described as empowering the government to increase its financial resources within the public budget through the CB expanding the money supply (Batman, 2021). It also signifies the creation of funds by central banks to finance government spending, meaning the central bank directly purchases government debt (bonds) (Tober and Watt, 2015).

MF in Iraq is associated with three fundamental conditions: a gradual increase in the monetary base, an interest rate equal to or lower than the real market rate, and the central bank's limited ability to refuse MF requests.

1.1.1 Direct Impact on Debt

The central bank's direct purchase of government bonds leads to an increase in the domestic debt held by the CB. Therefore, MF is a mechanism that increases total domestic debt (as the government issues new debt), but the largest portion of this new debt is held within public sector accounts at the CB rather than by individuals.

1.1.2 Indirect Impact

MF is viewed as an alternative to borrowing from the public. Instead of competing with the private sector for savings and potentially raising interest rates, the government turns to the central bank. This might imply that the domestic debt held by individuals grows more slowly than it would have otherwise, but the total domestic debt (including that held by the central bank) increases as a result of the deficit itself.

1.2 MF and its Relationship with Inflation

This relationship is the most sensitive and significant, explained as follows:

1.2.1 Increase in Money Supply: MF directly leads to an increase in the monetary base (high-powered money issued by the central bank). When the government spends this new money, the broader money supply (M1, M2) in the economy expands, as deposits at commercial banks rise and currency in circulation increases.

1.2.2 Increase in Aggregate Demand: Government spending financed monetarily directly boosts aggregate demand in the economy. If the economy is operating near its full production capacity, this increase in demand will not be met by a parallel increase in the real supply of goods and services, leading to pressure for price increases and the emergence of demand-pull inflation.

1.2.3 Inflation Expectations: If individuals and businesses anticipate that MF will lead to future inflation, they may begin to adjust their behavior today (e.g., demanding higher wages, preemptively raising prices, reducing savings in the local currency). These expectations can

become self-fulfilling and lead to actual inflation even before the full effects of the increased money supply manifest. For this reason, MF is often considered a hazardous measure that can undermine CB credibility and trigger unanchored inflation expectations.

1.3 Relationship between Domestic Debt and Inflation under MF

Significantly high levels of domestic debt mean the government faces difficulty in servicing it (paying interest and principal). This might tempt it to pressure the central bank to resort to MF to cover these obligations or the ongoing deficit, returning us to the direct link between MF and inflation.

From another perspective, it could lead to Fiscal Dominance. If monetary policy (central bank decisions) becomes subordinate to fiscal policy needs (financing the government deficit), fiscal dominance is said to exist. In this case, the central bank might be compelled to keep interest rates low or resort to monetary financing to support the government, even if this contradicts the objective of price stability (combating inflation).

Finally, the impact of monetary financing on the economy leads to the erosion of the real value of debt. High inflation diminishes the real value of government debt (denominated in local currency at a fixed interest rate), which can be considered an indirect "inflation tax" on debt holders (including the public).

From the preceding points, we conclude that the improper (political) use of MF negatively affects the exacerbation of domestic debt, which subsequently reflects in rising inflation. Financing government expenditures through (monetary finance) implies an increase in domestic public debt, and if not matched by goods output in the real market, it leads to inflation.

2. Analysis of the Relationship between MF, Public Debt, and Inflation in Iraq

2.1 Analysis of the Debt Structure in Iraq

The Iraqi economy witnessed numerous crises and economic and geopolitical changes influencing its macroeconomic policies. Following the political regime change in 2003, the country's economic policy shifted, coinciding with the lifting of long-standing economic sanctions (thirteen years). Public revenues increased due to the resumption of oil exports, positively impacting the public budget and reducing the fiscal deficit gap. This led to dispensing with bonds as a deficit financing tool and the central bank gaining independence from government dominance under Law No. 56 of 2004. This law prohibited the CBI from lending to the government, directly or indirectly, while permitting it to conduct Open Market Operations (OMOs) with licensed banks, influencing the domestic public debt structure.

