

IMPACT OF INTERNATIONAL FINANCIAL FACTORS ON VIETNAM'S STOCK INDEX IN THE PERIOD 2020 - 2023

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Abstract: *The study aims to measure the impact of three macroeconomic factors including US stocks (Dow Jones index), exchange rate and gold price on Vietnam's stock market (through the stock price index: VN-Index) in the period 2020-2023 using the VAR model. Research results show that the Dow Jones index has a positive impact on the VN-Index. Meanwhile, the exchange rate and gold price have an inverse relationship with the VNIndex.*

• Keywords: *dow jones index, vn-index, exchange rate, gold price.*

JEL codes: *E4, J11, K22, O47*

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1. Introduction

The COVID-19 outbreak has brought unprecedented challenges, with significant impacts on Vietnam's economic development. Furthermore, Vietnam's economy depends heavily on other economies in the world. Therefore, it is relevant that the impacts on Vietnam's economy are also correlated with the impacts on the economies of other countries after the COVID-19 pandemic outbreak. The epidemic caused numerous problems for the economy, yet the Vietnamese stock market, as measured by the VN-Index, had a "sublimation" year in 2020–2023 with new record milestones set on the route to progress. The trading scale of Vietnam's stock market has now surpassed Singapore, ranking second in ASEAN, after Thailand. Vietnam's stock market is among the TOP markets that bring high returns in the world. Besides domestic macroeconomic factors, there are still few studies examining the impact of international financial factors on Vietnam's stock index.

In order to verify that fluctuations in the Vietnamese stock market are influenced by both domestic and foreign financial factors, this study looks at the impact of international financial factors on the VN-Index, including the influence of US stocks, exchange rates, and world gold prices.

2. Literature review

Hussain et al (2009) studied the long-term relationship between macroeconomic variables and stock prices in the Karachi stock market in Pakistan during the period 1987 to 2008 for analysis. The research results show five correlations between variables and stock prices as follows: in the long run, the variables real exchange rate (RER), foreign exchange reserves (EXERS), wholesale price index (WPI), industrial production index (IIP), gross fixed capital formation (GFCF), money supply (M2), 3-month Government bond interest rate

(IR) have a positive correlation with stock prices, in when IR is insignificantly correlated and WPI is negatively correlated with stock prices.

Gan et al (2006) studied the relationship between seven macroeconomic variables and stock prices in the New Zealand stock market. The author uses monthly data to observe variables: Exchange rate (EX), consumer price index (CPI) - variables representing inflation rate, money supply (M2), long-term interest rates (LR), short-term interest rate (SR), domestic retail oil price (ROIL), gross domestic product (GDP) to study the impact on the New Zealand stock price index in the period 1-1990 to 1-2003. The results of the Johansen test show that there exists a long-run relationship between NZSE40 and the macroeconomic variables considered. In which, GDP and ROIL covary with NZSE40, whereas CPI, M2, LR, SR and EX inversely change with NZSE40. Overall, the NZSE40 has always been influenced by interest rates, money supply and real GDP over the period 1990-2003.

Using data from January 2001 to December 2010, Hussain et al (2012) examined the long- and short-term relationships between macroeconomic factors in Pakistan and the KSE (Karachi Stock Exchange). The results demonstrate that, over the long term, the Wholesale Price Index (WPI), Exports (EX), Interest Rates (IR), Imports (IM), Money Supply (MS), and Foreign Exchange Reserves (FER) have a positive impact on stock prices, while the Exchange Rate (ER), Industrial Production Index (IPI), and Exports (EX) have a negative impact through statistical techniques like the Granger causality test, VECM, and KPSS. Results from the Granger causality test show that MS and WPI have a bidirectional relationship while ER, FER and IM have a unidirectional relationship with stock prices and IPI, IR, and X have no causal relationship.

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Using data from 1992 to 2010, Rafay et al (2014) investigated the causal link between the KSE 100 index and the following macroeconomic variables: consumer price index (CPI), imports (IM), exports (EX), interest rate (IR), and exchange rate (EXR). To obtain the following conclusions, the author employs the Granger causality test, ADF unit root test, and regression analysis method: While CPI, EXR, and EXPT have no association with the KSE 100 index, there is a positive relationship between IMP and the KSEI. The Granger causality test results indicate that there is a one-way relationship between EXR and IM and the KSE 100 index, but no causal relationship between CPI and EX and the KSE 100 index. In contrast, there is a two-way relationship between IR and the KSE 100 index.

