Exploring the Moderating Effect of Exchange Rate on Trading Activity and Stock Market Index in Syria

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ABSTRACT

Purpose: This study examined the relationship between stock market liquidity—characterized by trading volume, trading value, and the number of transactions—and the stock market index in Syria, particularly emphasizing the moderating role of the exchange rate.

Design/Methodology/Approach: The study is rooted in a positivist philosophy, emphasizing objectivity and empirical data. It follows a deductive approach, relying on established theories and previous research findings. The research design is explanatory and utilizes time series data analysis to draw conclusions.

Findings: The findings indicate that both trading volume and exchange rate have significant long-term impacts on the stock market index. In the short term, trading value and the number of transactions also significantly influence the index. Furthermore, the exchange rate acts as a moderating factor in the relationships among these three trading activity variables and the market index, highlighting its vital role in influencing investor confidence and maintaining market stability.

Recommendation: Policymakers and regulators need to prioritize stabilizing the exchange rate while also enhancing market liquidity. Strengthening the financial infrastructure and promoting macroeconomic integration are essential steps in fostering a robust market environment. For investors, it's crucial to factor in exchange rate movements when making investment decisions. Additionally, employing liquidity metrics can serve as valuable indicators of stock market performance.

Index terms: stock market index, Trading Volume, Trading Value, Transactions Number, Exchange rate.

1-Introduction:

This study explores the effect of stock market liquidity measured by (trading volume, trading value, and number of transactions) on the stock market index, with exchange rate as a moderating variable in the context of the Syrian securities market.

The efficient market hypothesis postulates that stock prices fully reflected all available information, implying that trading activity such as volume and number of transactions contributes to efficient price discovery and market valuation. Increased market activity enhances information flow, supporting the formation of stock prices represented by the market index.

In addition, market macrostructure theory provides a framework to understand how trading mechanisms influence asset prices. Trading volume, value, and transaction numbers reflect liquidity and market depth, which are critical in emerging markets like Syria, were market inefficiencies and informational asymmetries may be prevalent.

Moreover, the liquidity preference theory suggests that investors prefer assets that can be easily traded without a significant price impact. Higher trading volume and transactions signify better liquidity, potentially reducing risk premiums and positively impacting the stock market index.

Furthermore, in the context of an open economy, the capital asset pricing model, extended to include exchange rate risk, is relevant. Exchange rate fluctuations can affect expected returns by altering the risk profile of investments, especially in emerging markets. Therefore, the exchange rate as a moderator variable, influencing the relationship between trading activity and stock market valuation.

Also, behavioral finance theory highlights the role of investor psychology in market dynamics. Trading activity may capture investor sentiment or herding behaviors, which can be intensified by exchange rate volatility, further affecting stock market valuation.

Lastly, exchange rate dynamic aligns with purchasing power parity, and related exchange rate theories, where currency movements affect firm profitability and investor confidence, thereby influencing stock prices.

Collectively, these theories offer a comprehensive framework for understanding how trading activity and exchange rate fluctuations interact to influence stock market performance within the context of the Syrian emerging economy. By examining the intricate relationships between trading volume, trading value, the number of transactions, and the exchange rate, one can gain insights into the behavior of investors and market dynamics, ultimately helping to navigate the complexities of this underdeveloped market. This understanding is crucial for both policymakers aiming to enhance market stability and investors seeking to make informed decisions in a volatile economic environment.

2-Literature Review:

The dynamic of stock market performance is influenced by a variety of micro-and macroeconomic indicators. Among these, trading activity metrics- such as trading value, Number of transactions, trading volume are often considered key determinants of stock market movement.

In the context of emerging economies, where market structures are less mature and more susceptible to macroeconomic shocks, these relationships tend to exhibit greater volatility and complexity.

Trading value, which represents the total worth of traded shares over a given period, is generally positively associated with stock market indices. High trading values indicate increased investor participation and confidence, which often lead to a rise in market indices. According to Karim and Chaudhary (2017), in the context of south Asian markets, increased trading value significantly contributed to short-term market returns. Similarly, Aduda, Masila, and Osongo (2012) found that trading volume and market turnover are important indicators of market performance in the Nairobi securities exchange.

The number of transactions and trading volume-both reflecting the level of investor engagement-have also been found to be strongly correlated with stock index movements. Jones, Kaul, and Lipson (2014) argued that trading volume information about investor sentiment and expectations, which are then reflected in price changes. High transaction frequency, particularly in less efficient markets volatility, which in turn affect stock index trends (Karim, 2016).