Domestic debt in Iraq is composed of a set of treasury transfers, considered a form of inflationary financing, with most of this debt owed to the banking system. The Iraqi government significantly relies on domestic debt to finance the growing public budget deficit. Numerous bonds and transfers have been issued by the government, increasing after 2004, as detailed in Table (1):

Table (1) Structure of Public Debt in Iraq for the Period (2004-2024)

Year	Domestic Debt (1)	Total Debt (2)	Ratio 1/2 %)(
2004	6,398	144,609	4.4
2005	6,594	128,272	5.1
2006	5,645	97,856	5.7
2007	5,194	91,503	5.6
2008	4,456	77,460	5.7
2009	8,504	75,280	11.3
2010	9,714	48,403	20.1
2011	7,294	49,392	14.7
2012	6,536	49,491	13.2
2013	4,078	48,422	8.4
2014	9,958	51,380	19.3
2015	32,142	78,933	40.7
2016	47,362	94,024	50.3
2017	47,749	97,248	49.1
2018	41,954	91,729	45.7
2019	38,331	70,236	54.5
2020	64,246	94,069	68.2
2021	69,912	96,462	72.4
2022	70,056	94,401	74.2
2023	73,255	92,543	79.1
2024	83,122	95,874	86.7

Source: Column (1) CBI, Economic Bulletins, Public Debt for various years. Column (2) Ministry of Finance, Public Debt Division, various years. *Percentages calculated by the researcher.

Table (1) reveals that domestic debt was divided into treasury transfers held by commercial banks and legacy debt owed to the Ministry of Finance (represented by the cash balance at the CB) during the 2004-2010 period. For the interval 2011-2014, the Directorate for the Care of Minors participated as a lender through Ministry of Finance treasury transfers. Subsequently, between 2015 and 2022, amidst the prevailing budget deficit (whether planned or actual) and the pressing requirement for military expenditure, the significance of transfers discounted by the CB became apparent, alongside bonds. This period also saw the prominent

involvement of financial institutions and the National Retirement Authority, with the Directorate for the Care of Minors playing a lesser role (Daghir et al., 2022, 270).

It is evident from Table (1) that domestic debt decreased during the period from 2004-2006 at an average annual growth rate of about 14.3%. It then declined again in 2007 and 2008, with the domestic debt volume reaching approximately (5.194) and (4.456) trillion dinars, respectively. This reduction is attributed to the improvement in sovereign revenues, particularly oil revenues, and the decrease in the public budget deficit size.

As for the period 2010-2013, the level of domestic debt steadily decreased, reaching about (4.078) trillion dinars in 2013. This was due to the rise in oil prices and the financial abundance experienced in public revenues, which positively impacted Iraq's public finance situation, as oil prices rose to about (\$107) per barrel in 2012, up from about (\$67) per barrel in 2011.

Domestic debt began to rise again during the period 2014-2017. The reason for this increase stems from the dual shock the Iraqi economy experienced starting mid-2014, represented by the fall in oil prices, coupled with the security conditions in vast areas of Iraq and the subsequent security operations involving increased military spending. This placed a heavy burden on the Iraqi public budget. Indeed, the Iraqi Ministry of Finance continued its fiscal policies from 2014 through 2020, financing the large deficit via domestic borrowing within the public budget, primarily through issuing bonds and discounting treasury transfers. The balance of domestic public debt during 2020 reached approximately (66.255) trillion dinars, increasing to about (69.912) trillion dinars in 2021, and then to about (70.056) trillion dinars in 2022. This was driven by increased government spending to finance electricity projects and security operation expenses, as well as the participation of state-owned banks in purchasing treasury transfers, leading to an expansion in the issuance of these transfers funded by the government budget deficit.

As for the years 2023 and 2024, domestic debt escalated, reaching record levels following an increase in public expenditures relative to public revenues, which led to an increased budget deficit financed through MF (discounting of treasury transfers).

