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-RESEARCH ARTICLE-

Exchange Rate and Money Supply Shocks, Fiscal Balance, and External Stability in Iraq: Evidence from an SVAR Model

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─Abstract─

The study investigates the dynamic interdependence between Iraq's exchange rate policy and money supply, with particular emphasis on how their interactions affect internal and external economic equilibrium. Internal balance is represented by the net general budget, whereas the balance of payments serves as the indicator of external balance. Using annual observations spanning 2004–2024, the analysis employs two three-variable structural vector autoregressive models, identified through short-run recursive restrictions grounded in monetary theory and the institutional characteristics of a rentier economy. Before model estimation, the time-series properties and underlying relationships are examined through unit root, cointegration, causality, optimal lag selection and residual diagnostic tests. The findings establish that all variables are integrated of order one and exhibit cointegration. Bidirectional causal

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relationships are identified between the general budget and both monetary variables, as well as between the money supply and exchange rate. Conversely, causality involving the balance of payments operates exclusively from the money supply and exchange rate towards the external balance indicator. Both estimated models fulfil the stability requirement, with maximum characteristic root moduli of .845 and .873. Forecast error variance decomposition further reveals an increasing contribution from exchange rate and monetary fluctuations, with their respective shares reaching 17.82% and 13.71% at the tenth forecast horizon. The exchange rate demonstrates a comparatively greater influence on both internal and external balances, suggesting that Iraq's currency auction mechanism constitutes the principal adjustment channel, rather than monetary expansion operating independently.

Keywords: Exchange Rate Policy; Money Supply; Structural VAR; Internal Balance; Balance of Payments; Currency Auction; Iraq.

INTRODUCTION

Background

The relationship between exchange rate and money supply is not one-way but is a process of reinforcement. If additional money is printed in the domestic currency without the supply of foreign currency, it's necessary to print more of the domestic currency to get more foreign currency, which puts downward pressure on the domestic currency. On the other hand, changes in the exchange rate impact the appreciation or depreciation of foreign assets and foreign earnings in domestic currency and hence the monetary base. This interdependence becomes more significant in economies where the creation of money is mainly linked with foreign currency conversion. In these cases, the feedback mechanism is a basic aspect of monetary operations and not an adjustment. Thus, if the exchange rate, or the money supply is exogenously imposed, it would be incomplete to represent the underlying economic system.

The evolution of theory over the past few years has posed new challenges to single-equation approaches to the determination of exchange rates. Persistent differences between currency prices and macroeconomic fundamentals are now to be understood in the light of the combined effect of financial market imperfections and of disturbances within the financial market. The view is that monetary aggregates and exchange rates are not determined sequentially but rather are simultaneously determined in a general equilibrium setting (Itskhoki & Mukhin, 2021). Empirical evidence also suggests that the link between exchange rates and economic fundamentals is more apparent when differences in the composition of international asset holdings are taken into account (Lilley et al., 2022). Conditions governing funding-market liquidity also emerge as important determinants of currency movements (Engel & Wu, 2023). Although monetary policy continues to provide information relevant to forecasting nominal

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exchange rates, its transmission depends substantially on market expectations and risk premiums rather than a direct, mechanical correspondence between monetary quantities and prices (Eichenbaum et al., 2021). Taken together, these theoretical and empirical developments support an analytical framework capable of capturing simultaneous interactions among monetary and exchange rate variables.

This mechanism is institutionally different in resource-dependent rentier economies. In fact, when the government receives petroleum revenues in foreign currency, but spends public funds in its own currency, then the intermediation of the central bank is a necessary part of fiscal operations. This will lead to an expansion of the money supply in the form of conversion of foreign exchange into the local currency, apart from any deliberate increase in the money supply. These can be an important channel of transmission for resource revenue shocks to affect domestic liquidity and the real exchange rate (Bjørnland et al., 2019). Furthermore, international oil price changes have significant macroeconomic impacts across borders, especially on oil-exporting economies (Mohaddes & Raissi, 2019). The relationship between oil prices and currency valuations is not always one-way but rather features reciprocal and regime-dependent effects (Beckmann et al., 2020). As for the processes within Iraq, they take place under a well-defined system of foreign currency auctions. The Central Bank of Iraq not only sustains the administered nominal exchange rate but also removes the domestic liquidity that was created when petroleum receipts were converted into Iraqi dinars.

Institutional and monetary interactions have macroeconomic repercussions which can be seen in the development of the fiscal and external balances. The link between government budget outcomes and the balance of payments is linked by both national income accounting relationships, as well as behavioural responses, though the association of these links differs across the effectiveness of fiscal institutions (Afonso et al., 2022). The effects of exchange rate changes are mediated by several channels. One works by the inclusion of currency movements into the domestic prices, which, although its volume has decreased over the years, still has an economically significant impact in emerging and developing economies (Ha et al., 2020; Jašová, 2016). A second comes from the rules of international trade in invoicing. However, conventional expenditure switching reactions to exchange rate movements can be undermined in situations where transactions are mostly conducted in US dollars, which can hamper the anticipated adjustment in trade flows (Gopinath et al., 2020). Thus, for Iraq, the relative importance, direction and magnitude of these channels must be empirically specified, considering the endogenous channels of interaction between the exchange rate, money supply, government budget balance and balance of payments.

Iraq is a particularly appropriate empirical context for the analysis of these connections for several features. First, in terms of structural characteristics of external revenues, it has been maintained from 2004 onwards that the revenues of the state's foreign sector

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are concentrated around one main source, and that foreign exchange is converted almost exclusively by a single institution. This continuity gives a relatively steady institutional context over the time of observation. Second, the existence of the parallel market exchange rate and the official rate, officially set by the state, allows one to directly see and measure the pressures that are accommodated by the currency auction, which otherwise would only be approximately estimated by indicators that are difficult to observe. Third, the regular reporting of fiscal and monetary data from one source each year gives a common statistical platform for exploring the links between fiscal and monetary data. Taken together these features enable the study of the interaction between monetary conditions and exchange rate policy within Iraq's institutional setting without sacrificing institutional detail that can be lost when estimating such interactions across countries.

Statement of the Research Problem

Domestic expenditure is determined by fiscal operations along with this, the volume of Iraqi dinars that must be withdrawn from circulation and Iraq's monetary framework is organised around an exchange rate anchor supported by the foreign currency auction. Although monetary and fiscal policies are closely interdependent, they are often treated as distinct fields for policy measures, with the central bank being responsible for price stability and the treasury being responsible for resource allocation. This form of division ignores the interdependency between the instruments that support these policy functions. It raises the empirical question whether exchange rate policy and monetary supply in Iraq have a true two-way relationship and, crucially, which is the dominant influence on internal and external economic balances. The relative importance is directly related to the design of corrective measures. A strong exchange rate effect would point to an institutional reform of the currency auction as the most important constraint on macroeconomic adjustment, while stronger monetary effects would point to the course of fiscal disbursements as the primary constraint.

There are also multiple econometric issues that must be addressed in discussing this question. Single equation models are not sufficient for modeling relationships with simultaneous determination. Unrestricted VAR models are dynamic models that allow variables to move together, but the reduced form shocks are not necessarily economically meaningful structural shocks. This involves a matrix of identification and restrictions which are theoretically and institutionally justified. In the context of Iraq, these restrictions should be based on the real sequence and timing of monetary and fiscal transactions, not the conventions of identification without foundation in institutions. It is further complicated because there is a low number of observations to draw on for estimation. If data is available for a period of 20 years (2004 to 2024) the number of degrees of freedom for the model becomes much smaller, and hence the specification of the model and the identification of the structure of the model are especially relevant.

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The key difference between the two competing explanations is the policy mechanism that the adjustment is realised through. Another view focuses on the domestic money supply and argues that the behaviour of exchange rates would follow the effective control of dinar money supply. In the alternative, the foreign exchange supply mechanism is at the heart of adjustment implying conditions of foreign exchange provision affect monetary and fiscal outcomes. If the latter interpretation is correct, liquidity management outside of currency auction reform would deal with the effects of the imbalance, but not the causes. Such conflicting explanations therefore imply material difference in policy priorities. Identifying the dominant transmission channel is crucial for deciding which channel is a better fit for Iraq's actual monetary and fiscal dynamics.

Significance of the Study

This research is significant for theoretical, practical and policy aspects. Theoretically, it expands the use of a simultaneous-system approach to an economic environment in which the mutual dependence between changes in prices and money supply can be tracked back into specific institutional frameworks. So far, most structural studies have focused on economically diversified countries with advanced financial systems in which the changes in monetary base are mainly the result of conscious policy decisions. The institutional setting in Iraq is distinctly different because the creation of monetary base is much more heavily dependent on government spending and the government's resulting issuance of domestic liquidity from foreign currency income. This makes it impractical to study the interactions that determine monetary and exchange rate adjustment using frameworks that were designed for economies that have different monetary systems. The study analyzes whether any of the variables is playing the most important role in this unique system and offers institution-specific evidence that can be masked in cross-country analyses that combine differences in monetary and fiscal arrangements.

In terms of practice, the study suggests that the foreign currency auction in Iraq is affected by the practice in the operation and design of the institutions. If the explanation of the forecast error variance for both internal and external balances is greater due to exchange rate disturbances, the auction would have to be regarded as more than an approval process to meet foreign exchange demand. Rather, it would be a core macroeconomic policy tool, and the institutional framework, exchange rate pricing mechanism and access conditions to the tool would affect the performance of the fiscal policy and the results of the external sector. The emphasis of this interpretation is on the role of auction arrangements in determining the transmission of exchange rate disturbances throughout the economy. The current literature on conditions under which foreign exchange market intervention is effective provides a useful analytical framework to evaluate these institutional design issues (Fratzscher et al., 2019).

