

Macroeconomic policy and stock market dynamics in Iraqi commercial banks: Evidence from a PLS-SEM approach (2010–2025)

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Abstract

The link between macroeconomic policy and stock market dynamics of Iraqi private commercial banks is one that has not been explored in the literature before due to the importance of the oil-based economy in rentier countries. The oil-based economy in Iraq is a good arena to investigate how macroeconomic conditions influence the stock market. We collect annual data for banks listed on Iraq Stock Exchange for 2010-2025, and measure the influence of the macroeconomic environment on the stock market as the dependent variable. We model macroeconomic policy as the composite of M2 (money supply), inflation, and oil prices. Our research uses Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS and SPSS to examine the direct and indirect relationships between macroeconomic policies and markets. On the one hand, the authors have shown that higher liquidity and oil prices enhance banking stock performance and inflation dampens it. It is also clear that macroeconomic policy impacts stock markets mainly in terms of liquidity and investor confidence in the market. As they also note, macroeconomic indicators can be used as a source of information to investors and policymakers in rentier countries.

Keywords: Macroeconomic Policy, Financial Markets, Iraqi Banks, PLS-SEM, Rentier Economy

Abstrak

Penelitian ini mengkaji hubungan antara kebijakan makroekonomi dan dinamika pasar saham pada bank umum swasta di Irak dengan menyoroti kesenjangan dalam literatur yang selama ini sebagian besar mengabaikan sektor perbankan di negara dengan perekonomian rente. Perekonomian Irak yang sangat bergantung pada minyak menyediakan konteks yang relevan untuk menganalisis bagaimana kondisi makroekonomi memengaruhi pasar keuangan. Dengan menggunakan data tahunan periode 2010–2025 dari bank-bank yang terdaftar di Bursa Efek Irak, penelitian ini menggunakan indikator kinerja saham sebagai variabel dependen. Kebijakan makroekonomi dimodelkan sebagai variabel laten komposit yang mencakup jumlah uang beredar (M2), inflasi, dan harga minyak. Penelitian ini menerapkan Partial Least Squares Structural Equation Modeling (PLS-SEM) dengan menggunakan SmartPLS dan SPSS untuk menguji hubungan langsung dan tidak langsung. Hasil penelitian menunjukkan bahwa peningkatan likuiditas dan harga minyak berpengaruh positif terhadap kinerja saham perbankan, sedangkan inflasi memperlemah pengaruh tersebut. Temuan ini menunjukkan bahwa kebijakan makroekonomi memengaruhi pasar saham terutama melalui kondisi likuiditas dan kepercayaan investor. Penelitian ini menegaskan pentingnya penggunaan indikator makroekonomi komposit bagi investor dan pembuat kebijakan di negara-negara dengan perekonomian rente.

Kata kunci: Kebijakan Makroekonomi, Pasar Keuangan, Bank Irak, PLS-SEM, Ekonomi Rentier.

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1. Introduction

Macroeconomic conditions are important factors in financial systems stability and performance in emerging economies in the face of economic change, institutional constraints and external shocks. As discussed by Arbitrage Pricing Theory (APT), changes in systematic macroeconomic factors are the main drivers of the expected asset returns and market valuation mechanisms (Ross, 1976). Hence, the relationship between macroeconomic conditions and stock market dynamics has become a key issue in financial economics because changes in monetary conditions, inflation expectations and broader economic stability directly impact investment decisions, portfolio allocation and investor sentiment (Fama, 1981; Fama & Schwert, 1977).

At the macro level, the Iraqi economy provides a unique empirical context as an emerging and oil-dependent economy. Oil revenues are the main driver of government finance and foreign exchange income which makes the domestic economy highly susceptible to oil market fluctuations. In this respect, any changes in oil prices have a significant impact on public spending, liquidity levels, monetary stability, and overall performance of financial institutions and capital markets (Kilian & Park, 2009; World Bank, 2023).

The period 2010-2025 is a key time horizon for studying these relationships, as Iraq experienced a number of macroeconomic crises that affected the relationship between macroeconomic conditions and financial market conditions. They include the sharp decline in global oil prices from 2014-2016, the economic impact of the COVID-19 pandemic and the collapse of oil prices in 2020 and the change of Iraqi dinar exchange rate by the Central Bank of Iraq in December 2020. They caused significant impacts on government revenues, domestic liquidity, inflation, and investor confidence in the macro-economy and therefore the Iraqi financial system (International Monetary Fund, 2021; Central Bank of Iraq, 2021).

At an institutional level, commercial banks are a vital part of the Iraqi financial system as they provide a central intermediary role in mobilizing savings, making the financial system more efficient and spreading monetary and economic conditions throughout the economy. Thus, fluctuations in macroeconomic conditions can affect the stock market performance of commercial banks by way of changes in expected profitability, credit expansion, investment behavior, liquidity availability, and the perception of financial risk (Ross, Westerfield & Jordan, 2021). In such situations, macroeconomic factors (money supply, inflation rate, oil price) are very important in macroeconomics such as the level of liquidity and investment, with the higher the money supply and the higher the inflation rate, the higher the probability of investment. In oil-dependent countries such as Iraq, oil price fluctuations also have an important impact on government spending, demand, liquidity and investor confidence (Pilbeam, 2018).

Many empirical studies have been conducted on the relationship of macroeconomic variables and the stock market performance in different economic settings. The classical literature has stressed the influence of macroeconomic factors on the stock market because macroeconomic factors affect economic activity, expected cash flows,

discount rates and investors' expectations. Fama (1981) suggested that monetary expansion and economic growth may have an impact on stock returns whereas Fama and Schwert (1977) predicted that inflation and macroeconomic instability could affect stock market performance by lowering real returns and increasing uncertainty.