Lone et al (2023) investigates how certain macroeconomic factors affect the performance of the stock market in the BRICS countries. For the years 2011-2021, monthly data were used in the study. The short-run and long-run associations were measured in the study using both the PMG/ARDL model and the ARDL bounds testing model. Except for South Africa, both models offer outcomes that are consistent for both long- and short-term relationships for each of the BRICS economies. Furthermore, it was discovered that the variables had a causal relationship throughout the sample period.

Phan Thi Bich Nguyet & Pham Duong Phuong Thao (2013) investigate the relationship between the six macroeconomic parameters that influence the Vietnamese stock market: money supply (M2), consumer price index (CPI), actual economic activity (IP), interest rates (R), exchange rates (EX), and oil prices (OP). The information that provides the state of the Vietnam Stock Market is the monthly VN-Index data for the months of July 2000 through September 2011. The correlation between the variables is represented by the authors' multiple regression estimation equations, which they further post-test using the Wald and Durbin-Watson tests to increase the regression equation's validity. The findings of the study indicate that the stock market is positively connected with the parameters M2, CPI, IP, and OP, and negatively correlated with R and EX.

Nguyen Thi Nhu Quynh & Vo Thi Huong Linh (2019) used the VECM model to study how various macroeconomic factors affected the Vietnamese stock price index from 2000 to 2018. According to research findings, interest rates have a negative long-term influence on the VN-Index, while inflation has a favorable long-term impact. The VN-Index is mostly influenced in the short term by the VN-Index from the prior month. Additionally, there is a negative correlation between the VN-Index and inflation as well as a positive correlation with the money supply, interest rates, and oil prices. In the short and long terms, the price of gold has little bearing on the VN-Index.

Trang Hong Doan & Nguyen Thu Huyen (2011) studied the influence of the US stock market on the Vietnamese stock market. The GARCH model is used in research to verify the impact of the US stock market on the Vietnamese stock market, on stock groups classified by size, growth and liquidity; and verify the mutual impact between these groups of stocks on the Vietnamese stock market in the period from January 2005 to December 2010 (a total of 1,204 trading days). Sample descriptive statistical results for the two daily SSL markets show that the average SSL and standard deviation of the VN-Index are exceptionally high, consistent with the inference that emerging markets are often profitable. High is commensurate with high risk. Skewness DJIA is highly positively skewed showing some days with outstanding positive SSL. Kurtosis of the SSL VN-Index series shows that the SSL series distribution of the VN-Index is more pointed and fluctuates less around the mean value.

3. Research models

Based on previous studies, the author has built a research model as follows:

$$DVNINDEX_t = \beta_1 DDOWJONES_t + \beta_2 DEX_t + \beta_3 DGOLD_t + \epsilon_t$$

In which the variables are described in table 1:

No	Name of research variable	Symbol	Unit	Expectation
1	Volatility of VN-Index stock index	DVNINDEX	%	
2	Volatility of Dow Jones Index	DDOWJONES	%	+
3	Fluctuations in Exchange rate USD/VND	DEX	%	-
4	Fluctuations in world gold price	DGOLD	%	-

Research data is collected weekly (time cycle) to avoid schedule differences, taken from January 1, 2020 to December 31, 2023.

Data type: Percentage change at the end of the day compared to the previous trading session.

Source of data collection from <https://vn.investing.com/indices/vn-historical-data>

The VAR model was employed in this essay. Using simultaneous equations (SEs) and univariate autoregression (AR), this autoregressive vector model combines two models. Combining the benefit of estimating numerous equations simultaneously in the same system with the ease of estimating AR using the least squares (OLS) approach, the VAR model combines these two advantages. VAR also gets around SEs' drawback in that all of the model's variables are regarded as endogenous, thus it doesn't have to take into account the endogeneity of economic factors. The lag of a variable and all other variables are used by VAR to estimate each equation for a variable.