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The policy contribution relates to the coordination and assignment of duties to the fiscal and monetary authorities of Iraq. Statutory central bank independence does not always lead to effective control of monetary conditions, as government budget operations are important determinants of the creation of base money. Such an institutional set-up represents a degree of fiscal dominance, as monetary policies are limited by the needs of the public sector in terms of financing and spending (Bassetto, 2020). How much this setup contributes to inflationary pressures, however, relies on the ability of monetary institutions to channelize the fiscal demands or limit accommodation (Bordo & Levy, 2021). With this background, it is possible to estimate the relative importance of the effects of the exchange rate policy and monetary expansion on the internal and external imbalances and offer an empirical basis for distinguishing the effects of the two. It is fundamental to establishing institutional liability and distribution of responsibilities for macroeconomic stabilisation between the monetary and fiscal arms.

Research Objectives and Hypothesis

The primary objective of this study is to assess the predictive influence of exchange rate movements and changes in the money supply on Iraq's internal and external economic balances.

- To establish the statistical properties of the four series and the existence of long-run relationships among them (Tables 1, 2 and 4).
- To determine the direction of causality between the exchange rate, the money supply and each of the two balances (Tables 3 and 5).
- To specify and estimate two structural vector autoregressions and verify that both satisfy the stability and residual conditions required for valid inference (Tables 6–8 and 11).
- To quantify the contribution of exchange rate and money supply shocks to the forecast error variance of internal and external balance, and to compare their relative magnitudes (Tables 9, 10, 12 and 13; Figure 1).
- To derive policy implications for the design of the currency auction and for monetary–fiscal coordination (Section 6).

LITERATURE REVIEW

The Monetary Approach and its Reformulation

In the monetary interpretation of the determination of exchange rates, a currency value is seen as being caused by the relationship between the relative demand for and supply of domestic and foreign money. Therefore, a growth in domestic money supply, compared with foreign money, is likely to lead to a corresponding devaluation of the domestic currency in the long term. Although theoretically sound, it has proved not to be of great empirical validity when applied to shorter forecasting horizons and has sparked a long debate that has shaped the study of exchange rates for the last 40 years

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or so. Theoretical work that is more recent has reevaluated this discrepancy, adding financial market imperfections to general equilibrium analysis. This view does not reject the idea of monetary fundamentals as the explanation for the weak link between exchange rates and regular macroeconomic variables but sees it as stemming from financial market disturbances passed on via intermediaries with limited risk absorption ability. In such a case, monetary aggregates and exchange rates become endogenous variables that are determined simultaneously, and the weaker than expected empirical relationship between the two and macroeconomic fundamentals becomes more of a property of the market structure than an artifact of unfulfilled theoretical predictions (Itskhoki & Mukhin, 2021).

Empirical research offers three important foundations for this new view on the behaviour of the exchange rate.Empirical research has three important foundations for this new view of exchange rate behaviour. One relates to the measurement of the international financial position. The relation between the currency valuations and the economic fundamentals is significantly strengthened if composition and magnitude of cross-border asset holding are properly added to empirical specifications. This indicates that, for the most part, previously reported disconnects in the exchange rate were caused not through the absence of macroeconomic relationships but rather by the failure to consider relevant information on balance sheets (Lilley et al., 2022). A second development relates to the liquidity of funding markets, and their explanatory power. Empirical evidence suggests that capital inflows and capital outflows matter more than just the amount of money in circulation: currency changes depend more on the nature of money used in exchange and conversion than on the quantity of money (Engel & Wu, 2023). The third is the development of international portfolio allocation, specifically foreign investors' preference for safe and secure US dollar denominated assets. Past studies have documented that such demand can impact the value of the dollar via a unique financial channel that is separate from any direct link between real differences in monetary expansion in the two economies (Jiang et al., 2021). Nevertheless, monetary policy has a relevance to forecasting nominal exchange rates, but the relevance is only indirect, relating to people's expectations of the future path of monetary policy (Eichenbaum et al., 2021).

The progress made does not negate the importance of monetary aggregates in accounting for longer-term price trends. The link between continued monetary growth and general price variation is especially pertinent when money grows at a higher rate. Given the recent experience of inflation, it is also noteworthy that there has been a resurgence of interest in the use of monetary indicators as early warning tools for inflation in the recent past, a time when the analytical role of the monetary indicators was relatively underutilized (Greenwood & Hanke, 2022). This relationship can be particularly relevant in economies where the financial markets are relatively shallow and the transmission of interest rates is limited. In these institutional settings, where financial innovation has had a less pronounced impact on the traditional monetary

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relations, changes in the money supply usually reflect monetary activities fairly closely in the macroeconomic data.

Exchange Rate Pass-Through and the Transmission to Prices

The effect of exchange rate changes on macroeconomics rests on the transmission mechanism to the home prices. While exchange rate pass-through has declined in most of the world's economies, the decrease has been stronger in advanced economies and those with more robust inflation targeting policies. Empirical evidence suggests that domestic price elasticities to changes in the currency are still fairly elastic in emerging and developing economies (Jašová, 2016). Importantly, the strength of this transmission is not just a function of the external trade characteristics but is also a function of the monetary policy framework. For the same reason, inflation expectations being anchored by monetary authorities tend to create relatively low levels of price inflation when there is currency depreciation, which in turn fade away relatively quickly. Hence, exchange rate pass-through not only captures the trustworthiness of monetary institutions, but also the international trade structure (Ha et al., 2020). This is important for the interpretation of the empirical identification of exchange rate shocks because a similar nominal depreciation can have very different real economic impacts if it takes place in different monetary institutions.

An extra layer of exchange rate transmission is added by denomination of international transactions. If the dollar depreciates against other currencies in an economy where the majority of imports and exports are priced in dollars, then in that same economy the dollar prices of imports will rise about as much as the dollar depreciates against other currencies, and the dollar prices of exports will have only a minor effect on that dollar depreciation. The typical reason why currency depreciation would stimulate expenditure switching to domestic products, then, is significantly weakened. Rather, in the short term, higher import price creates a mainly contractionary effect (Gopinath et al., 2020). This mechanism is especially significant in petroleum exporting economies where export revenues are denominated in dollars and where there is a high dependence on imports issued in dollars. In such a case, exchange rate adjustments affect the fiscal results in the main because they have an effect on the domestic currency value of converted petroleum receipts but not on significant changes in the volume of international trade.

Internal and External Balance and Their Linkage

This association of fiscal results with external sector outcomes has been the subject of much empirical research, in part because the national accounting identity linking the two does not guarantee the same behavioural link between the two across economies. The literature on the twin deficit provides evidence of the significance of the institutional framework of public finances on the transmission of fiscal imbalances into

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external disequilibrium. Specifically, stronger fiscal institutions can help lessen the impact of fiscal deterioration on the external position, while weaker fiscal institutions tend to exacerbate the fiscal-external position link (Afonso et al., 2022). In the absence of strict fiscal discipline and the absence of effective budget constraints, external sector results are increasingly dependent on government's revenue and expenditure decisions with the external balance reflecting more narrowly the residual impact of fiscal activities. In addition to institutional quality, the macroeconomic effects of the fiscal policy are to a large extent dependent on the allocation of public resources. Estimates of the fiscal multiplier are quite sensitive to the type of expenditure and the general economic climate, so that the impact of government spending depends on the mix of spending and the macroeconomic context in which it takes place. There is some evidence to date that indicates that consumption-intensive expenditure regimes can deliver lasting improvements in economic output (Chodorow-Reich, 2019).

The longer-term sustainability of the related public indebtedness curve is also affected by the spread between the rates of interest and economic growth. This differential could be good for the sustainability of debt compared to traditional fiscal accounting, but this is not guaranteed in economies where revenues and growth are significantly linked to a commodity price shock (Blanchard, 2019). Political economy conditions that decrease incentives for reducing budgetary imbalances and for fiscal consolidation also continue to drive public debt accumulation (Yared, 2019). A further source of fiscal funding is the return that governments can earn from being able to borrow from domestic debt holders who are captive that is, those who must remain as lenders within the country. These hidden revenues are not fully reflected in the conventional fiscal measures and may lead to underestimate the fiscal pressures that are effectively imposed on monetary authorities (Reis, 2022).

Monetary–Fiscal Interaction and the Rentier Configuration

Fiscal dominance occurs when the government dictates the timing and level of expenditure and financing of government spending, without considering sufficiently the intertemporal budget constraint, meaning that the monetary authority must facilitate the financing needs resulting from the budget constraint. In such a situation, the determination of the general level of prices increasingly relies on fiscal conditions and less on the autonomous monetary decision. In theory, the relationship between the two policy instruments is formulated as a strategic relationship between the fiscal and monetary authorities, in which the commitment and willingness of the authorities to keep their policy stance determine the resulting macroeconomic equilibrium (Bassetto, 2020). Widening fiscal deficits also have historical precedent and inflationary pressures are especially likely when they are financed by the creation of money and when central banks are institutionally weak against inflationary pressures (Bordo & Levy, 2021). It is important that inflationary effects of fiscal disturbance do not fade after the first shock. The hypothesis of a persistent fiscal element of inflation could be maintained

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because economic agents can foresee the persistence of fiscal imbalances and lack of credible fiscal consolidation plans in the future (Bianchi et al., 2023).

The operational nature of these interactions is a distinctive feature of economies that rely on natural resource revenues as the main sources of revenue to the public sector. In this context, foreign currency revenues from export of commodities are paid to the government, and domestic expenditure must be translated into local currency by the central bank. As a result, government spending always goes hand in hand with monetary expansion as a policy outcome or an institutional and accounting one, whether it is a policy goal or not. This situation is a simultaneous transmission pathway that acts on both real exchange rates and domestic liquidity (Bjørnland et al., 2019). The impact is also exacerbated by international spillover effects of petroleum price changes, which may trigger significant macroeconomic rebalancing in oil exporting countries (Mohaddes & Raissi, 2019). Furthermore, empirical studies suggest that there are two-way causalities in the relationship between petroleum prices and exchange rate movements and that the estimated characteristics of the relationship vary between the different time periods and identification methods. This is because there is a lot of variation, which emphasizes the methodological value of acknowledging their simultaneous endogeneity, not assuming a given direction of impact (Beckmann et al., 2020).