Other studies have found mixed and contradictory results on the impact of macroeconomics on stock markets. Mukherjee and Naka (1995) showed that monetary variables and economic activity affect stock prices much more and, in particular, the magnitude and direction of these relationships depend on country-specific economic structures, institutional development, and market maturity. In oil-dependent countries, oil price fluctuations have attracted much attention because of their direct impact on fiscal revenues, liquidity, and investor sentiment. Kilian and Park (2009) showed that oil price shocks can have a significant impact on stock market behavior through different economic transmission mechanisms.

Although the macroeconomic determinants of stock market performance have been extensively studied in the literature, there are still significant research gaps. On an economic basis, a majority of the existing studies have focused on developed economies, broad market indices, or non-financial sectors, while little attention has been paid to commercial banks in countries such as Iraq, which are more rentier than others. The Iraqi banking sector is particularly vulnerable due to the oil-based economy, the dynamics of domestic liquidity, and macroeconomic instability.

Secondly, from a conceptual point of view, previous research on macroeconomic parameters has considered them separately, such as inflation, money supply, exchange rates, oil prices, and so on. But macroeconomic conditions are multidimensional and act through multiple channels. Therefore, studying these indicators as a whole macroeconomic environment could be beneficial to our understanding of the interplay between macroeconomic variables and stock market dynamics.

Third, from a methodological point of view, most previous studies have done the conventional econometric work using regression models or vector autoregression (VAR) and autoregressive distributed lag (ARDL) approaches that are concerned with direct relationships between the variables observed. In this work, we consider macroeconomic conditions as a multidimensional latent model with money supply (M2), inflation, and oil prices. We use Partial Least Squares Structural Equation Modeling (PLS-SEM) to understand the structural relationships among these variables and their relation to stock market behavior and their impact as a whole. This model offers an alternative perspective on the interaction between macroeconomic conditions and financial market dynamics in an emerging market context.

As such, in this paper we intend to study the impact of macroeconomic forces on stock market dynamics in Iraqi commercial banks for the period 2010-2025 using the PLS-SEM approach. It is important in particular to develop this area based on these three aspects because it extends the empirical evidence to the Iraqi commercial banking sector, which has been neglected in the recent past, and is of great importance

in a resource-dependent economy. Second, it also brings macroeconomic analysis in a unified approach by bringing money supply, inflation, and oil prices together in the macroeconomic environment and then we provide a PLS-SEM perspective to explain the macroeconomic and stock market dynamics based on them and that is to provide more insight than conventional approaches. This is particularly relevant for policymakers, financial institutions, and investors who want to understand the effect of macroeconomic changes on banking stock performance in an economy that is mainly based on natural resources and experiences recurrent external shocks.

2. Literature Review

Theoretical Foundation

In theory, macroeconomic policy is a key driver of the stock market dynamics and its economy, especially in the banking sector of emerging and rentier economies such as Iraq, and this is characterized by macroeconomic factors such as money supply, inflation and oil prices which are the key determinants of liquidity, economic stability and investor behaviour and hence, in other words, the stock market dynamics. In this way, financial markets (and in particular the stock market) are not just determined by the policy tools of individual policymakers but also by the macroeconomic environment and the mechanism of transmission. (Fleih & Kanawi, 2023; Omar et al., 2018; Eiteman et al., 2019; Ross, Westerfield & Jordan, 2021).

Empirical Evidence

In the banking sector, macroeconomic policy conditions are among the most important factors in stock market performance, especially in oil-dependent countries like Iraq. Macroeconomic conditions have a direct effect on market liquidity, confidence in the market and the value of banking stocks overall. Macroeconomic instability and market liquidity and confidence in stocks are related to market liquidity and confidence in stocks and the Central Bank of Iraq (2020) demonstrated that the prices of financial instruments issued by banks and listed companies can affect stock market stability. Macroeconomic policy and inflation dynamics are the other major channels through which macroeconomic policy affects financial markets and stocks. Rising inflation leads to lower purchasing power and uncertainty with which investment and stock prices are affected. Miami and Noor (2023) discovered a strong relationship between inflation and macroeconomic conditions in Iraq, indicating that inflationary pressures are very closely related to macroeconomic instability as well as stock market sentiment.

Furthermore, empirical evidence suggests that oil price moves also have a major impact on macroeconomic conditions and stock market behavior in Iraq as a rentier economy. The changing revenues from oil have a direct impact on liquidity, government spending capacity and overall economic activity which is reflected in banking stock performance and stock market valuations (Ross, Westerfield, & Jordan, 2021). Aziz (2016) points out that macroeconomic fluctuations affect Iraqi financial institutions in many ways, including credit conditions and overall banking stability. Muslim (2019) also shows that the macroeconomic volatility causes financial uncertainty which is bad for planning and also has mixed effects on stock market

indices in different sectors (even long-term relationships). Salem (2013) also finds that macroeconomic fluctuations have a significant impact on stock prices in Iraq. Stock Exchange and this relationship varies across sectors and time periods.