Conversely, we observe that the ratio of domestic debt to total public debt gradually increased, especially after 2015. This date marks the beginning of monetary financing (the Central Bank of Iraq financing the budget deficit and public expenditures). This period witnessed an exacerbation of domestic debt, with its share rising from about (4.4%) in 2004 to approximately (86.7%) in 2024. This constitutes a dangerous indicator, warning that the Iraqi economy could enter a severe economic crisis, particularly given its reliance on a single resource (crude oil) for budget financing while importing nearly everything else.

2.2 Role of Monetary Financing in Public Debt and Inflation

The CBI adheres to a fixed exchange rate system within its monetary policy targets. This implies that the central bank targets inflation rates primarily through the exchange rate channel to maintain moderate price levels. This approach aims to bolster confidence in macroeconomic policies, particularly monetary policy, and achieve specific objectives, which may be social or economic in nature (Mahous & Daghir, 2016, 32).

The monetary authority succeeded in achieving price stability through several measures, foremost among them controlling inflation rates. Tackling inflation was deemed a

fundamental goal for achieving growth across economic sectors and activities. The CB managed to attain low inflation rates, reaching single decimal points in various years, a significant improvement from the near hyperinflationary conditions prevalent, especially in the initial years following the 2003 political change.

However, the alteration of the exchange rate at the end of 2020 triggered an upward inflationary response. Prices surged significantly, with inflation reaching approximately (3.2%). Besides the exchange rate adjustment, inflation also rose due to increased global food prices, which impacted the Iraqi economy via the imported inflation channel, as Iraq is a net importer of virtually all goods and services needed to satisfy domestic demand.

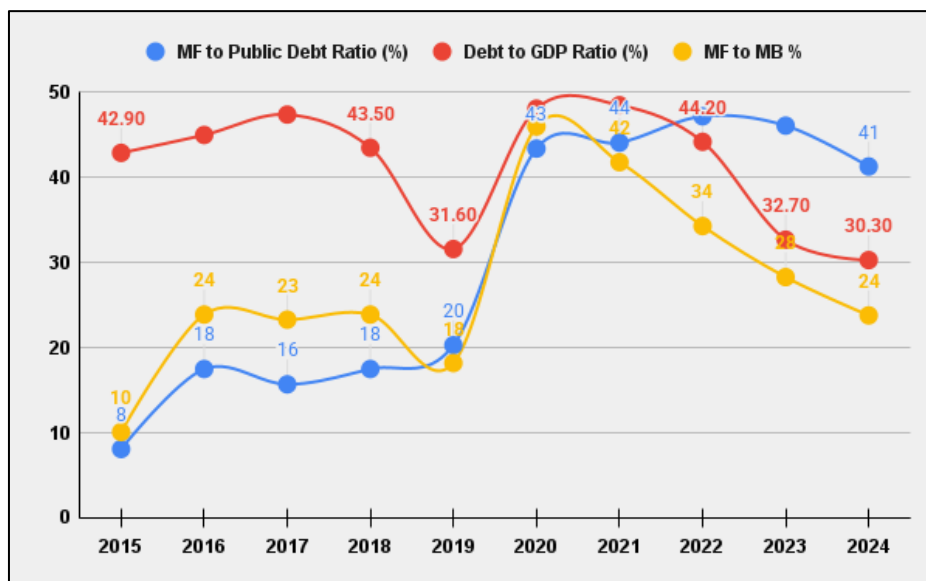
Furthermore, domestic public debt played a substantial role in fueling inflation through the monetary financing provided to support the public budget deficit, specifically the discounting of treasury transfers. This mechanism directly influenced the monetary base, which in turn affected the money supply (both narrow and broad), taking the money multiplier into account. All these factors ultimately reflected in elevated price levels and, consequently, rising inflation. Table (2) below illustrates the impact of MF on debt and inflation during the period (2015 – 2024):

Table (2) Impact of MF on Debt and Inflation for the Period (2015-2024)