The institutional implications of the fiscal and monetary linkages also include the autonomy and credibility of the central banks. In various jurisdictions, laws that have increased central bank autonomy have grown and so have laws that aim to enhance monetary policy transparency (Dincer, 2022). However, empirical results indicate that the impact of central bank independence on lowing inflation in developing countries might be stronger than previously believed, but this impact depends on the overall institutional and political framework (Garriga & Rodriguez, 2020). However, another view calls this notion of legal independence into question as a property of the institution. In this view, monetary autonomy is a compromise that can be changed when the effects of monetary policy on the distribution of resources involve central banks in political contests (Hartwell, 2019). he role of the monetary institution in the policy effectiveness is not only based on the formal legal definition of the monetary institution but also on its ability to maintain confidence among the public for future policy commitments. After its establishment, such credibility affects economic activity and expectations, but destroying it can have high prices which can only be recovered with great effort and time by restoring confidence in monetary policy (Coibion et al., 2022).

Monetary Transmission Where Financial Markets Are Thin

Monetary policy transmission is dependent on the level of institutionalization and sophistication of the financial system. Monetary impulses impact real economic activity via several inter-connected channels in advanced economies: via changes in policy

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interest rates, via movements along the yield curve, via bank credit conditions, via asset valuation, and via economic expectations. However, suitable financial markets, with the capacity to facilitate price discovery, financial intermediation and financial arbitrage, are required to operate these mechanisms. Thus their effectiveness is limited in developing economies with little trading volume in the securities markets and state-owned banks with limited interest rate sensitivity to lending, and large quantities of money in circulation outside of the formal banking sector. In such a situation, traditional monetary transmission instruments are partially useless or even non-existent. In particular, the power of interest rate changes to affect economic behaviour is reduced, making quantitative control and exchange rate policies the main tools used by monetary authorities to intervene in the economy.

The specification and interpretation of the present empirical analysis are important implications of these institutional constraints. As far as identification is concerned, the poor performance of interest rate transmission renders the implications of omitting the policy interest rate from the estimated system less significant. A central transmission mechanism in this setting is the direct conversion of foreign exchange to domestic currency, as opposed to in some other, more financially developed economies, where movements in interest rates are key to the transmission of monetary conditions to currency valuations. Since this process is modeled with the monetary and exchange rate variables included in the model, its inclusion is a reflection of the main institutional mechanism being studied. The strength of exchange rate transmission to domestic prices is closely related to the stability of inflation expectations from an interpretative standpoint. Empirical evidence suggests that the pass-through is higher when the expectations are not sufficiently anchored (Jašová, 2016). How effective this anchoring will be further hinges on monetary policy credibility, which is linked to the degree to which institutional frictions between fiscal and monetary policymakers are clearly defined and remain intact (Coibion et al., 2022). Hence, an economic system with a strong central bank currency intervention in foreign currency markets and with frequent purchases of foreign money using the money supply is likely to have a relatively strong exchange rate transmission mechanism and a relatively weak independent monetary transmission mechanism. These expected trends are consistent with the empirical results shown in Section 4.

However, the decreased effectiveness of traditional monetary transmission mechanisms does not mean that monetary aggregates do not have any analytical relevance. The link between monetary expansion and price developments may not have been loosened as much in less developed financial markets with relatively shallow financial systems as in more advanced financial markets, for which structural change has reduced the relationship between money holdings and nominal expenditure. In recent studies of inflationary periods, monetary aggregates have continued to play an important role as measures of underlying inflationary pressure (Greenwood & Hanke, 2022). This is not to say that the quantity theory of money offers a full explanation of the short-term

fluctuations in macroeconomics. Instead, it highlights that the presence of a less pronounced money–price relationship in these more financially advanced economies does not mean that monetary supply is not informative in economies with different financial and institutional environments.

Exchange Rate Regimes, Intervention and External Constraints

The US dollar continues to be the preferred nominal anchor in the economies of commodity exporters, as currencies of most commodity exporters are mostly dollar denominated. A review of historical classifications of international exchange rate arrangements shows that the dollar-centred currency bloc has grown in importance over the longer-term, not shrunk (Ilzetzki et al., 2019). An exchange rate anchor can be a desirable policy tool for countries with poor interest rate transmission because it sets a clear and easily visible nominal policy goal. It does involve, however, some macroeconomic compromises. In even those economies that have some degree of capital controls, exchange rate stabilisation exerts a significant adjustment pressure on foreign exchange reserves and limits the room to make independent policy moves (Obstfeld et al., 2019).

The impact of foreign exchange intervention is thus dependent upon the economic environment in which the intervention takes place. Empirical evidence indicates that the chances of intervention being successful in fulfilling its intended stabilisation goals are higher when exchange rate targets are consistent with underlying macroeconomic fundamentals than when the monetary authorities try to keep an increasingly misaligned currency valuation for a prolonged period (Fratzscher et al., 2019). These constraints in domestic policies are further strengthened by the developments in international financial markets. One aspect of particular relevance is that an appreciation of the US dollar is correlated with more restrictive financing conditions for borrowers and financial intermediaries relying on such funding, an extra external constraint on the effectiveness and autonomy of exchange rate management (Avdjiev et al., 2019).

Structural VAR Identification

While vector autoregression is flexible in addressing the problem of dynamically dependent variables that does not suggest any exclusion restriction, the reduced-form shocks contained in the disturbances are not individually economic shocks. Rather, these innovations have several underlying structural shocks, and further assumptions are required for a decomposition of their separate economic impacts. Thus, the validity of structural inference is dependent on the theoretical and institutional defensibility of the restrictions which are used to make the contemporaneous relationships. In line with this, methodological advances have increasingly focused on identification methods based on additional sources of information, such as changes in the variances of the disturbances as a function of the economic regime, or on the exclusion of the expected

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direction of responses or on the identification of an instrumental variable from an external source (Angelini et al., 2019). However, in some cases recursive identification is methodologically suitable where the institutions of economic transactions can provide a reasonable basis for ordering the variables. An important benefit of this is that it provides an accurate identification without making assumptions on the nature of the structural responses, which can be subject of debate. A major drawback, however, is that it is not possible to perform statistical testing of the identifying restrictions in an exactly identified specification. The credibility of the resulting structural shocks therefore needs to be demonstrated by means of the economic reasoning that is provided for the ordering chosen for the periods in question, rather than by the more traditional statistical validation. Explicit justification, therefore, should be provided for the use of recursive identification, and based on the institutional characteristics and the timing of the economy under investigation, other orderings may lead to other economic interpretations of the disturbances identified.

There is yet another dimension to structural analysis because of the interaction between the exchange rate mechanism and fiscal conditions. When government revenues are high and plentiful, it may still be relatively secure, but it may be increasingly vulnerable in times of low government revenues. The vulnerability is related to the foreign exchange reserves needed to keep the exchange rate commitment, which are affected by the same commodity price increases that affect the fiscal resources of the government. These two macroeconomic constraints should therefore not be considered independently of each other from a sustainability perspective of the exchange rate regime and of public finances. Instead, they represent a shared experience of commodity revenue volatility, and this volatility has an interdependent impact on fiscal capacity and the level of reserves. This mutual dependence is given theoretical and institutional rationale for studying the policy and fiscal consequences of exchange rate policies in the context of an integrated empirical system instead of as separate processes.

Synthesis and Research Gap

The existing literature and empirical evidence show that exchange rates and monetary aggregates can be simultaneously determined and that the impact of monetary changes on the macroeconomies is influenced by exchange rate pass-through and international trade invoicing arrangements. The literature also emphasizes the significance of fiscal institutional arrangements for the link between internal and external balances and confirms that monetary base creation in rentier economies has a strong correlation with the government's fiscal operations. These are important developments, but a crucial empirical question remains about how these two types of shocks affect internal and external imbalances in the context of a unified framework that is structurally identified and specifically targeted at a rentier economy. The existing literature on exchange rate determination has been mainly focused on more developed economies with more developed financial markets, while studies on the dynamics of fiscal policies in resource

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intensive economies have tended to focus on government spending without explicitly considering the endogenous dynamics of exchange rates. In addition, the foreign currency auction mechanism in Iraq, which is the institutional mechanism through which monetary expansion and exchange rate adjustments have a mutual interaction, has not been studied systematically under a structural modelling framework. This study aims to fill this gap by using an empirical methodology to examine the interdependence of the monetary, exchange rate and macroeconomic variables to weigh the relative contribution of exchange rate and monetary disturbances in the internal and external economic imbalances of Iraq.

METHODOLOGY

Data and Variables

The empirical investigation is based on annual time-series data in the period 2004–2024, and in addition it uses four macroeconomic indicators: the net general budget balance (BB) in millions of Iraqi dinars, the balance of payments (BP), the broad money (M2) in millions of Iraqi dinars, and the parallel market exchange rate (EX) in Iraqi dinars per United States dollar. This data was extracted from statistical publications released by Central Bank of Iraq and has been obtained from the Article IV documentation of the International Monetary Fund (IMF) (Central Asia Dept, 2024; Iraq, 2024). The use of the parallel market exchange rate, instead of the official rate, reflects its ability to reflect the actual foreign exchange market conditions. The parallel rate is determined by market forces and is not fixed or administered by the government and, therefore, offers a clue on the excess demand for foreign currency to be met through the auction mechanism, whereas the official exchange rate is fixed and administered by the government and often remains static for longer periods. EViews 12 has been used for all econometric calculations and statistical analysis related to this paper.

Model Specification

The empirical framework is based on two different three-variable systems because of the relatively short time series available for the annual data. The first one (Model 1) deals with dynamic relationships between the net general budget balance and broad money and exchange rate (BB, M2, EX). In Model 2, the budgetary variable is replaced by the balance of payments which results in a system of (BP, M2, EX). The two specifications are first specified in reduced-form VAR form, with each endogenous variable represented by its own past values as well as the past values of all other variables, and a vector of reduced-form disturbances with no serial correlation.