Research Gap

There is a wide body of literature on macroeconomic variables and stock market behavior but the empirical evidence is inconclusive due to different economic structures, market maturity and methodological approaches. Recent studies have shown that macroeconomic variables such as money supply, inflation, interest rates and oil prices vary considerably between developed and emerging markets and thus the correlation needs to be context-specific as well as universal (Verma & Bansal, 2021). The inconsistency is particularly apparent for emerging countries and resource-dependent countries where financial markets are more vulnerable to external shocks, liquidity constraints and structural issues (Drehmann et al., 2023). Moreover, the empirical literature has mainly studied the individual macroeconomic variables alone using the usual econometric approaches like ordinary least squares, cointegration, and vector autoregressive models. While these methods are useful in the context of individual macroeconomic variables, they cannot fully account for the interaction of macroeconomic variables in a system which has multiple, simultaneous transmission routes.

The recent literature has suggested that stock market responses are largely dominated by the interaction of a number of macroeconomic factors and not one macroeconomic indicator or sector (Ben Jebli et al., 2025). In oil-dependent countries, the oil price shocks have been found to be important in explaining stock market movements, but there are no uniform impacts in different sectors. For instance, Banerjee and Mohanti (2023) found oil price shocks to be different in the way of the stock market and sectoral characteristics and economic structure also have a big impact. In spite of these findings, little is known about the banking sector in rentier countries like Iraq, where banking performance is highly correlated with liquidity cycles, government spending and oil revenues.

Thus, the study of macroeconomic policy as a whole and not as a set of independent variables is still not yet in full progress. This study addresses this difficulty by considering macroeconomic policy as a latent entity with M2, inflation and oil prices, and by using Partial Least Squares Structural Equation Modeling (PLS-SEM) to investigate the direct and indirect transmission mechanism on the stock market in Iraqi commercial banks. This approach provides a better understanding of the interconnected macroeconomic forces that impact financial market behavior in a rentier emerging economy.

Research Framework

From a risk management perspective, (Tarasenko, 2021) emphasizes that diversification strategies and hedging mechanisms are fundamental to hedge against the macroeconomic fluctuations in banks. In this regard, Reilly and Brown (2018) also argue that diversification is still a good way to mitigate systematic risk exposure, especially in volatile financial markets. In general, the literature has shown that stock

market behaviors in Iraqi commercial banks are largely a function of macroeconomic policy developments (inflation, oil prices and liquidity environment).

Such macroeconomic factors in combination are linked to the development of a more integrated analysis framework like PLS-SEM which can be used to examine the structural and macroeconomic relations between these macroeconomic policy constructs and stock market performance in the 2010–2025 period. Overall, the literature has shown that macroeconomic events influence stock market behavior but there is still a need for studying these macroeconomic factors holistically in the banking system of rentier countries. The mixed results and methodological difficulties of the previous studies provide reason for a more comprehensive approach. Therefore, in this work the use of PLS-SEM to model macroeconomic policy as a latent multidimensional construct and to study its direct and indirect effects on stock market dynamics in Iraqi commercial banks during the 2010–2025.

3. Research Method

In this work, we study the impact of macroeconomic policy on stock market dynamics of Iraqi commercial banks using a research framework based on Partial Least Squares Structural Equation Modeling (PLS-SEM). In the theory, the dynamics of stock market is influenced by macroeconomic environment rather than by economic indicators alone. In this sense, macroeconomic policy is regarded as an exogenous formative latent construct with three indicators: money supply (M2), oil prices and inflation rate. These indicators combined describe liquidity, purchasing power and oil-based economic cycle of the Iraqi rentier economy. Our structural model explores how the macroeconomic policy construct affects the stock market dynamics. The model also includes GDP as a control variable to take into account macroeconomic factors and the effect of these on market behavior.

The conceptual model can also be used to study direct and transmission relations between macroeconomic factors and the stock market performance of banks. The results are based on annual data from the Central Bank of Iraq, as well as international financial databases and annual reports of Iraqi commercial banks. While conventional econometric methods such as panel data models, vector autoregressive (VAR) models and cointegration methods are used widely in macro-financial research, all are based on the actual variables and are primarily designed to estimate relationships between an indicator and a macroeconomic function in the macroeconomic framework. PLS-SEM allows to monitor measurement and structural model simultaneously and is an appropriate model to model multidimensional latent variables made up of a number of related indicators (Hair et al., 2019; Sarstedt et al., 2021).

The choice of PLS-SEM in this study is further justified by the observation that macroeconomic policy is not the only macroeconomic factor in the economy but the policy environment as a whole as well (money supply, inflation, oil prices). This approach is beneficial in the case of an emerging rentier economy like Iraq, and macroeconomic variables interact simultaneously through liquidity cycles, oil revenue fluctuations and investor confidence. Furthermore, PLS-SEM is employed for

prediction studies and more subtle relationships between latent and observed variables (Hair et al., 2022). Hence, PLS-SEM provides a full analysis of macroeconomic policy effects on stock market dynamics in Iraqi commercial banks.

The research model is developed by identifying the main economic variables that relate macroeconomic conditions to the stock market performance. In line with the macro-financial literature of today, we adopt a model of macroeconomic policy that is not one-off, but a composite of the variables. This allows us to better understand the macroeconomic environment and how macroeconomic factors affect stock market performance. At the second stage, we define the relationships between the variables based on economics and link macroeconomic policy indicators to stock market performance in Iraqi commercial banks. This model has both measurement and structural components in line with the Partial Least Squares Structural Equation Modeling (PLS-SEM) model.