Year	Discounted Treasury Transfers (1)	Initiative Amounts (2)	Total MF (1+2)	Total Public Debt	MF to Public Debt Ratio (%)	GDP	Debt to GDP Ratio (%)	Monetary Base (MB)	MF to MB %	Inflation Rate(%)
2015	6,225	0,198	6,423	78,933	8.1	183.616	42.9	63,048	10.1	2.3
2016	16,225	0,235	16,460	94,024	17.5	208.932	45.0	68,717	23.9	0.1
2017	15,125	0,185	15,310	97,248	15.7	205.130	47.4	65,690	23.3	0.2
2018	14,925	1,190	16,115	91,729	17.5	210.532	43.5	67,160	23.9	0.4
2019	14,125	0,143	14,268	70,236	20.3	222.141	31.6	78,253	18.2	0.9
2020	40,452	0,439	40,891	94,069	43.4	195.402	48.1	88,861	46.0	3.2
2021	42,452	3,622	42,452	96,462	44.1	198.490	48.5	110,137	41.8	6.4
2022	44,450	5,479	44,450	94,401	47.2	213.490	44.2	145,242	34.3	8.6
2023	42,632	---	42,632	92,543	46.1	282.491	32.7	150,245	28.3	3.5
2024	39,654	---	39,654	95,874	41.3	316.245	30.3	166,205	23.8	4.6

1. CBI, Official Statistical Website.
2. Iraqi Ministry of Planning, National Accounts Department, GDP data for the period (2004-2024).
3. Iraqi Ministry of Finance, Public Debt Division, various years, total domestic and external public debt.

Figure (1) Relationship between MF, Monetary Base, and Public Debt in Iraq



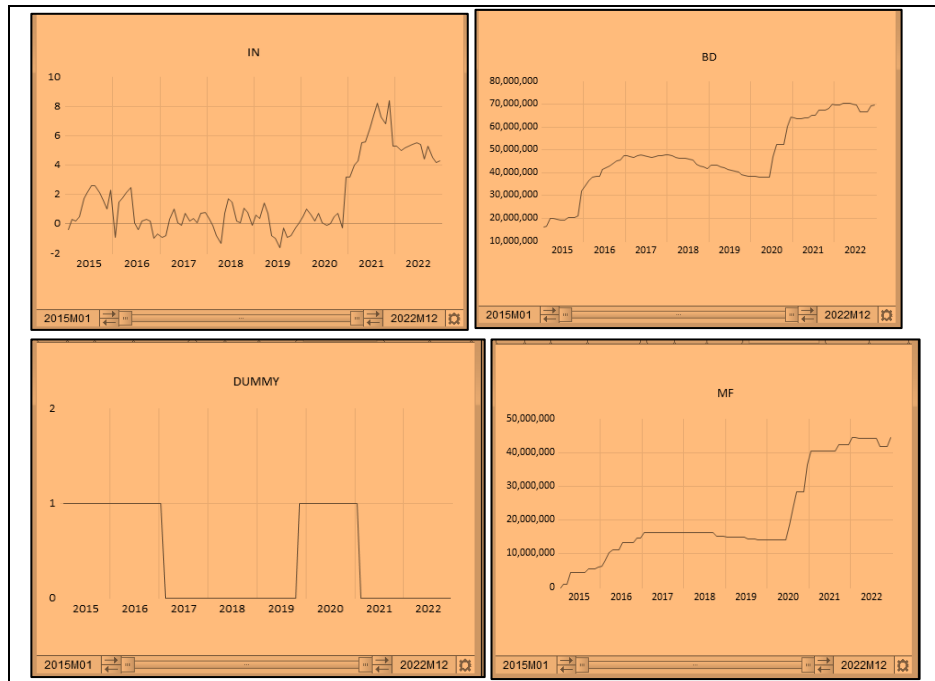
Observations from Table (2) and Figure (1) indicate a positive and largely interconnected relationship between monetary financing, public debt, and inflation. Accordingly, an increase in the value of MF resulted in an expansion of the monetary base (MB), consequently leading to higher inflation rates. It is noted that MF commenced in 2015 following the military crisis involving ISIS, alongside a severe recession that caused a significant decline in oil revenues, resulting in an actual public budget deficit.