A transformation matrix, $S = A^{-1}B$, is then introduced to identify the structure, in the form of reduced-form innovations and economically interpretable disturbances. Identification is the process of normalising both diagonal coefficients of matrices A and

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Bε to unity and of restricting the coefficients of A to represent the assumed timings of contemporaneous interactions. For both models, there are six assumptions that are listed in matching sets. The restrictions assume that the money supply does not change immediately in response to an unexpected exchange rate change and that the exchange rate does not change immediately in response to an unexpected change in the money supply. They also assume that a change in the monetary instrument and/or a change in the exchange rate does not affect the government budget balance and/or the balance of payments during the same period, but during the following lagged periods.

The logic behind these restrictions has to do with the institutional order of monetary and fiscal transactions in Iraq. Foreign exchange auctions are held much more often than the fiscal year, which suggests that total budgetary results are not realized at the same time as they are affected by disturbances via the foreign exchange auction mechanism. Likewise, the amount of domestic currency for foreign exchange transactions in one year is determined largely by government disbursement plans in previous years. These operating properties give the economic justification for using a recursive identification structure which identifies each estimated system exactly. However, the imposing of contemporaneous restrictions is not sufficient to establish the validity of the restrictions in and of themselves, as discussed in Section 2.6. The economic interpretation of the recovered structural disturbances is thus dependent on institutional plausibility of the chosen variable ordering. For this reason, the identifying assumptions are explicitly stated and argued rather than simply assumed to be conventional modelling constraints without reference to the monetary and fiscal structure in Iraq.

Estimation Sequence

The six stages of estimation for the econometric analysis are followed to determine the statistical characteristics of the variables, the relationship between the variables in time and the reliability of the estimated systems. First, the distribution properties of the time series are analysed using descriptive statistics and the Jarque–Bera statistic. They are then tested for stationarity using the augmented Dickey–Fuller and Phillips–Perron unit root tests and the Schwarz information criterion is used to select the lag length. After determining the order of integration, Johansen cointegration procedure is used to examine the existence of long run equilibrium relationship between the variables. This direction of predictive causality is then analysed using Granger causality tests and the optimal autoregressive lag structure is selected using the Akaike information criterion. The derived specifications are approximate and diagnosed using the moduli of the roots of the characteristic polynomial as well as residual serial correlation, normality and heteroskedasticity. Last, the structural impulse response functions and forecast error variance decompositions are computed over a ten-year forecasting horizon to gauge the dynamic impacts and relative shares of the identified disturbances.

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Validation of the Estimation Output

All the numerical results reported were also checked systematically with their associated estimation output to guarantee consistency between the statistical evidence and its representation, before interpreting the results. The verification was carried out by three complementary checks. The first looked at the internal consistency of the descriptive statistics, specifically if the means and medians reported were within the range of minimum and maximum values seen within their respective series. The second evaluated how close the empirical results and their interpretation were to the underlying output, making sure that statements about the direction, size, and statistical significance of the estimated coefficients matched the actual output. The third analyzed the use of methodological decision rules, such as whether the specified optimal lag was the one with the smallest Akaike information criterion value as in the estimation procedure. The discrepancies found in this examination between the original narrative and the statistical results were four and the inconsistency was with respect to the use of measurement units in the descriptive statistics. All deviations are clearly reported in the note accompanying the table to the relevant table and (if relevant for the interpretation of results) also commented upon in the main text. In the analysis the numbers are kept exactly as they are produced by the econometric procedures. In areas where the discussion in the text was incorrect with respect to those estimates, the interpretation has been modified to align with the statistical evidence and the type of change indicated.

Methodological Limitations

Several methodological limitations need to be noted in the interpretation of empirical results, and they are accepted at the start of this paper so as to set boundaries for the reliability of the results. The first relates to the small sample size. The data set consists of 21 annual observations, but the lag structure means that the effective sample size is 19. As a result, a system of three equations with two lags will have less than 3 observations per estimated parameter in any one of the equations. This is limited information base reduces the accuracy of the parameters estimation, and consequently it makes the parameters estimation by the conventional asymptotic method necessarily approximate and results in relatively large confidence intervals around the estimated impulse response functions. The second restriction is related to the identification process. Both structural systems use recursive restrictions, as a result of which the economic interpretation of the recovered disturbances rely on the validity of the assumed contemporaneous relationships. The restrictions cannot be tested in a specification without knowing the number of individuals within it. So, the structural conclusions must be regarded as provisional, and not only because of estimated relationships, but also considering the institutional and theoretical arguments justifying the imposed ordering.

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The third restriction is in the field of numerical reliability in the process of structural estimation. The standard errors of both systems, which vary between about 10^{-7} and 10^{-9}, are very small, with z-statistics far higher than would be expected for systems of this kind and absolute log-likelihood values far greater than 10^{12}. The model may have reached a parameter space with values that are degenerate in terms of their numerical values, which is indicated by such extreme numerical outcomes. One possible reason is that the measurement scales for the variables are quite different, the variables are entered in levels and have an approximate seven order of magnitude difference. In such cases, the estimated structural coefficients can still serve as good clues as to the direction and relative strength of the underlying relationship. The standard errors that accompany the estimates are, however, not reliable indicators of the uncertainty of the estimates and should not be used as the basis for making statistical inferences.

RESULTS

Descriptive Statistics

The descriptive statistics presented in Table 1 reveal considerable variation in the distributional characteristics of the four macroeconomic series. For the net general budget balance, the observed values extend from a deficit of 12,882,754 million dinars to a surplus of 44,737,855 million dinars, indicating substantial fluctuations in Iraq's fiscal position over the study period.

Table 1: Descriptive Statistics for the Model Variables, 2004–2024

Statistic	Net General Budget (Million IQD)	Balance of Payments	Broad Money (M2)	Parallel Exchange Rate (IQD/USD)
Mean	8,858,370	−517.03	85,588,000[a]	1,310.77
Median	6,231,805	−4,374.50	89,512,000[a]	1,247.00
Minimum	−12,882,754	−18,650.40	12,254,000	1,182.00
Maximum	44,737,855	23,336.10	180,976,000	1,531.00
Jarque–Bera	1.0947	1.1992	0.8323	3.0948
p	(.5784)	(.5490)	(.6595)	(.2127)

Note: N = 21. [a] The source reported the mean and median of broad money as 85,588.00 and 89,512.00, values that lie outside the reported minimum and maximum by a factor of one thousand. Normality is not rejected for any series at the 5% level. Estimated with EViews 12.

The series' average is 8,858,370 million dinars, while the median is 6,231,805 million dinars. Since the mean is greater than the median, the data are skewed toward the larger values, reflecting a possible positive skewness with the presence of a few very high fiscal surpluses increasing the average value above the median. This is consistent with

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times of high oil prices, when surpluses in the budget were unusually large because of high petroleum revenues.

The descriptive evidence also shows that BP has experienced significant changes in Iraq's external position, ranging from −18,650.40 to 23,336.10 during the observation period. Despite the years of positive balances, its mean value of −517.03 indicates that the country had an external deficit, on average. There is also considerable variation in EX with a rate range of 1,182 - 1,531 dinars per United States dollar. The difference between these observations is about 29.5 per cent of the minimum rate recorded to indicate the range of exchange rates that can be observed within the sample. Further, the average rate at 1,310.77 is above the median rate of 1,247, indicating that a few years had many exchange rate observations compared to the rest of the years. For distributional normality, the Jarque–Bera test results are statistically not significant with p-values greater than the conventional 0.05 level, for all four variables. Therefore, the null hypothesis of normality can be accepted for all the series tested.

Order of Integration

The stationarity properties of the variables are examined in Table 2, which presents the unit root test results for both their level values and first differences. The findings provide consistent evidence that BB, BP and EX become stationary after first differencing, as both the augmented Dickey–Fuller and Phillips–Perron tests reject the unit root null hypothesis at the 5% significance level under both deterministic specifications, with all reported probabilities below .05. The results for M2, however, are less definitive. Although the first-differenced series achieves statistical significance under the augmented Dickey–Fuller specification incorporating an intercept ($p = .0475$), this conclusion is not supported when a deterministic trend is included ($p = .1564$). Likewise, the Phillips–Perron specification does not reject the unit root hypothesis as evidenced by $p = .5664$ and .1838 for the two specifications respectively. These differences suggest that the four variables do not have necessarily an unambiguous degree of uniformly integrated order one, and that the degree of the uniform integration of M2 is still dependent on the testing method and deterministic specification used. However, this uncertainty does not necessarily prevent the subsequent analysis of long-run relationships using Johansen's cointegration procedure Table 4 which can test if there are any equilibrium relationships between non-stationary variables. The mixed stationarity evidence for M2, however, also provides another qualification to interpreting the econometric results. Higher degrees of caution are needed when drawing inferences about monetary aggregates than for BB, BP and EX, respectively, for which the unit root tests give more consistent results.

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Table 2: Augmented Dickey–Fuller and Phillips–Perron Unit Root Tests

Variable	ADF Level Trend	ADF Level Intercept	ADF Δ Trend	ADF Δ Intercept	PP Level Trend	PP Level Intercept	PP Δ Trend	PP Δ Intercept
Net Fiscal Balance	.0058	.0023	.0008	.0001	.0001	.0066	.0000	.0000
Balance of Payments	.0407	.0206	.0370	.0047	.0220	.0205	.0001	.0000
Broad Money Supply	.0101	.8716	.1564	.0475	.7266	.9623	.5664	.1838
Parallel Exchange Rate	.8137	.6622	.0380	.0343	.8539	.5693	.0403	.0340

Note: Entries are probability values. Δ denotes the first difference. Lag length selected by the Schwarz criterion. Values in green identify first-difference specifications that fail to reject the unit root at the 5% level. Broad money is stationary in first differences only under the ADF test with intercept; the claim that all four series are stationary in first differences is therefore not supported for M2 and has been qualified in the text.