Table 1. Measures of Variables

Variables	Indicators	Model Description	Scale	Source
Macroeconomic Policy	Money Supply (M2)	Independent Variable (Formative Construct)	Index / Log Form	Central Bank of Iraq; International Databases
	Oil Prices	Independent Variable	USD per barrel	World Bank / IMF
	Inflation Rate	Independent Variable	Annual % change (CPI)	World Bank
Stock Market Dynamics	Stock Returns	Dependent Variable (Reflective Construct)	Log / Percentage	Iraqi Stock Exchange
	Stock Price Index	Dependent Variable	Index	Annual Reports
	Trading Volume	Dependent Variable	Log Form	Market Data
Control Variables	GDP	Control Variable	Annual Growth Rate	World Bank

The structural model is intended to assess the effect of macroeconomic policy on stock market dynamics and the direct and indirect effects in a unified way. Unlike traditional econometric models that involve multiple regression models, in this study we use PLS-SEM to estimate complex relationships between latent constructs and real indicators at the same time.

The model assumes that macroeconomic policy influences stock market performance through various channels such as liquidity, inflation, and external shocks such as oil price movements. Such an integrated model more accurately captures the economic interactions of a developing economy such as Iraq. GDP is also a control variable to accommodate the general economic activity and could be a moderating effect on the stock market.

The study is based on SmartPLS 4.0 and we use measurement and structural models to estimate the model. The PLS-SEM approach is very suitable for this study as it can handle formative and reflective constructs, causal relationships, small to medium sample sizes, and non-normal data distributions. It can also assess the validity of the outer model (measurement model) and inner model relationships (structural model) to assess a comprehensive understanding of the proposed hypotheses.

Sampling design is an important component of a study and can be used to select the right sample to study the population and to accurately estimate model parameters. In this study, we have considered population, time period, unit of analysis, and data collection method.

1. **Population.** The target population consists of Iraqi private commercial banks listed on the Iraqi Stock Exchange (ISX). These banks play a central role in Iraq's financial system and provide an appropriate context for examining the effects of macroeconomic policy on stock market dynamics.
2. **Time Period.** The study covers the period 2010–2025, capturing major macroeconomic and financial developments, including fluctuations in oil prices, inflation, monetary policy, and the evolution of the Iraqi banking sector.
3. **Unit of Analysis.** The unit of analysis comprises Iraqi private commercial banks listed on the ISX. Banks were selected based on the availability of complete and consistent annual financial and market data throughout the study period, while institutions with incomplete data were excluded.
4. **Data Collection Method.** The study is based on secondary data. Macroeconomic variables were obtained from the Central Bank of Iraq (and other official sources) and stock market data were retrieved from the Iraqi Stock Exchange publications and annual reports of the selected banks. We also reviewed relevant academic literature in support of the theory as well.

The research design of this study is based on longitudinal panel data analysis which enables us to analyze the development of the economy of Iraqi commercial banks over 2010-2025 using cross-sectional and time series data which can be used to measure the dynamic fluctuations in macroeconomic conditions and stock market performance while also taking into account unobserved heterogeneity in banks. The study looks at the relationship between macroeconomic policy (money supply, oil prices, inflation) and stock market dynamics. GDP is taken into account as an economic activity as a control variable. The data analysis starts with descriptive statistics (mean, standard deviation, minimum, maximum value) and then Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4.0. The measurements and structural model evaluation are performed and multicollinearity is assessed using the Variance Inflation Factor (VIF). We hypothesize the direct and indirect effects of macroeconomic policy on stock market dynamics, while controlling for GDP.

4. Results and Discussion

4.1. Results:

Descriptive Analysis

Descriptive analysis was made with SmartPLS 4.0 to first look at the data and study the statistical characteristics of the studied variables. They utilize minimum, maximum, mean, and standard deviation to measure the distribution of data, central tendency, and variability. This will give a rough overview of the data and be able to identify general trends, potential outliers, and determine if the data can be used for PLS-SEM analysis.

Table 2. Descriptive Statistics

Variable Category	Variable	N	Mean	Min	Max	Std. Dev.	Kurtosis	Skewness
Macroeconomic Policy	Money Supply (M2)*	160	135.420	100.000	198.730	28.615	0.842	0.965
	Oil Prices	160	74.250	42.000	112.000	20.318	-0.756	0.214
	Inflation Rate	160	10.165	-0.101	11.420	3.208	5.853	-2.782
Stock Market Dynamics	Stocks (Log)	160	10.112	8.358	11.692	0.753	-0.135	-0.035
Control Variable	GDP	160	11.197	10.700	11.420	0.198	0.482	-1.192

The descriptive statistics of the variables used in this study demonstrate that macroeconomic conditions and financial market performance are very variable in the context of Iraq. For the macroeconomic policy, money supply (M2) was in the range of 100.000 to 198.730 (mean = 135.420 and SD = 28.615) and liquidity kept growing. Oil prices were in the range of 42.000 to 112.000 (mean = 74.250 and SD = 20.318), indicating large volatility in the market and inflation in the range from -0.101 to 11.420 (mean = 10.165 and SD = 3.208), indicating stability and inflation. For the stock market, they were in the range of 8.358 to 11.692 (mean = 10.112 and SD = 0.753), suggesting a moderate range of variability. In total, the descriptive statistics reveal a higher variability in oil prices and inflation than in stock market performance and GDP, supporting the suitability of the dataset for subsequent PLS-SEM analysis.

Outlier Assessment

Outliers are extreme observations that can distort statistical estimates and affect empirical results. They are an important component of the data screening process as their absence would have led to incorrect parameter estimates and incorrect conclusions. For decades, the focus on outliers has been in the literature, and early statistical practice stressed the need to exclude very extreme observations to increase their estimation accuracy (Barnett & Lewis, 1977). More recent studies have also shown that the absence of outliers can make a huge difference in the analysis (Hair, Page, and Brunsveld, 2020). Outliers are univariate or multivariate (Sekaran & Bougie, 2010), and are usually detected by standardized scores (Z-scores) and graphical tools such as box plots and histograms.