This situation compelled the government to resort to MF, which amounted to approximately (6.423) trillion dinars at the time. Concurrently, the monetary base stood at around (63.048) trillion dinars, and public debt was approximately (78.933) trillion dinars. When the value of MF increased in 2022 to (49.929) trillion dinars, this corresponded with a rise in debt to about (94.401) trillion dinars and the monetary base to (145.242) trillion dinars. This signifies that the ratio of monetary financing to public debt climbed to (52.8%) in 2022, compared to only (8.1%) in 2015. Similarly, the ratio of MF to the monetary base ascended from (10.1%) in 2015 to approximately (34.3%) in 2022. This development contributed to the increase in the inflation rate from (2.3%) to about (8.6%).

3. Measuring the Impact of the Relationship between MF, Domestic Debt, and Inflation in Iraq

The researcher will utilize the NARDL model, integrating it with (dummy variables) representing the two crises (financial and health), to identify the long- and short-run dynamics. Before proceeding with the standard tests, it is essential to examine the research sample data. Generally, Figure (2) displays the graphical representations, from which the underlying relationships between the utilized variables can be discerned, as presented below:

Figure (2) Graphical Representation of the Relationship between MF, Public Debt, and Inflation



It is observed that graph shows an upward trend. We find a very strong correlation between Monetary Finance (MF) and Public Debt (BD), to which Inflation (IN) is added, especially after 2020. For the purpose of applying the econometric model to the variables, the functional relationship between MF as the independent variable was used – as it is the influencer whose effect we seek to test on the dependent variables, which are considered the result of the independent variable's impact on them.

3.1 Results of the Econometric Measurement of the Used Model

3.1.1 Unit Root Test

The initial step involves testing the time series stationarity of the study variables to identify whether they are stationary or non-stationary. Once the order of integration for each variable is established, the most suitable econometric model for the subsequent analysis is chosen.

Table (3) Unit Root Test (ADF)

Variable	Level			1 st Difference		
	Constant Only	Constant & Trend	Non	Constant Only	Constant & Trend	Non
	Prob	Prob.	Prob	Prob	Prob.	Prob.*
MF-I(I)	0.8703	0.7911	0.9543	0.0020	0.0000	0.0001
IN-I(I)	0.3502	0.3778	0.2015	0.0001	0.0000	0.0000
BD(I)	0.5209	0.6199	0.9522	0.0000	0.0000	0.0010

Based on Table (3), the stationarity of the time series for the research variables was determined. The time series for both the dependent and independent variables were not stationary at the level but achieved stationarity after taking the first differences.

3.1.2 Estimating the Used Model

The best model that aligns with these results is the NARDL model. It can be applied when there is a mixture of data stationary at the level with data stationary at the first difference, or when the stationarity order is similar, as follows:

Table (4) Results of Estimating the Used Model (NARDL)

Dependent Variable: D(MF) Method: ARDL Date: 07/01/25 Time: 8:41 Sample: 2015M01 2024M12 Included observations: 120 Dependent lags: 1 (Automatic) Automatic-lag dual non-linear regresses (0 max. lags): MF BD IN Static regresses: DUMMY Deterministics: Unrestricted constant and trend (Case 2) Model method : Akaike info criterion (AIC) Number of models evaluated : 1 Selected model : ARDL(1,0,0,0)				
Variable	Coefficient	Std. Error	t-statistic	Prob.*
MF(-1)	-0.632670	0.104502	-6.053077	0.0001
@CUMDP(BD)	-1.362690	0.517589	-2.632767	0.0102
@CUMDN(BD)	5.189346	1.341718	3.867687	0.0002
@CUMDP(IN)	2653690.	943705.7	2.811989	0.0066
@CUMDN(IN)	-910904.0	969203.3	-0.939848	0.3498
DUMMY	-4597552	2674485	-1.719042	0.0892
C	8497522	4008638	2.119803	0.0369
R -squared	0.817840	Mean dependent var	433115.1	
Adjusted R-squared	0.248488	S.D. dependnt var	9937954.	
S.E. of regresion	8615131.	Akaike info crierion	34.86512	
SUM squaed resid	6.38E+15	Schwarz criterion	35.10711	
Log likelihood	-1647.181	Hanan-Quinn criter	34.96353	
F-statistic	4.885370	Durbin-Watson	2,207499	
Prob(F-statistic)	0.000101			