Bivariate Association

The pairwise correlation matrix presented in Table 3 indicates that the linear associations among the examined macroeconomic variables are generally weak to moderate, with no evidence of particularly strong unconditional relationships. The largest coefficient is observed between BP and M2 (r = .4334), suggesting a moderate positive association, while the relationship between BP and BB is comparatively weaker (r = .2928). Two aspects of these findings require clarification to ensure consistency between the statistical output and its interpretation. First, the correlation between EX and BB is positive rather than negative, as its estimated coefficient is r = .0882. Nevertheless, the coefficient is sufficiently close to zero to indicate an essentially negligible linear association, rather than a substantively meaningful positive relationship. Second, the only negative coefficient identified is that between M2 and BB (r = −.1371), whose small absolute magnitude likewise suggests little practical evidence of a linear bivariate relationship.

All the results taken together show that there is only a limited knowledge of the relation between Iraq's fiscal, monetary and external indicators through contemporaneous pairwise correlations. These weak unconditional associations do not stand alone as evidence for lagged or conditional effects but do support the existence of such effects that occur because of dynamic adjustment and interaction with other variables. This limitation of simple correlation analysis further emphasizes the methodological need to use a multivariate system that could test interdependencies between different time periods and identify the differences between conditional responses and unconditional statistical relations.

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Table 3: Pairwise Correlation Coefficients Between Model Variables

Variable Pair	r	Interpretation
Parallel exchange rate and net general budget	.0882	Negligible; no linear bivariate relationship
Broad money supply and net general budget	−.1371	Very weak negative
Balance of payments and net general budget	.2928	Weak to moderate positive
Balance of payments and broad money supply	.4334	Moderate positive

Note: The coefficient linking the parallel exchange rate to the net general budget is positive, not inverse as the original narrative stated; at .0882 it indicates the absence of a linear bivariate relationship.

Cointegration

The Johansen cointegration results presented in Table 4 provide evidence of long-run equilibrium relationships among the variables included in the empirical framework. Across all reported specifications, both the trace and maximum eigenvalue statistics exceed their respective critical values at the 5% significance level, with associated probability values consistently below .05. These findings support rejection of the null hypothesis of no cointegration, indicating that the examined macroeconomic series exhibit statistically identifiable long-run relationships despite their non-stationary behaviour. The strength of the statistical evidence nevertheless varies across the reported results.

Table 4: Johansen Cointegration Test Results

Variable	Trace Statistic	Critical Value (.05)	p	Maximum Eigenvalue	Critical Value (.05)	p
Net General Budget	160.9154	63.8761	.0000	72.4514	32.1183	.0000
Balance of Payments	88.4641	42.9153	.0000	43.6056	25.8232	.0001
Broad Money Supply	44.8585	25.8721	.0001	30.7689	19.3870	.0007
Parallel Exchange Rate	14.0897	12.5180	.0271	14.0897	12.5180	.0271

Note: The null hypothesis of no cointegrating relationship is rejected in every specification at the 5% level. The margin is narrowest for the parallel exchange rate.

The difference between calculated statistic and its critical value is the greatest for the BB statistic (160.92 and 63.88, respectively) representing the difference of about 2.5 times. The evidence related to EX is less convincing (but still statistically significant). It has a trace statistic of 14.09, which is somewhat higher than the corresponding critical value of 12.52, on the other hand the reported probability of .0271 is closer to the conventional significance threshold. Overall, the null hypothesis of no cointegration has been rejected, lending empirical support to retaining the variables in levels to estimate the dynamic system allowing for the analysis to be based on the underlying long-run relationships between the variables.

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Direction of Causality

The outcome of the Granger causality tests, as shown in Table 5, indicate a significant predictive interdependence between the analyzed macro-economic variables, in which 10 of the 12 directional hypotheses are statistically significant at the 5% level. Bidirectional causality is found between BB and BP, between BB and M2, and between BB and EX, suggesting that the past information of each variable is statistically significant for predicting the other variable. The relationship between monetary expansion and changes in the exchange rate is of special importance in the context of the central research hypothesis. The results indicate that M2 Granger-causes EX ($F = 5.4830$, $p = .0047$), while EX also Granger-causes M2 ($F = 5.0821$, $p = .0069$). This bidirectionality was confirmed statistically, with both directions giving direct evidence of a bi-directional predictive causality relationship between the two monetary variables, which backs the study's hypothesis that the money supply and exchange rate dynamics are not exclusively of a one-way adjustment mechanism, but are also bidirectional.

However, the relationship between variables is not always two-way for every pair of variables. Two directional relationships do not meet the standard 5% significance criteria but do meet the less stringent 10% criterion. The BP Granger-causes M2 hypothesis gives $p = .0813$ while the test from BP to EX gives $p = .0669$. Thus, the evidence is in favor of a unidirectional predictive relationship at the 5% significance level that M2 predicts BP, but not for the reverse direction. This is important, because it will help to determine the degree of interdependence inferred in the system. The fiscal balance is found to have reciprocal predictive relationships with the other variables, but the external balance does not have similar feedback to the monetary aggregates or to the exchange rate at the conventional level of significance.

Table 5: Granger Causality Test Results

Direction of Causality	F	p	Decision at 5%
Net General Budget → Balance of Payments	4.3117	.0389	Causality
Balance of Payments → Net General Budget	1.9862	.0371	Causality
Net General Budget → Broad Money Supply	8.3108	.0043	Causality
Broad Money Supply → Net General Budget	20.5101	.0000	Causality
Balance of Payments → Broad Money Supply	2.5350	.0813	No Causality (10% only)
Broad Money Supply → Balance of Payments	5.9199	.0031	Causality
Net General Budget → Parallel Exchange Rate	11.8305	.0000	Causality
Parallel Exchange Rate → Net General Budget	6.8667	.0011	Causality
Balance of Payments → Parallel Exchange Rate	3.3861	.0669	No Causality (10% only)
Parallel Exchange Rate → Balance of Payments	4.5484	.0339	Causality
Broad Money Supply → Parallel Exchange Rate	5.4830	.0047	Causality

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Direction of Causality	F	p	Decision at 5%
Parallel Exchange Rate → Broad Money Supply	5.0821	.0069	Causality

Lag Selection and System Stability

Accordingly, the earlier interpretation suggesting universal bidirectional causality among all variables has been revised to reflect the actual probability values and the more differentiated pattern of directional relationships established by the tests.

Table 6: VAR Lag Order Selection Criteria, Model 1 (Net General Budget, Broad Money, Exchange Rate)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−817.5655		6.53e+33	86.37532	86.52444	86.40055
1	−772.7993	70.68349*	1.54e+32	82.61045	83.20694*	82.71140
2	−760.2169	15.89358	1.16e+32*	82.23335*	83.27721	82.41002*

Note: Endogenous variables: BB, M2, EX. Exogenous variable: constant. Sample 2004–2024; 19 observations included. An asterisk denotes the lag order selected by each criterion. The Akaike criterion selects two lags, which is the order adopted; the Schwarz criterion selects one.

The lag-order selection criteria for the two estimated models are presented in Tables 6 and Table 7, respectively.

Table 7: VAR Lag Order Selection Criteria, Model 2 (Balance of Payments, Broad Money, Exchange Rate)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	−678.4678		2.86e+27	71.73345	71.88258	71.75869
1	−629.7595	76.90781*	4.46e+25*	67.55364*	68.15012*	67.65459*
2	−621.5613	10.35568	5.31e+25	67.63803	68.68188	67.81469

Note: Endogenous variables: BP, M2, EX. Exogenous variable: constant. Sample 2004–2024; 19 observations included. An asterisk denotes the lag order selected by each criterion. All criteria agree on one lag, which is the order adopted.

The Akaike information criterion (AIC) selects different optimal lag structures for the two empirical specifications. The minimum value of the criterion is 82.2334 in Model 1 at two lags, and in Model 2 at one lag. Both selections were independently reconfirmed by recalculation of the reported criterion values and were consistent with the previously described lag-selection procedure. However, the information criteria do not give a completely consistent recommendation for Model 1. Both the Hannan–Quinn criterion and final prediction error criterion prefer the inclusion of two lags while the Schwarz information criterion preferred the one-lag specification. The two-lag specification is selected according to Akaike information criterion with the predetermined methodological approach. This difference in selection criteria, however,

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adds a layer of uncertainty about how best to structure the dynamic, especially given the small number of annual observations on which to estimate. Thus, the results of this study must be viewed in light of the sensitivity of the lag to the criterion used.

The characteristic polynomial roots shown in Table 8 are used to evaluate the dynamic stability of the estimated systems. The largest roots are .8451 and .8726, for Models 1 and 2, respectively, with all other roots inside the unit circle. These results have verified both specifications meet the stability condition, which implies that disturbances cause convergent, not explosive, dynamic responses. However, the positions of the roots show differences in the adjustment properties of the two systems. For example, the maximum modulus for Model 2 is nearer to unity than Model 1, indicating that it takes longer to adjust after a disturbance and therefore the system with BP is more persistent. The fiscal specification, on the other hand, has relatively quick convergence to equilibrium. As a result, both models satisfy the stability condition required to make sense of the impulse response functions, but the external balance system has more persistent dynamic characteristics than the fiscal balance system.

Table 8: Roots of the Characteristic Polynomial for Both Models

Model 1: Root	Modulus	Model 2: Root	Modulus
0.817713 − 0.213519i	0.845130	0.782071 − 0.387067i	0.872614
0.817713 + 0.213519i	0.845130	0.782071 + 0.387067i	0.872614
0.161912 − 0.558295i	0.581299	0.830438	0.830438
0.161912 + 0.558295i	0.581299	−0.128662 − 0.374070i	0.395578
0.397325	0.397325	−0.128662 + 0.374070i	0.395578
−0.056148	0.056148	−0.027609	0.027609

Note: Model 1 endogenous variables: BB, M2, EX. Model 2 endogenous variables: BP, M2, EX. No root lies outside the unit circle in either model, so both satisfy the stability condition. The source output reports a lag specification of 1 to 2 for both models, although the criteria in Table 7 select one lag for Model 2.