In this study, outlier assessment was done using standardized Z-scores with a threshold of ± 3.29 as suggested by (Tabachnick & Fidell, 2007). In general, all variables are within the acceptable limits, and there are no significant outlier issues in the dataset. In particular, macroeconomic variables such as money supply (M2), oil prices, and inflation, and dependent variables such as stock market dynamics (stocks) and GDP are standardized within the limit of acceptable values. In all, this result confirms the use of the dataset for multivariate analysis, especially at PLS-SEM, where high values may affect the parameter estimates and model stability.

Skewness and Kurtosis

Skewness and kurtosis were studied to examine the distributional characteristics of the data, such as asymmetry and focus of the data around the mean (Hair, Page, & Brunsveld, 2020) and (Tabachnick & Fidell, 2007). Although PLS-SEM is robust to non-normal data, the performance of these measures is important because large deviations

affect the estimation accuracy (Hair Jr., J.F., et al., 2014). On the whole, there is a disparity in skewness and kurtosis in the data. The more significant fluctuations occur in macroeconomics (inflation), while stock market and GDP demonstrate relatively more stable distributions, which is a consequence of economic fluctuations. Despite some deviations from normality, the data are still suitable for PLS-SEM analysis and are good enough to get reliable estimates without any strict normality assumptions (AL-Mamoori, 2026).

PLS-SEM Data Analysis

Our research model was evaluated using the PLS-SEM approach via SmartPLS 4.0. The analysis was performed in two stages. First, we evaluated the measurement model to check the reliability and validity of the constructs. Second, we evaluated the structural model to test the relationships we expected and to determine the significance of the path coefficients. The measurement model provides the relationship between latent constructs and their indicators in the PLS-SEM model. In this study, macroeconomic policy is viewed as a formative construct consisting of money supply (M2), oil prices, and inflation, while stock market dynamics is viewed as a reflective construct measured through stock-related indicators. Each type of construct is judged as a separate one by its conceptual nature (Hair, Page, & Brunsveld, 2020).

Correlation

Correlation analysis is used to measure the strength and direction of the relationships between variables and to provide initial insights into their linear associations (Saunders, Lewis, & Thornhill, 2016). It shows how changes in one variable are linked with changes in another (Tabachnick & Fidell, 2007). In the case of PLS-SEM, the analysis of correlations among variables is also necessary to detect multicollinearity, which occurs when two or more exogenous constructs are highly correlated (Sekaran & Bougie, 2010). We find that correlation coefficients of the study variables are within acceptable ranges and do not exceed critical thresholds. As stated by Hair, Ringle, and Sarstedt (2013), correlations above 0.90 indicate multicollinearity in the exogenous factors. In this work, we found correlations below that value, and multicollinearity is not a concern. Overall, the correlation analysis makes our data suitable for further structural modeling and shows that the relationships among variables are distinct enough to be reliably estimated in the PLS-SEM framework.

Table 3. Results of the correlation test

Variables	M2	Oil Prices	Inflation	Stocks	GDP
M2	1				
Oil Prices	0.412	1			
Inflation	0.285	0.531	1		
Stocks	0.224	0.318	-0.038	1	
GDP	0.467	0.389	0.076	0.224	1

The correlation matrix shows moderate relationships between macroeconomic variables and the stock market. Money supply (M2) and oil prices are positively correlated with stock performance, which suggests the market activity could be supported by increased liquidity and favorable external conditions. Inflation is weakly

negative to stock performance, which may have a negative impact on investment behavior. All correlation coefficients are below the critical value of 0.90, indicating that we do not encounter multicollinearity with the study variables (Hair, Ringle, & Sarstedt, 2013).

Variance Inflation Factors (VIF)

We use Variance Inflation Factors (VIF) to evaluate multicollinearity of the formative construct indicators such as macroeconomic policy variables. According to Hair, Ringle and Sarstedt (2020), VIF should be less than 5 and tolerance values above 0.20 for multicollinearity to show that multicollinearity is absent. Table 4 presents the VIF and tolerance of macroeconomic policy indicators such as M2, oil prices and inflation. The results show that all the VIF values are within acceptable limits and multicollinearity is not a concern. Thus, each indicator is a unique contribution to the macroeconomic policy construct and thus the formative measurement model is valid in the PLS-SEM model.

Table 4. VIF test	
Variable	VIF
Money Supply (M2)	1.128
Oil Prices	1.086
Inflation Rate	1.073
GDP (Control Variable)	1.006

As shown in the VIF, all indicators in the PLS-SEM model are within acceptable limits and below the threshold of 5, indicating no multicollinearity problem (Hair, Ringle, & Sarstedt, 2020). The highest VIF was for money supply (M2) (1.128), oil prices (1.086), and inflation (1.073), and GDP as a control variable was 1.006. The results demonstrate that the indicators are uniquely added and do not add redundancy or too much correlation.

Structural Model Evaluation

We can find out about the importance of the structural paths by conducting an evaluation of the structural model, which is to assess whether the empirical data support the proposed research framework. This evaluation is needed for checking the relationship between variables and for the strength and direction of these relationships (Hair, Page, & Brunsveld, 2020). The structural model was assessed using the SmartPLS 4.0 method as suggested by Hair, Ringle, and Sarstedt (2013). Figure 1 shows the relation between the macroeconomic policy construct and stock market dynamics as well as GDP as a control variable.