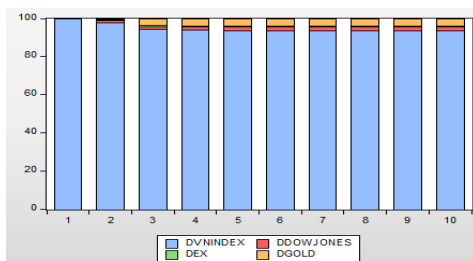
4. Results and discussion

From the VAR model, variance decompositions and impulse response functions were performed, thereby evaluating the impact between variables in the research model.

The variance decomposition table shows that the variance fluctuation of more than 90% occurs mainly due to the VN-Index itself, the impact from Dow Jones

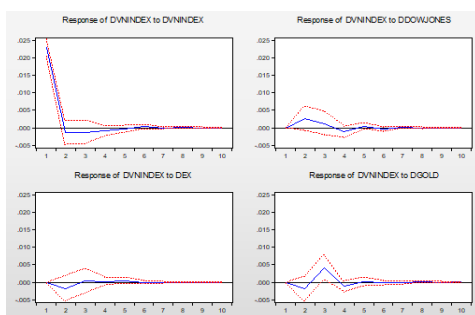
index factors, USD/VND exchange rate and Gold price contributing only ~10%.

Figure 1. Variance decomposition



Source: Results from Stata

Figure 2. Impulse response function



Source: Results from Stata

The impulse response function shows evidence that the fluctuations of the VN-Index stock index are influenced by its fluctuations, the fluctuations of the US stock index - Dow Jones index, the fluctuations of the USD/VND exchange rate, and gold price fluctuations.

+ The reaction to the impact of the VN-Index on itself was immediate with a positive value - this is consistent with expectations and coincides with the research results of Nguyen Thi Nhu Quynh & Vo Thi Huong Linh (2019). The impact level decreased immediately in the following period (week), lasting for about 5 periods but was quite small.

+ The impact reaction of the Dow Jones index on the VN-Index occurred strongly in the second period, in the same direction - consistent with expectations and consistent with the results of Trang Hong Doan & Nguyen Thu Huyen (2011). The impact level decreases from period 3, period 4 and lasts up to 6 periods. With a relatively young stock market like Vietnam, the majority of investors are individual investors, so the transactions of individual investors play a large role in influencing stock prices and VN-Index. Therefore, the decision-making of these investors cannot avoid the psychological impact of fluctuations in major stock markets like the US.

+ The reaction of the impact of exchange rates on the VN-Index in period 2 is negative and decreases in period 3. The sign of negative impact is consistent with the research results of Gan et al (2006) and Phan Thi Bich Nguyet & Pham Duong Phuong Thao (2013). Exchange

rates have a negative impact on the VN-Index because when exchange rates increase, it will bring investors more business opportunities in the foreign exchange market than investing in the stock market. Therefore, investors will withdraw capital to invest in foreign currency.

+ The reaction to the impact of gold price fluctuations on the VN-Index was in the opposite direction in period 2 but in the same direction in period 3 and decreased from period 4, similar to the research of Samontaray & Alanuzi (2015). A sharp increase in gold prices can negatively impact the stock market and cause deposits in the population to decrease, thereby reducing the supply of lending funds to the economy. However, that influence is not large. Gold prices have a negligible impact on the VN-Index in both the short and long term. Although according to previous studies, gold prices have a negative impact on the stock market, in our country, gold is not a major investment channel, but gold is mainly considered a means of storing value.

5. Conclusion and policy implications

The study uses the VAR model to assess the effects of three macroeconomic variables (US stocks (Dow Jones index), exchange rates, and gold price) on Vietnam's stock market (via the stock price index, or VN-Index) in the years 2020–2023. The Dow Jones index positively affects the VN-Index, according to research findings. In the meantime, the VNIndex and the gold price are inversely related.

The above research results are evidence to help guide policy direction and forecast stock market fluctuations in the future. From there, it helps policymakers be alert to external fluctuations in devising appropriate operating mechanisms. The VN-Index is affected by the DowJones index, exchange rates and gold price fluctuations, proving that Vietnam's stock market is not only influenced by domestic factors but also influenced by international financial factors. Therefore, investors need to pay attention to domestic macro policies and external fluctuations.

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