Structural Estimates and Impulse Responses

The structural parameter estimates for the two specifications are presented in Tables 12 and 13, while their associated dynamic responses are illustrated in Figure 1. This estimated contemporaneous coefficient is .1131 in Model 1, suggesting a positive direct relationship between exchange rate changes and the level of monetary aggregates. The coefficient on EX is also positive and for one unit increase in the exchange rate the fiscal balance improved by .0207. This is in line with the theoretical mechanism that takes place in the oil rich economy of Iraq, where a rise in the value of the United States dollar in terms of the local currency leads to a corresponding rise in the value of oil revenue in local currency, thus lowering the deficit in government budgets. Matrix B has an estimated diagonal coefficient of 109,537.3 and a corresponding transition matrix of 524.2719 for a one-standard-deviation EX structural disturbance.

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The same general positive contemporaneous relationship between movements of the exchange rate and monetary aggregates is observed in the second specification, except that the estimated coefficient is larger at .2204. For the external balance equation, EX has a positive relationship with the structural coefficient of 2.21×10^{-6} that is relatively small numerically. The estimates of structural disturbance are 981,313.4 for BP, while the estimates of the transformation represented by transition matrix yield a BP response of 1,814,583 upon a one-standard-deviation shock to EX. The contemporaneous relationships in the fiscal and external balance specifications are of different magnitudes, as shown by these estimates. Impulse response functions in Figure 1are used to explore the adjustment process that follows the identified structural disturbances.

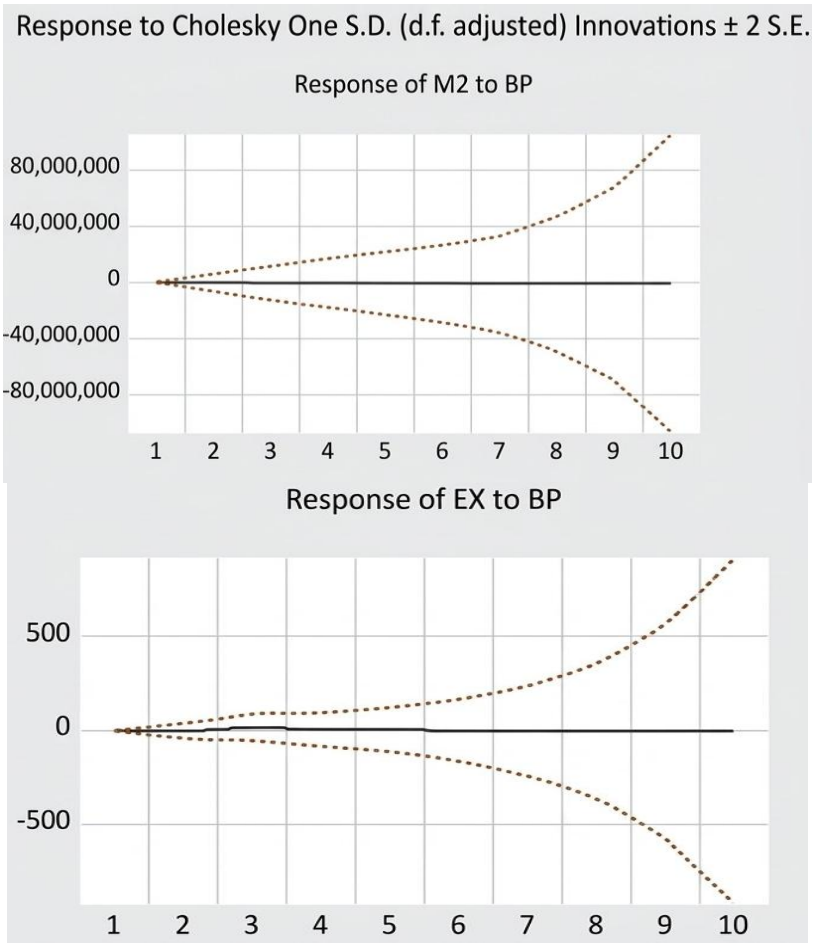


Figure 1: Estimated Impulse Response Functions of the Money Supply and the Exchange Rate to a Balance of Payments Innovation

Note: Responses to a one standard deviation innovation with two standard error bands, over a ten-period horizon. The output reproduced here is generated under a Cholesky decomposition with degrees of freedom adjustment, and covers the responses of M2 and EX to a balance of payments innovation.

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The interpretation of the impulse response functions presented in Figure 1 requires consideration of two important methodological and empirical issues. The first concerns the identification procedure underlying the plotted responses. Although Section 3.2 specifies a structural identification framework based on explicitly imposed contemporaneous restrictions, the responses displayed in Figure 1 were obtained using Cholesky decomposition. These approaches produce equivalent results only when the ordering adopted for the Cholesky decomposition corresponds to the ordering implied by the specified structural restrictions. Consequently, such equivalence cannot be presumed without verification, and the identification method used to generate the reported responses must be explicitly distinguished from the structural specification described in the methodology.

The second is the one that has more direct impact on the interpretation of the estimated dynamic effects. Both M2 and EX point responses are approximately zero for the entire forecasting horizon following an innovation in BP. Furthermore, the two-standard-error confidence bands for them are progressively widening and they contain the zero value at each of the time periods analyzed. The graphical evidence thus does not give statistical support to the distinction between either response and zero, so that neither of the estimated reactions of monetary aggregates or exchange rate to external balance disturbances are statistically significant within the reported horizon. This result is consistent with the Granger causality results reported in Table 5, which show that the predictive relationships from BP to M2 and EX were not significant at the conventional 5% level. Overall, these findings indicate that the evidence for feedback between external balance disturbances and the two monetary variables is not strong enough to establish those feedback. For this reason, interpretations with accurate numerical impacts on the responses must be qualified, because Figure 1 does not have enough statistical support to be confident about the impact of these responses.

Variance Decomposition

Table 9 Shows the forecast error variance decomposition results for 10 periods of forecasting. The results of the forecast error variance decomposition show that as the forecasting horizon lengthens, the sources of the fluctuations in the fiscal and external balances increase in a progressive manner. At the first period, innovations from each balance account for 100% of the variance in the forecast error for that period, which is a result of the recursive identification structure, and does not reflect the absence of interactions between the variables. Further out on the horizon, however, the uncertainty of the forecast due to disturbances associated with M2 and EX becomes progressively larger. In particular, the EX shocks contribution to the whole of the innovation increase from 9.93% to 17.82% in the tenth period, and the contribution of the M2 innovations increases from 3.96% to 13.71%. The developments are paralleled by decreases in the importance of disturbances from within the balances themselves. At the end of the tenth

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period the share of the variance of forecast errors explained by own shocks has fallen from 100% to 61.15% for BB and from 100% to 69.88% for BP.

Importantly, this pattern requires some revision to the interpretation given in the original manuscript. It is incorrect to represent the effects of the disturbances in the money supply and the exchange rate as falling toward their 10th-period levels as in the previous discussion. Study of the reported decomposition sequences, rather, shows that the share of these contributions grows monotonically with the forecasting horizon while the share of own innovations gradually decreases. The recognition of this difference is an important reinforcement of the empirical analysis of the results. The results obtained after the adjustments do not weaken the importance of monetary and exchange rate shocks over time, but instead have shown that the relative impact of these shocks on changes in BB and BP increases as we look forward in time. This set of explanatory significance offers more support to the central research hypothesis than the original interpretation, revealing that the dynamic importance of the decision on monetary expansion and exchange rate changes to the internal and external balances of Iraq is increasing rather than decreasing during the period studied.

Table 9: Forecast Error Variance Decomposition Over a Ten-Period Horizon (Percentage)

Period	S.E.	Own Shock, Net Budget	Own Shock, Balance of Payments	Exchange Rate Shock	Money Supply Shock
1	14,860,598	100.0000	100.0000	0.0000	0.0000
2	17,176,919	79.2374	98.8716	9.9333	3.9622
3	18,397,388	77.5434	74.2650	9.6990	6.1419
4	19,293,809	71.0701	72.6621	16.2853	6.6160
5	21,659,994	65.9721	72.7380	19.2486	9.1923
6	22,407,501	64.7214	72.0284	18.6801	10.7897
7	22,614,455	63.5441	70.9793	18.3408	11.4839
8	22,813,869	62.5768	70.2289	18.1242	12.2846
9	23,010,297	61.5953	70.1977	17.9661	13.2149
10	23,106,002	61.1546	69.8769	17.8200	13.7079

Note: Columns report the decomposition for the two models side by side; the own-shock columns belong to different systems and are not additive across a row. The contribution of the exchange rate and the money supply rises monotonically across the horizon while the own-shock shares fall.

Parameter Estimates and Residual Diagnostics

The parameter estimates presented in Table 10 provide further evidence of positive relationships between the two monetary instruments and Iraq's fiscal and external balances. Across both estimated equations, the coefficients associated with M2 and EX are positive, although their numerical magnitudes differ considerably. In the BB equation, the estimated coefficient for EX is 18.2753, compared with .7107 for M2. A similar pattern emerges in the BP specification, where the EX coefficient reaches

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11.0189, whereas the corresponding M2 coefficient is only .0008. Accordingly, the unstandardised point estimates indicate a substantially larger numerical coefficient for EX in both systems, exceeding that of M2 by a factor of approximately 26 in the fiscal equation and by four orders of magnitude in the external balance equation.

The differences, however, are not to be interpreted as necessarily implying proportionately larger economic effects, as they are measured in different units and there has been no standardisation of the estimated coefficients. The relative ordering of the coefficients, however, is like the forecast error variance decomposition reported at the bottom of Table 9, which shows that the variance of the forecast error increases more from EX innovations than from M2 disturbances across the forecasting horizon. The autoregressive parameters estimated also give information on the adjusting properties of the systems. In particular, the sign on the lagged dependent variables is negative for both equations (namely, −.3500 for BB and −.1128 for BP) indicating that there is a tendency for mean reversion after deviations in the prior period. On the other hand, the positive own lags coefficients of the monetary instruments suggest persistence in the instruments' dynamic behaviour. When combined, both these estimates indicate a tendency towards corrective adjustment in the fiscal and external balances, while fluctuations in the monetary instruments show a certain continuity of time.