Observations from Table (4), which presents the NARDL model test integrated with a dummy variable representing (120) months (covering the crises experienced by the Iraqi economy during (2015-2024), indicate that the estimated model is distinct and consistent with the relationship between monetary financing, domestic debt, and inflation. The coefficient of determination (R-squared) reached (0.817840), implying that the independent variable

(Monetary Finance) explains approximately (81.7%) of the variations occurring in the dependent variables (Domestic Debt and Inflation). The remaining (18.3%) of the variations are attributed to external factors not included in the model, such as global oil price volatility, the 2020 health crisis, and other factors negatively affecting oil revenues, in addition to imported inflation. Furthermore, the F-statistic amounted to (4.885370) with very high significance for the model (Prob = 0.000101). This signifies that the model is fully acceptable.

3.1.3 Cointegration Test for the Estimated Model

The Bound Test is applied as a first step to ascertain the existence or absence of a long-run equilibrium relationship among the research variables. The results of this test revealed that the calculated F-statistic reached (15.549510). This value is greater than the critical values at both the lower and upper bounds across the (1%, 5%, and 10%) significance levels, respectively. Consequently, we accept the alternative hypothesis and reject the null hypothesis, indicating the presence of a long-run cointegrating relationship between the independent variable (MF) and the dependent variables (Debt and Inflation), as detailed in Table (5).

Table (5) Bound Test

Test Statistic	Value	K
F-statistic	15.549522	6
Prob	I0 Bound	I1 Bound
%10	2.236	3.381
%5	2.627	3.864
%1	3.457	4.943

Based on the foregoing, the existence of a long-run equilibrium relationship between MF and the *dependent* variables (domestic debt and inflation) in Iraq is observed. As this test fulfills the necessary condition, verification of the sufficient condition, represented by the error correction mechanism (ECM) and its properties, which further confirms the long-run relationship between the variables, is consequently required.

3.2 Asymmetric Dynamic Cumulative Multiplier

The asymmetric dynamic cumulative multiplier illustrates the asymmetric dynamic effects of positive and negative changes in the independent variable on the dependent variable. It also helps determine when the impacts are symmetric versus asymmetric, and the time horizon over which asymmetry may manifest. Furthermore, the dynamic cumulative multiplier demonstrates the impact of a shock's evolution on the dependent variable and its associated outcomes. When a shock is introduced into the dynamic economic system, it can influence the dependent variable and subsequent outcomes over an extended period. The dynamic accumulation pathway reflects how this shock propagates over time and its persistent influence on the related results. Figure (3) illustrates the cumulative dynamic impact on the dependent variables (Domestic Debt and Inflation) resulting from a one-unit positive or negative shock to the independent variable, MF.