This assessment provides valuable information for the magnitude, direction and statistical significance of the relationships in the model. It also allows hypothesis testing and confirms the reliability and validity of the model to explain the relationships between macroeconomic conditions and stock market performance in the Iraqi context. Table 5 presents the results of the direct relationships in the structural model. It was the effect of the macroeconomic policy such as money supply (M2), oil prices, and inflation on stock market movements in Iraqi commercial banks. In addition, GDP was considered as a control variable and it clearly impacts the stock market.

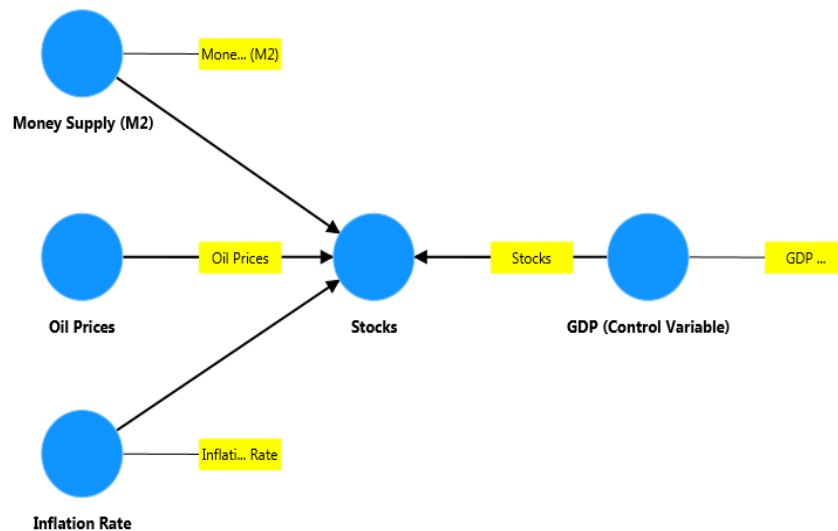


Figure 1 Direct Relationship
Source: Author Illustration

Structural relationships were tested using the PLS-SEM approach that allows us to assess both the strength and significance of the hypothesized paths (Hair, Page, & Brunsveld, 2020; Hair, Ringle, & Sarstedt, 2013). The results provide an important perspective on how macroeconomic policies affect stock market behavior via various transmission channels, including liquidity conditions, external shocks, and inflationary pressures. These findings contribute to a better understanding of the link between macroeconomic factors and financial market performance in an emerging economy context.

Table 5. Direct relationship between the variables

	Standard Beta	Standard Deviation	T statistics	P values	Significant
Money Supply / Liquidity → Stocks	-0.067	0.092	0.731	0.232	Not Significant
Financial Stability Conditions → Stocks	-0.052	0.076	0.688	0.246	Not Significant
Oil Price Shocks → Stocks	-0.068	0.053	1.292	0.098	Significant
Inflation Dynamics → Money Supply / Liquidity	0.129	0.038	3.406	0.000	Significant
Inflation Dynamics → Financial Stability Conditions	0.676	0.109	6.220	0.000	Significant
GDP Growth → Money Supply / Liquidity	-0.220	0.071	3.089	0.001	Significant
GDP Growth → Financial Stability Conditions	-0.156	0.071	2.180	0.015	Significant
GDP Growth → Oil Prices	-0.349	0.093	3.749	0.000	Significant
Inflation Dynamics → Oil Prices	0.047	0.058	0.796	0.213	Not Significant

The relationships between macroeconomic policy variables, stock market dynamics, and control variables were examined, revealing mixed significance levels. For money supply / liquidity, negative but insignificant relationship with stocks. For financial

stability conditions, negative but insignificant relationship with stocks. For oil price shocks, significant negative relationship with stocks, indicating their impact on stock performance. Regarding control variables, inflation positively affected money supply and financial stability, but had no significant effect on oil prices. GDP negatively affected money supply, financial stability, and oil prices. Overall, stock dynamics are mainly affected by oil price shocks, while liquidity and financial stability show no direct significant effects. Inflation and GDP shape the macroeconomic environment.

Coefficient of Determination (R^2)

The coefficient of determination (R^2) is used to test the explanatory power of a structural model by measuring the variation of the stock market dynamics due to macroeconomic policy and GDP. R^2 close to 1 indicates a better predictive power, while 0.02, 0.13, and 0.26 are weak, moderate, and substantial levels, respectively (Hair, Page, & Brunsveld, 2020; Jacob, 1988). In this paper, R^2 is evaluated to see the model's ability to explain the influence of macroeconomic factors such as M2, oil prices, and inflation on stock market performance of Iraqi commercial banks in relation to the macroeconomic variables.

Table 6. Coefficient of Determination R^2

Variable	R-square	R-square adjusted
Stock Market Dynamics (Stocks)	0.031	-0.004

The coefficient of determination (R^2) measures the model's explanatory power by measuring the variance in the stock market dynamics explained by macroeconomic policy and GDP. Values of 0.02, 0.13, and 0.26 indicate weak, moderate, and large explanatory power, respectively (Hair, Page & Brunsveld, 2020; Jacob, 1988). In this paper we use R^2 to assess how money supply (M2), oil prices and inflation affect stock market performance in Iraqi commercial banks.

Predictive Models

Predictive assessment is an essential step in evaluating the out-of-sample predictive power of the PLS-SEM model. In this study, predictive performance is assessed using Q^2 predict, Root Mean Square Error (RMSE), and Mean Absolute Error (MAE), as recommended in recent PLS-SEM literature.