Additionally, the exchange rate plays a crucial role in influencing stock market performance in emerging markets, especially those with high import dependencies and fragile monetary systems.

While the direct effect of exchange rate fluctuations on the stock market have been extensively studied, its role as a moderator-altering the strength or direction of the relationship between trading activities and stock index-has received growing attention in recent literature. As a moderator, the exchange rate can amplify or dampen the impact of trading variables on the stock market index. For instance, in times of exchange rate depreciation, local currency devaluation might discourage foreign investment, reduce market liquidity, and thus weaken the otherwise positive effect of increased trading activity on stock prices (Adjasi, Biekpe, Osei, 2011).

Conversely, a stable or appreciating exchange rate may enhance investor confidence, thereby strengthening the link between trading volume and market performance (Grambovas, 2003).

Empirical findings by Mishra, Das, and Pradhan (2009) in BRICS countries highlight that exchange rate volatility significantly conditions the relationship between stock returns and trading activity.

In Syria, where political and economic stability has led to substantial exchange rate volatility, the exchange rate is expected to function as a contextual variable, shaping the effectiveness of trading activities in driving stock market performance.

Furthermore, Aydemir and Demirhan (2009) suggest that the interaction effect between exchange rates and market microstructure variables is particularly significant in emerging and frontier markets, where external shocks and policy interventions are frequent.

In this context, the exchange rate not only reflects macroeconomic condition but also influences investor perception and behavior, thereby acting as a transmission mechanism between micro-level trading activities and macro-level market valuation.

3–Research Questions:

The study aims to investigate the relationship between key indicators of stock market liquidity and the stock index, with a specific emphasis on the moderating role of the exchange rate. The following research questions guide this investigation:

- Do trading volume, trading value, the number of transactions, and the exchange rate influence the stock market index?
- Does the exchange rate moderate the impact of the number of transactions on the stock market index?
- Does the exchange rate moderate the impact of trading volume on the stock market index?
- Does the exchange rate moderate the impact of trading value on the stock market index?

These questions will help to clarify the interactions between liquidity indicators and the stock index, providing a deeper understanding of how the exchange rate influences these relationships.

4-Research Objectives:

The primary aim of this study is to investigate whether the exchange rate moderates the impact of the number of transactions, trading volume, and trading value on the stock market index. To achieve this aim, the following specific sub-objectives are outlined:

- To analyze the impact of trading volume, trading value, the number of transactions, and the exchange rate on the stock market index.
- To evaluate the moderating role of the exchange rate on the relationship between the number of transactions and the stock market index.
- To assess the moderating role of the exchange rate on the relationship between trading volume and the stock market index.
- To identify the moderating role of the exchange rate on the relationship between trading value and the stock market index.

These sub-objectives will help clarify the intricate relationships among these variables and provide insights into the dynamics driving the stock market performance in Syria.

5-Research Significance:

The significance of this study is twofold: theoretical and practical.

Theoretical Significance: The study enhances market microstructure theory by examining how key trading activity metrics—such as volume, value, and the number of transactions—impact stock market performance. It rigorously tests the assumption that these indicators not only reflect market liquidity but also influence information flow and investor sentiment, which are critical to market efficiency.

Additionally, this research offers a theoretical refinement by demonstrating how exchange rate volatility can strengthen, weaken, or alter the relationship between trading activities and the stock market index, thereby introducing a macroeconomic perspective to microstructure dynamics.

Furthermore, this study indirectly contributes to the understanding of investor behavior and expectations, a key aspect of behavioral finance. For instance, depreciation of the exchange rate might induce irrational investor panic, dampening the market response to positive trading signals.

Practical Significance: This research is valuable for Syrian policymakers focused on stabilizing the economy and restoring investor confidence. It highlights the indirect effects of monetary and exchange rate policies on stock market functionality. Moreover, investors can leverage the findings to optimize their market entry and exit strategies. The results suggest that the impact of trading activity on stock prices may differ under volatile versus stable exchange rates, which can inform decisions related to portfolio allocation, risk assessment, and hedging strategies within Syria's uncertain economic landscape.

Additionally, this research provides a framework for identifying when trading activity may cease to be a reliable predictor of market performance, thus equipping regulators and financial institutions with tools to develop early warning systems for potential financial instability.