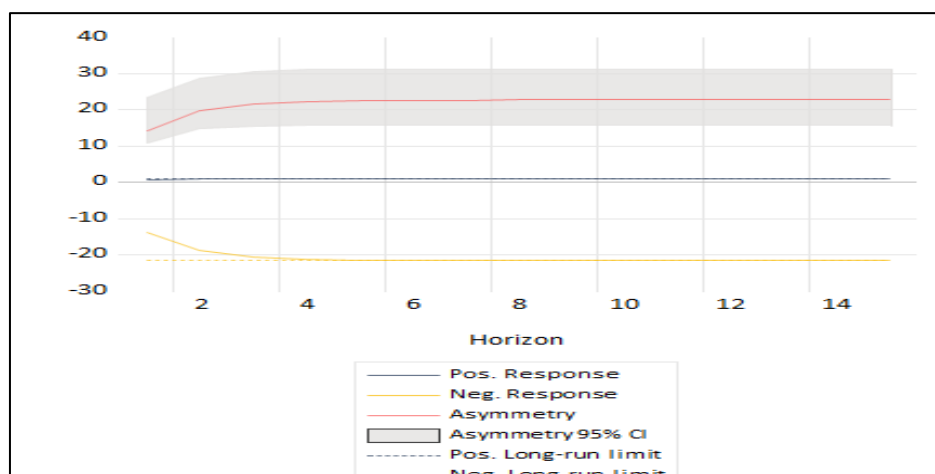


Figure (3) Dynamic Cumulative Multiplier of MF

Figure (3) clarifies the dynamic cumulative multiplier's impact concerning the linkage between MF, domestic debt, and inflation. The blue curve indicates the positive response degree of the *dependent variables* to positive variations in the *independent variable* (MF). Accordingly, a (1%) rise in MF leads to debt monetization/increase by approximately (4%) within a 120-month timeframe. As the response curve stayed above the zero line, this implies that MF exerted a positive influence on augmenting domestic debt over the entire study duration.

Conversely, the yellow curve demonstrates the response degree of the *dependent variables* to a negative shock in the *independent variable* MF. Given the curve's negative slope (below zero), this indicates that monetary financing's effect on inflation is significant during crisis periods. A (1%) decrease in MF corresponds to a (20%) reduction in inflation over the (120) months of the (2015-2024) period. This response was more pronounced compared to the positive change response, which remained relatively stable near the zero point. This suggests that the magnitude of the system's response to negative changes originating from MF is larger, falling within the (11%-22%) range.

Meanwhile, the red asymmetry curve, illustrating the asymmetric response pattern in the dependent variable stemming from positive and negative shocks/changes in the independent variable, remained within positive bounds. This confirms the asymmetry between positive and negative impacts within the model, with positive effects predominating regarding monetary financing's influence on domestic debt and inflation.

4. Conclusions and Recommendations

4.1 Conclusions

1. The hypothesis was substantiated; MF led to an improvement in the spending performance of the Iraqi public budget during the period (2015-2024). Concurrently, MF weakened the CBI capacity to target inflation. Furthermore, MF addressed the crises affecting the Iraqi economy and facilitated the monetization of the deficit and public debt throughout the study's duration.

2. While Law No. 56 of 2004 prohibits the CBI from directly financing the government, it permits the indirect monetization of the deficit and government public debt via discounted transfers, a practice observed during the 2015-2022 period.
3. The ratio of MF to the monetary base escalated from (10.1%) in 2015 to approximately (34.3%) in 2022. This surge contributed to the rise in the inflation rate from (2.3%) to about (8.6%) between 2015 and 2022. Similarly, the ratio of monetary financing to public debt increased to (52.8%) in 2022, compared to only (8.1%) in 2015.
4. The utilized model was formulated incorporating a dummy variable representing (120) months spanning the 2015-2024 period. The findings established a long-run equilibrium relationship between MF and the included variables (inflation and public debt). The coefficient of determination reached (81.7%), indicating that the independent variable (MF) accounts for approximately (81.7%) of the fluctuations in the dependent variables (Domestic Debt and Inflation). The remaining (18.3%) of variations are attributable to external factors (such as oil price volatility impacting revenues, and Iraq's import dependency making imported inflation a significant factor).

4.2 Recommendations

1. Economic rationale must rigorously guide the application of MF policy in Iraq. Its use, specifically through the discounted transfers mechanism, should be strictly confined to funding government *investment* expenditures to promote public debt sustainability and mitigate inflation levels.
2. The independence of the CBI, as outlined in its law, should be preserved. This entails granting it the authority to approve or deny MF requests, ensuring the Ministry of Finance resorts to this measure only based on thorough studies or plans designed to stimulate the nation's productive sectors.
3. Post-crisis monetary policies have evolved beyond their traditional role of solely pursuing economic stability. Consequently, updating monetary tools and strategies is crucial and beneficial during exceptional periods, but unjustified during normal conditions. Persisting with such measures in ordinary times will hinder the return to effective inflation targeting and complicate the control of government debts, which tend to rise even outside crises.
4. Fiscal policy orientations in the country require correction. MF should be reserved for exceptional circumstances. When utilized, it should preferably involve private banks rather than the CB, with the primary objective being the activation of non-oil sectors and a transition away from rentierism in economic performance.

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