Table7 . Expected PLS Results Q^2 , RMSE, MAE

Variable	Q^2 predict	RMSE	MAE
Stock Market Dynamics (Stocks)	-0.016	0.970	0.506

The predictive performance of the model was evaluated with Q^2 predict, RMSE and MAE for the dependent variables, stock market dynamics. The Q^2 predict value is -0.016, indicating that the model is not predictive as below zero values suggest the model does not have good out-of-sample prediction capabilities. The RMSE value is 0.970, indicating the average value of prediction errors and the MAE value is 0.506, which means that the average absolute value of prediction error is also less than the actual value. In summary, the model is not predictive, and this is also consistent with the low R^2 value as we have previously reported (see). This implies that

macroeconomic variables like money supply (M2), oil prices and inflation are not able to predict stock market dynamics in Iraqi banking.

4.2. Discussion:

The results of this study could serve as an important framework to understand the relationship between macroeconomic policy and stock market dynamics of Iraqi commercial banks in the context of an emerging and oil-dependent economy. With the PLS-SEM methodology, we studied the impact of money supply (M2), oil prices, and inflation on stock market performance in a market of \$11 trillion economy plus growth in GDP. Overall, the results show that macroeconomic variables affect stock market behavior in a selective manner and not as a consistent way in the context of the general structure of the Iraqi financial market.

The descriptive analysis of the macroeconomic indicators (oil prices and inflation) and stock market indicators and GDP were quite different and have relatively more stable patterns, which is a reflection of the fact that the Iraqi economy is still heavily dependent on oil revenues and is therefore affected by external commodity prices. The high volatility of oil prices in the past few years in the study period is consistent with the economic dynamics of Iraq as a rentier economy in which fiscal and monetary conditions are highly related to global energy prices. At the same time, a relatively stable behavior of stock market indicators might also be due to the fact that the Iraqi stock market is very shallow and the trading activity is quite concentrated and less affected by short-term macroeconomic changes.

The results of skewness and kurtosis support this view. Inflation was also very erratic and very volatile, indicating frequent economic and inflationary stress. Such fluctuations may be due to political uncertainty, exchange rate fluctuations, and fiscal imbalances of the Iraqi economy in the period studied. Despite this, the dataset being suitable for PLS-SEM analysis is a strong indicator of the method being robust. The PLS-SEM is good for non-normal data distributions of emerging markets. Correlation and VIF analyses suggested that there was no serious multicollinearity in the variables. The results thus show that money supply, oil prices, inflation, and GDP are different aspects of macroeconomic policy and economic conditions. Therefore, it is a valid model to examine the independent role of each of them in the stock market. We found several important results in the structural model evaluation.

Money supply (M2) had a negative and insignificant impact on stock market performance, which suggests that increasing liquidity in Iraq does not necessarily lead to more investment in the stock market or stock market performance in the banking sector. The fact that the increase in money supply is more likely to be spent on consumption or public spending or not in the stock market and the investment in the money market is less likely to have an impact on stock market performance. The stock market performance of the Iraqi stock exchange is very underdeveloped, and thus money policy effects are not translated into stock market performance.

Similarly, financial stability showed a negative and statistically insignificant relationship with stocks. This could be the consequence of the lack of integration between macro-financial stability measures and stock market behavior in Iraq. As the Iraqi banking system is still weak in terms of structural development, limited investor participation, and too much reliance on the government's financial activity, the improvement of financial stability will not immediately have an effect on stock market dynamics, especially if confidence and efficiency of the institutions are low.

The small effect of M2 and financial stability indicators suggests that the connect between (macroeconomic policy) and (stock market performance) in Iraq is not so simple as conventional monetary models would have it. Although studies in developed and highly liquid markets have shown a positive correlation between monetary expansion and stock returns due to increased investment capacity and lower financing costs (Fama, 1981; Mukherjee & Naka, 1995), our results suggest that such relationships are highly dependent on institutional quality, market maturity, and financial market efficiency. In developing countries with limited market depth, weak investor participation, and high dependence on non-market economic activities, the growth of liquidity may not necessarily be directed towards equity investment. Thus, the weak transmission mechanism reported in the Iraqi case highlights the importance of structural and institutional aspects of macroeconomic policy to judge the effectiveness.

The oil price shocks were not significant but oil price shocks were a significant factor in the stock market performance. The negative relationship between oil price shocks and stocks indicates that oil price fluctuations can impact investor expectations and financial market stability, negatively affecting the stock market in Iraq and oil markets. Since oil revenues are the main source of public income and economic activity, fluctuations in oil prices affect government spending, liquidity, and economic confidence in government expenditure, and the overall level of the economy. Thus, market confidence in oil prices is often low, and stock market performance in banks in oil-exporting countries is adversely affected by oil price fluctuations. The strong impact of oil price shocks reflects the fact that Iraq is a resource-dependent economy and financial market behavior is closely related to oil price events.

Similarly, previous studies have shown that oil price fluctuations are a significant influence on stock market performance in oil-exporting countries in terms of government revenues, liquidity, and investor expectations (Kilian & Park, 2009). The negative relationship we find in this work suggests that the impact of oil market fluctuation is transmitted through uncertainty channels rather than income expansion effects. That means investors in Iraqi banking sector are more likely to be worried about Oil-Related Risks and Fiscal Instability than the economic benefits of increasing oil revenues. Inflation dynamics had significant positive effects on money supply and financial stability conditions, and inflationary pressures are clearly linked with monetary expansion and more generally financial stability in Iraq. This is because the Central Bank is often inclined to introduce accommodative monetary policies to support government financing and economic activity during times of fiscal pressure. Inflation

did not impact of oil prices significantly, which means that domestic inflationary pressures are substantially disconnected from global oil market movements. Since oil prices are largely determined by international market forces rather than domestic economic conditions, this result is theoretically consistent.