Table 10: Estimated VAR Parameters for Both Models

Regressor	Model 1: Net General Budget	Direction	Model 2: Balance of Payments	Direction
Exchange Rate	18.2753	Positive	11.0189	Positive
Money Supply	0.7107	Positive	0.0008	Positive
Dependent Variable, Lagged	−0.3500	Negative	−0.1128	Negative
Constant	−0.0298	Neutral	−0.3643	Neutral
Effect of the Balance on the Exchange Rate	−8.3539	Negative	1.4249	Positive
Effect of the Balance on the Money Supply	−0.0708	Negative	−4.3470	Negative
Own Lag of the Instrument	0.8882[a]	Positive	1.6099[b]	Positive

Note: [a] Lagged exchange rate in the exchange rate equation. [b] Lagged money supply in the money supply equation.

The adequacy of the estimated specifications is further examined through the residual diagnostic tests presented in Table 11.

Table 11: Residual Diagnostic Tests for Both Models

Diagnostic	Model 1: p	Model 1: Result	Model 2: p	Model 2: Result
Serial Correlation	.3907	Not Detected	.2210	Not Detected
Non-Normality of Residuals	.5904	Not Detected	.3076	Not Detected
Heteroskedasticity	.4513	Not Detected	.5550	Not Detected

Note: The null hypothesis of no misspecification is retained in every case, since all probabilities exceed .05.

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The residual diagnostic results provide no statistically significant evidence of serial correlation, departures from normality or heteroskedasticity in either estimated specification. Across the six diagnostic tests, all reported probability values exceed the conventional .05 significance threshold. Consequently, the relevant null hypotheses cannot be rejected, indicating that neither model exhibits detectable violations of the examined residual assumptions at the 5% significance level. These findings support the adequacy of both specifications with respect to the diagnostic properties assessed, although the absence of statistically significant test results does not conclusively establish that the models are free from misspecification.

Table 12: Structural VAR Estimates, Model 1 (Net General Budget, Broad Money, Exchange Rate)

Coefficient	Estimate	Std. error	z	p
C(1)	0.113142			
C(2)	−0.002446	4.25e−09	−575,220.6	.0000
C(3)	0.020681	4.14e−08	499,842.2	.0000
C(4)	109,537.3	0.003848	28,465,927	.0000
C(5)	2.717113	1.26e−07	21,530,947	.0000
C(6)	3.419672	4.31e−06	792,933.1	.0000
Estimated S matrix, budget response	524.2719			

Note: Sample adjusted to 2006–2024; 19 observations. Maximum likelihood via Newton–Raphson; convergence after 64 iterations; the system is just-identified. Log likelihood -7.74×10^{13}.

The standard errors and z-statistics reported in Table 12 are unsuitable for statistical inference. Standard errors approaching 10^{-9}, accompanied by z-statistics reaching hundreds of thousands, suggest numerical degeneracy at the estimated optimum. This problem is an expected consequence of estimating the model using variables in levels whose measurement scales differ by seven orders of magnitude. Nevertheless, the point estimates retain interpretative value regarding the direction and relative magnitude of the estimated relationships. Further details are provided in Section 3.5. Table 13 presents the estimates based on a sample adjusted to 2006–2024, comprising 19 observations.

Table 13: Structural VAR Estimates, Model 2 (Balance of Payments, Broad Money, Exchange Rate)

Coefficient	Estimate	Std. error	z	p
C(1)	0.220401			
C(2)	−1.849136	2.30e−07	−8,048,614	.0000
C(3)	2.21e−06			
C(4)	981,313.4			
C(5)	9.262495	4.04e−07	22,919,707	.0000
C(6)	10.66877			
Estimated S matrix, balance of payments response	1,814,583			

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DISCUSSION

The Reciprocal Relationship is Established

The empirical evidence meets the criteria set forth in Section 1.4 to support the study's main hypothesis. The Granger causality tests at the 5% level of significance provide evidence of reciprocal predictive relationships among the variables M2 and EX, and the forecast error variance decomposition indicates that the share of both instruments in the forecast of BB and BP grows over time as the forecasting horizon expands. This mutual link is not just the result of the model specification adopted, but the institutional features of Iraq's monetary system. The exchange of oil revenues into dinars expands the monetary base which in turn creates demand for foreign currencies via the auction process. The dollars that are provided in order to meet this demand, in turn, reduce liquidity in the dinar market and affect the exchange rate. M2 and EX are then variables of the annual monetary cycle, which influence one another. In this interpretation, monetary aggregates and exchange rates are viewed as simultaneously determined economic variables in line with the general equilibrium view (Itskhoki & Mukhin, 2021).

The relative importance of these instruments is further reflected in the parameter estimates presented in Table 10 and the variance decomposition results reported in Table 9, Higher transmission coefficients for EX than M2 with respect to internal and external balances, respectively, are both suggested. This difference is explained by the economy of Iraq. The prevailing rate of conversion determines the domestic currency value of the government's main revenue stream because the oil revenues are received in dollars while government spending is made in dinars. Thus, changes in the exchange rate will impact the fiscal position via an immediate accounting mechanism, without the need for any subsequent behavioural adjustments. M2 disturbances, on the other hand, impact the balances via changes in aggregate demand, domestic prices and import expenditure, and thus have a comparatively longer and weaker transmission. In this context, EX mainly serves as a parameter to measure the monetary worth of foreign currency receipts, not as a relative price that mainly affects the volume of international trade. This interpretation is in line with literature which argues that if the export and import bills are largely denominated in dollars, the ‘expenditure switching' mechanism of the international transmission of the exchange rate is significantly weakened and valuation effects become more significant (Gopinath et al., 2020).

The Asymmetry of the External Balance

The lack of statistically significant Granger causality from BP to M2 and EX at the 5% level is an economically significant result, and not a bad statistical result. It suggests that, although the external balance responds to monetary and exchange rate policies, changes in the external position do not generate corresponding feedback towards these

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instruments. With an endogenous policy adjustment mechanism, a deterioration in BP would automatically trigger a change in the exchange rate or in liquidity supplies. In the absence of such feedback, it means that the foreign currency auction system might have been geared towards setting a nominal target, rather than towards responding to external balance conditions. This interpretation is consistent with the impulse responses in Figure 1, where the estimated impulse responses do not show noticeable changes and are statistically close to zero. Studies of foreign exchange intervention have already suggested that a deviation from the fundamentals is ultimately not sustainable, since the effectiveness of intervention is contingent on the prevailing fundamentals (Fratzscher et al., 2019). Similarly, the monetary trilemma framework identifies the sacrifice of monetary policy autonomy as an inherent consequence of this exchange rate arrangement (Obstfeld et al., 2019).

Implications for the Monetary–Fiscal Boundary

The central role of the fiscal balance in the estimated system is reflected in the statistically significant bidirectionality of the Granger causality between BB and both of the two monetary instruments in turn, with all four directionality tests being significant at the 5% level. When these results are interpreted in the light of the higher influence found with EX, the results indicate that fiscal expenditures have a significant impact on monetary conditions, whereas the central bank's key policy instrument has a more direct impact on the government budget. This institutional setting is similar to the formal definition of fiscal dominance (Bassetto, 2020), but with a different channel than the classic one of central bank buying of government bonds. In Iraq, the relationship is mainly through the foreign-asset side of the central bank balance sheet. The potential for inflationary pressures from this configuration depends on the capacity of monetary institutions to bear the pressures for accommodation (Bordo & Levy, 2021). However, maintaining that institutional capacity requires credibility, which may progressively weaken when the distinction between fiscal and monetary responsibilities becomes less clearly defined (Coibion et al., 2022). Moreover, existing evidence indicates that statutory central bank independence does not necessarily translate into effective monetary autonomy in practice (Garriga & Rodriguez, 2020; Hartwell, 2019).

Reliability of the Structural Estimates

Notwithstanding the aforementioned shortcomings in the numerical estimates, and despite the inclusion of a number of potential additional factors, the study's main qualitative conclusions regarding reciprocal causality and the asymmetric reaction of the external balance are validated by the Granger causality results, forecast error variance decomposition and the signs of the estimated coefficients. An uncertainty is, however, greater about the exact size of the estimates of structures. The point responses in Section 4.7 are therefore only intended to indicate direction and relative magnitude but not as a reliable quantitative measure. The most useful extension of this analysis

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would then be to reestimate the models in the context of the logarithmic transformation or using variables measured as ratios to GDP. This is a respecification of the numerical conditioning problem along with the existing framework of structural identification.

CONCLUSION, RECOMMENDATIONS AND IMPLICATIONS

Conclusion

The investigation examined the reciprocal relationship between monetary expansion and exchange rate policy in Iraq, together with its implications for internal and external economic balances. The empirical evidence satisfies all three conditions established for evaluating the central hypothesis. First, the Granger causality results confirm bidirectional predictive relationships between M2 and EX, with significance levels of $p = .0047$ and $p = .0069$. Second, disturbances originating from both instruments produce responses in BB and BP. Third, their contributions to forecast error variance increase throughout the forecasting horizon, reaching 17.82% for EX and 13.71% for M2 by the tenth period, while the proportions attributable to own innovations decline to 61.15% and 69.88%, respectively. Both estimated systems exhibit cointegration and dynamic stability, with residual diagnostic tests revealing no statistically significant evidence of misspecification. Furthermore, EX emerges as the dominant instrument in both equations, whereas BP responds to disturbances in both monetary variables without generating statistically significant reverse feedback at conventional significance thresholds.