6-Research Philosophy and Approach and Data:

The study adopts a positivist philosophy that emphasizes objectivity and empirical data. A deductive approach is employed, drawing on established theories and prior findings to guide the research. The research design is explanatory, utilizing time series data analysis to examine the relationships between the variables.

The dataset includes monthly time series data from Syria, ranging from January 2011 to December 2024. It consists of the logarithm of the stock market index (LINDEX), logarithm of trading volume (LVOL), logarithm of trading value (LVAL), and logarithm of the number of transactions (LTN). The exchange rate (LFE) is included as a moderator variable, which is expected to influence the relationships between the independent variables and the dependent variable, the stock market index.

This structured approach allows for a thorough investigation of the effects of stock market liquidity and exchange rate fluctuations on stock market performance in the Syrian context.

7-Research Hypotheses:

H1: There is a significant long-run effect of Syrian stock market liquidity on the stock market index.
H2: There is a significant short-run effect of Syrian stock market liquidity on the stock market index.
H3: The exchange rate moderates the effect of the number of transactions on the stock market index.
H4: The exchange rate moderates the effect of trading value on the stock market index.
H5: The exchange rate moderates the effect of trading volume on the stock market index.

8- Descriptive Statistics:

The analysis revealed that the mean of the logarithm of stock market index was 8.405901, while the mean of LFE and LVOL, LVAL, LTN, was 6.454510, 2.672504, 3.027217, 7.268718 respectively, during the period from 2011 to 2024.

Furthermore, the Jarque-Bera test indicated a significance level of less than 0.05for LINDEX, LFE, which suggests that the data did not conform to a normal distribution. However, the Jarque-Bera test indicated a significance level of more than 0.05 for LVOL, LVAL, LTN, which suggests that the data conform to a normal distribution.

Table (1): Descriptive statistics of return on assets and current ratio during the study period

	LINDX	LFE	LVOL	LVAL	LTN
Mean	8.405901	6.454510	2.672504	3.027217	7.268718
Jarque-Bera	14.03041	11.28012	0.321645	1.690895	4.736259
Probability	0.000898	0.003553	0.851443	0,429365	0.093656
Number of observations	167	167	167	167	167

9- Test of Stationary:

To assess the stationarity of the variables, Augmented Dickey-Fuller unit root test was utilized on the time series data at both the level and first difference. The ADF test I a statistical test used to determine whether a time series is stationary or has a unit root. Stationary means that the statistical properties of the series (like mean and variance) do not change over time. The test is important because many models require stationary for valid results. The augmented part refers to the inclusion of lagged terms to account for autocorrelation in the data. The null hypothesis for this test posited that the time series contains a unit root, indicating non-stationarity, while the alternative

hypothesis asserted that the time series is stationary. Dickey et al (1979) The test was conducted with individual intercepts and trends for all time-series. The findings revealed that (LINDEX, LFE) were non-stationary at the level ($P > 0.05$) and became stationary at the first difference ($P < 0.05$). Additionally, the (LVOL, LVAL, LTN) were stationary at level.

Since some time series are stationary at the level and others at the first difference, this provides an incentive to use Auto-Regressive Distributed lag model (ARDL) to test relationships between variables in both the long and short run.

Table (2): Unit Root Test result

Level			
variables	T statistic	prob	result
LINDEX	-2.584115	0.2882	Non Stationary
LFE	-2.211438	0.4797	Non Stationary
LVOL	-9.446035	0.0000	Stationary
LVAL	-6.888692	0.0000	Stationary
LTN	-4.295215	0.0041	Stationary
First Difference			
LINDEX	-8.962757	0.0000	stationary
LFE	-14.39232	0.0000	stationary

10- The ARDL Bound Test:

The bound test is used to test whether there is a long-run co-integration relationship between the dependent variable the stock market index (LINDEX) and the independent variables, the trading value (LVAL), the trading volume (LVOL), number of transactions (LTN) and exchange rate (LFE). Pesaran et al (2001). The ARDL model is used to analyze the relationship between variables in the short and long run, even if the variables are a mix of stationary (I(0)) and non-stationary (I(1)) series. Unlike other co-integration methods, the ARDL approach can be used with small samples and provides robust results in such cases. It estimates both short-term dynamics and long term equilibrium relationship in one framework. Pesaran et al (1999).