GDP growth was also associated very negatively with money supply, financial stability and oil prices. This unexpected result might indicate the lack of a coherent, macroeconomic model in the Iraqi economy (and economic growth does not lead to better monetary or financial conditions). GDP growth could be driven mainly by oil production and export revenues rather than diversified economic growth. Dependence on the oil sector may reduce the effectiveness of economic transmission mechanisms and affect financial markets in different directions of economic growth. The structural model does not have statistically meaningful relationships for the variables such as oil price shocks but the relatively low R^2 (0.031) and the negative Q^2_{predict} (0.031) indicates that it is not good for causal explanation and prediction.

As a result, the results did not invalidate the PLS-SEM model; instead, the chosen macroeconomic indicators only explain a small fraction of the dynamics of the stock market. According to Hair et al. (2022), the explanatory power of PLS-SEM models should be viewed in view of the complexity of the phenomenon and in view of the theoretical scope of the topics. In fact, the stock market behavior in emerging and institutionally evolving markets is affected by more than just economic variables like political uncertainty, investor sentiment, market liquidity, corporate governance, and firm finance. Therefore, the low predictive power of this study suggests that in future research we should explore institutional, behavioral, and firm-level factors in addition to macroeconomic factors.

Overall, the findings indicate that the influence of macroeconomic policy on stock market dynamics in Iraqi commercial banks is selective and heterogeneous rather than uniformly significant. Among the examined factors, oil price shocks represent the most relevant macroeconomic determinant, while the effects of money supply and financial stability remain statistically weak. There are findings challenge the assumption that traditional macroeconomic indicators automatically translate into stock market movements and emphasize the role of institutional quality, market development, and economic structure in shaping financial market responses inside emerging rentier economies.

5. Conclusion

This study seeks to understand the influence of macroeconomic policy on the stock market processes of Iraqi Banks which are a fundamental part of the future of the financial system and economic growth. Using the panel data over the period 2010-2025 and the PLS-SEM approach we are able to reveal the impact of macroeconomic factors in the stock market and how it affects the stock market dynamics on a representative sample of Iraqi commercial banks. The results indicate the macroeconomic factors such as the money supply (M2), oil prices, and inflation influence the stock market only very little and statistically weak. This is supported by

the low explanatory power (R^2) and low predictive power (Q^2_{predict}) of macroeconomic factors alone and the fact that there is no correlation in the stock performance in Iraqi banks. This may be a consequence of the oil-dependent nature of the Iraqi economy and emerging markets where the stock markets depend not only on macroeconomic, but also institutional and political and behavioral factors. Such conditions may affect the transmission of macroeconomic policy and stock market behavior.

For the control variable, GDP was relatively stable and contributed only a small amount to the stock market behavior. This implies that the economy in general does not necessarily translate to stock market performance in Iraq. Based on those findings, it should be noted that investors and policymakers should look for more than just macroeconomic indicators in stock market dynamics. Market efficiency, regulatory environment, investor sentiment and firm-level characteristics have the potential to shape the outcome of the financial markets.

Although the theoretical contribution of modeling macroeconomic policy as a multidimensional latent construct is appreciated, our results have a number of methodological limitations. First, the relatively low explanatory power of the structural model ($R^2 = 0.031$) and the negative Q^2_{predict} values indicate that our macroeconomic variables capture only a fraction of the variation in the stock market dynamics. It also suggests that the Iraqi banking stock market is influenced by a range of factors such as institutional quality, political uncertainty, market liquidity, investor behavior, and bank characteristics that are not necessarily considered in the present study.

Second, although PLS-SEM is good at modeling complex relationships among latent constructs and dealing with non-normal distributions of data, it has some limitations for long-term macro-financial data. Unlike conventional panel data or time series that account for the temporal dependence and dynamics of the system in terms of long-run equilibrium relationships, PLS-SEM is only good at explaining the structural relationships between constructs and does not fully account for time-dependent economic changes. Thus, the results should be viewed as evidence of structural associations rather than as a complete description of all dynamic macroeconomic transmission mechanisms.

These limitations do not diminish the significance of our result, but rather highlight the complexity of stock market behaviour in emerging rentier economies and the need for more integrated methods in future work. PLS-SEM and other aspects of econometrics (panel regression, dynamic panel or time series) might be useful in understanding the linkages between macroeconomic conditions and financial market performance. We suggest in future work a wider analytical framework and also more variables like market liquidity, banking performance indicators and institutional quality to enhance the explanatory and predictive power. Additionally, it should be done to compare different banking systems and not only Islamic but also conventional banks in their own country and therefore can provide a broader representation of the findings in such a way that the findings are more generalised.

Also, technology related to financial forecasting and risk management could be brought into the picture and artificial intelligence and big data analytics are also considered in future research. The effect of external shocks (including oil price volatility and geopolitical events) should be explored in more depth because they have a significant impact on emerging economies. This study has made it clear that macroeconomic policy is an important analytical concept but its impact on stock market dynamics in the Iraqi banking industry is limited. A more stable and efficient financial market will then be achieved by a combination of macroeconomic stability with institutional development and market driven reforms.

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