Recommendations

The foreign currency auction should be recognised as an instrument of macroeconomic policy rather than merely a mechanism for clearing foreign exchange transactions. Given the dominant contribution of exchange rate disturbances to fluctuations in both balances, decisions concerning auction pricing and participation eligibility should explicitly consider their fiscal and external implications. These consequences should also be incorporated into the corresponding policy reports. External balance considerations should be formally integrated into the policy reaction function. The absence of feedback from BP suggests that external sector developments have not influenced auction operations. Establishing an explicit benchmark for reserve adequacy would introduce the external discipline currently missing from the policy framework.

A clearer institutional distinction is required between the fiscal conversion of oil revenues and the conduct of monetary operations. As EX primarily determines the domestic currency value of oil receipts, foreign exchange supplied to the market should follow a publicly disclosed allocation rule rather than being determined residually by government budget disbursements. Before the estimated structural magnitudes are used to guide policy decisions, the system should be re-estimated using transformed variables. As discussed in Section 3.5, numerical conditioning difficulties compromise

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the precision of the structural coefficients, although their estimated signs remain informative.

Implications

From a theoretical perspective, the principal role of the exchange rate in a rentier economy is to determine the fiscal value of foreign currency revenues rather than to regulate trade volumes through relative price adjustments. Consequently, theoretical models that emphasise expenditure switching incorrectly specify the underlying transmission mechanism. In policy terms, measures targeting monetary aggregates are likely to exert limited influence over either the internal or external balance as long as the foreign currency auction remains the principal channel of adjustment. Methodologically, the identification restrictions applied to such economies should reflect the institutional timing and operational frequency of policy instruments rather than rely on conventional modelling assumptions.

LIMITATIONS AND FUTURE RESEARCH

The conclusions need to be understood in light of the methodological limitations outlined in Section 3.5, which include the possibility of an effective sample of only nineteen observations, the use of a just-identified recursive specification with untestable restrictions, and the fact that the structural standard errors are not appropriate for statistical analysis. The above restrictions point to three avenues of further research. The numerical conditioning problem can be solved by first converting the variables into log form and/or taking ratios to GDP. Second, while the observations might typically be quarterly or monthly, they would also be much larger than would be the case with recursive ordering and would allow for the use of sign-restricted identification methods or heteroscedasticity-based identification methods, both of which are favored in the methodological literature. Third, the introduction of oil prices and foreign reserves into the estimated system would allow to separate the effect of external shocks from the policy reaction to them, which is not possible in the current three-variable specification.

REFERENCES

Afonso, A., Huart, F., Tovar Jalles, J., & Stanek, P. (2022). Twin deficits revisited: A role for fiscal institutions? *Journal of International Money and Finance*, *121*, 102506. https://doi.org/10.1016/j.jimonfin.2021.102506

Angelini, G., Bacchiocchi, E., Caggiano, G., & Fanelli, L. (2019). Uncertainty across volatility regimes. *Journal of Applied Econometrics*, *34*(3), 437-455. https://doi.org/10.1002/jae.2672

Avdjiev, S., Du, W., Koch, C., & Shin, H. S. (2019). The Dollar, Bank Leverage, and Deviations from Covered Interest Parity. *American Economic Review: Insights*, *1*(2), 193-208. https://doi.org/10.1257/aeri.20180322

Bassetto, M., & Sargent, T. J. . (2020). Shotgun wedding: Fiscal and monetary policy. *Annual Review of Economics*, *12*, 659–690. https://doi.org/10.1146/annurev-economics-091319-050022

Beckmann, J., Czudaj, R. L., & Arora, V. (2020). The relationship between oil prices and exchange rates: Revisiting theory and evidence. *Energy Economics*, *88*, 104772. https://doi.org/10.1016/j.eneco.2020.104772

Bianchi, F., Faccini, R., & Melosi, L. (2023). A Fiscal Theory of Persistent Inflation. *The Quarterly Journal of Economics*, *138*(4), 2127-2179. https://doi.org/10.1093/qje/qjad027

Bjørnland, H. C., Thorsrud, L. A., & Torvik, R. (2019). Dutch disease dynamics reconsidered. *European Economic Review*, *119*, 411-433. https://doi.org/10.1016/j.euroecorev.2019.07.016

Blanchard, O. (2019). Public Debt and Low Interest Rates. *American Economic Review*, *109*(4), 1197-1229. https://doi.org/10.1257/aer.109.4.1197

Bordo, M. D., & Levy, M. D. (2021). Do enlarged fiscal deficits cause inflation? The historical record. *Economic Affairs*, *41*(1), 59-83. https://doi.org/10.1111/ecaf.12446

Central Asia Dept, I. M. F. M. E. (2024). Iraq. *Iraq: 2024 Article IV consultation Press release and staff report*. https://doi.org/10.5089/9798400275357.002

Chodorow-Reich, G. (2019). Geographic Cross-Sectional Fiscal Spending Multipliers: What Have We Learned? *American Economic Journal: Economic Policy*, *11*(2), 1-34. https://doi.org/10.1257/pol.20160465

Coibion, O., Gorodnichenko, Y., & Weber, M. (2022). Monetary Policy Communications and Their Effects on Household Inflation Expectations. *Journal of Political Economy*, *130*(6), 1537-1584. https://doi.org/10.1086/718982

Dincer, N. N., Eichengreen, B., & Geraats, P. (2022). Trends in monetary policy transparency: Further updates. . *International Journal of Central Banking*, *18*(1), 331-348. https://www.ijcb.org/sites/default/files/journal/v18n1/ijcb-v18n1-trends-monetary-policy-transparency-further-updates.pdf

Eichenbaum, M. S., Johannsen, B. K., & Rebelo, S. T. (2021). Monetary Policy and the Predictability of Nominal Exchange Rates. *The Review of Economic Studies*, *88*(1), 192-228. https://doi.org/10.1093/restud/rdaa024

Engel, C., & Wu, S. P. Y. (2023). Liquidity and Exchange Rates: An Empirical Investigation. *The Review of Economic Studies*, *90*(5), 2395-2438. https://doi.org/10.1093/restud/rdac072

Fratzscher, M., Gloede, O., Menkhoff, L., Sarno, L., & Stöhr, T. (2019). When Is Foreign Exchange Intervention Effective? Evidence from 33 Countries. *American Economic Journal: Macroeconomics*, *11*(1), 132-156. https://doi.org/10.1257/mac.20150317

Garriga, A. C., & Rodriguez, C. M. (2020). More effective than we thought: Central bank independence and inflation in developing countries. *Economic Modelling*, *85*, 87-105. https://doi.org/10.1016/j.econmod.2019.05.009

Gopinath, G., Boz, E., Casas, C., Díez, F. J., Gourinchas, P.-O., & Plagborg-Møller, M. (2020). Dominant Currency Paradigm. *American Economic Review*, *110*(3), 677-719. https://doi.org/10.1257/aer.20171201

Greenwood, J., & Hanke, S. H. (2022). On monetary growth and inflation in leading economies, 2021–22: Relative prices and the overall price level. *Economic Affairs*, *42*(2), 288-306. https://doi.org/10.1111/ecaf.12536

Ha, J., Marc Stocker, M., & Yilmazkuday, H. (2020). Inflation and exchange rate pass-through. *Journal of International Money and Finance*, *105*, 102187. https://doi.org/10.1016/j.jimonfin.2020.102187

Hartwell, C. A. (2019). On the impossibility of central bank independence: four decades of time- (and intellectual) inconsistency. *Cambridge Journal of Economics*, *43*(1), 61-84. https://doi.org/10.1093/cje/bex083

Ilzetzki, E., Reinhart, C. M., & Rogoff, K. S. (2019). Exchange Arrangements Entering the Twenty-First Century: Which Anchor will Hold? *The Quarterly Journal of Economics*, *134*(2), 599-646. https://doi.org/10.1093/qje/qjy033

Iraq, C. B. o. (2024). Annual statistical bulletin. *Department of Statistics and Research*. https://cbi.iq/language/change/english/https:----cbi.iq--page--142

Itskhoki, O., & Mukhin, D. (2021). Exchange Rate Disconnect in General Equilibrium. *Journal of Political Economy*, *129*(8), 2183-2232. https://doi.org/10.1086/714447

Jašová, M., Moessner, R., & Takáts, E. (2016). Exchange rate pass-through: What has changed since the crisis? *International Journal of Central Banking*, *15*(3), 27-58. https://www.bis.org/publications/working-paper-583-exchange-rate-pass-through-what-has-changed-crisis

Jiang, Z., Krishnamurthy, A., & Lustig, H. (2021). Foreign Safe Asset Demand and the Dollar Exchange Rate. *The Journal of Finance*, *76*(3), 1049-1089. https://doi.org/10.1111/jofi.13003

Lilley, A., Maggiori, M., Neiman, B., & Schreger, J. (2022). Exchange Rate Reconnect. *The Review of Economics and Statistics*, *104*(4), 845-855. https://doi.org/10.1162/rest_a_00978

Mohaddes, K., & Raissi, M. (2019). The US oil supply revolution and the global economy. *Empirical Economics*, *57*(5), 1515-1546. https://doi.org/10.1007/s00181-018-1505-9

Obstfeld, M., Ostry, J. D., & Qureshi, M. S. (2019). A Tie That Binds: Revisiting the Trilemma in Emerging Market Economies. *The Review of Economics and Statistics*, *101*(2), 279-293. https://doi.org/10.1162/rest_a_00740

Reis, R. (2022). Debt Revenue and the Sustainability of Public Debt. *Journal of Economic Perspectives*, *36*(4), 103-124. https://doi.org/10.1257/jep.36.4.103

Vol: 18 **No:** 02 **Year:** 2026 **ISSN:** 1309-8055 (Online) (**pp.** 484-518) **Doi:** 10.34109/ijefs.2026180221

Yared, P. (2019). Rising Government Debt: Causes and Solutions for a Decades-Old Trend. *Journal of Economic Perspectives*, *33*(2), 115-140. https://doi.org/10.1257/jep.33.2.115