The null hypothesis: There is no long-run relationship (no co-integration).

The alternative hypothesis: There is a long-run relationship (co-integration exists).

The result of ARDL test indicates that the value of F-statistic (8.349470) is higher than even the upper bound at all conventional significance levels, we reject the null hypothesis of no co-integration. This confirms that a long run co-integration relationship exists between stock market index and the selected explanatory variables. This indicates acceptance of the first study hypothesis.

Table (3): The Result of Bound Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	8.349470	10%	3.03	4.06
k	4	5%	3.47	4.57
		2.5%	3.89	5.07
		1%	4.4	5.72
			Finite Sample:	
Actual Sample Size	166		n=80	
		10%	3.16	4.23
		5%	3.678	4.84
		1%	4.89	6.164

Additionally, Table (4) reveals that the coefficient of the lagged level of the dependent variable, LSP (-1), is negative ([-number_1]) and significant (p=0.0005). This suggests that approximately 7.1% of the disequilibrium in the stock market index is corrected each month, indicating a slow yet meaningful adjustment toward long-run equilibrium following short-term shocks. The negative sign reinforces the presence of a restoring force driving the system toward equilibrium.

Moreover, Table (4) indicates that only the logarithm of trading volume (LVO) and the logarithm of the exchange rate (LFE) have a statistically significant positive long-run effect on the stock market index (LINDEX), while the effects of the logarithm of trading value (LVA) and the logarithm of the number of transactions (LTN) were not significant. This supports the acceptance of the first study

hypothesis solely for LVA and LTN. Furthermore, Table (4) shows that only the logarithm of trading value (LVA) and the logarithm of the number of transactions (LTN) demonstrate a statistically significant positive short-run effect on the stock market index (LINDEX), while the effect of the logarithm of trading volume (LVO) is not significant. This indicates the acceptance of the second study hypothesis for LVA and LTN only.

Table (4): The Result of Conditional Error Correction Regression.

Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.655120	0.429506	-1.525287	0.1292
@TREND	0.000673	0.000521	1.290938	0.1986
LINDEX(-1)*	-0.071661	0.020092	-3.566619	0.0005
LFE**	0.035489	0.014554	2.438407	0.0159
LTN(-1)	0.018628	0.011407	1.633025	0.1045
LVA(-1)	-0.133536	0.276438	-0.483059	0.6297
LVO(-1)	0.472987	0.192353	2.458953	0.0150
D(LTN)	0.073776	0.011380	6.482762	0.0000
D(LVA)	0.581844	0.287683	2.022518	0.0448
D(LVO)	-0.340486	0.223940	-1.520435	0.1304

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

11- The moderating effect of exchange rate on the relationship between number of transactions (LTN) and stock market index (LINDEX):

The results presented in Table (5) indicate a significant negative effect of the logarithm of the number of transactions (LTN) on the stock market index (LINDEX), with a p-value below 0.05. Additionally, the logarithm of the exchange rate (LFE) shows a significant negative impact on the stock market index (LINDEX) at the same significance level.
Furthermore, the findings suggest that the logarithm of the exchange rate has a positive and statistically significant effect on the relationship between the number of transactions (LTN) and the stock market index (LINDEX), with a significance level of less than 0.05. This supports the acceptance of the third study hypothesis.
The model's coefficient of determination is reported at 99.8702%, indicating that the variables collectively account for approximately 99.8702% of the variation in the stock market index. This result further supports the acceptance of the third study hypothesis.

12- The moderating effect of exchange rate on the relationship between trading value (LVA) and stock market index (LINDEX):

The results presented in Table (6) indicate a non-significant negative effect of the logarithm of trading value (LVA) on the stock market index (LINDEX), with a p-value below 0.05. Additionally, the logarithm of the exchange rate (LFE) exhibits a significant negative impact on the stock market index (LINDEX) at the same significance level.
Furthermore, the findings suggest that the logarithm of the exchange rate has a positive and statistically significant effect on the relationship between trading value (LVO) and the stock market index (LINDEX), demonstrated by a significance level of less than 0.05. This supports the acceptance of the third study hypothesis.

Table (5): The Result Third Hypothesis Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LINDEX(-1)	0.844312	0.018772	44.97642	0.0000
LTN	-0.057384	0.016747	-3.426552	0.0008
LFE	-0.148094	0.033134	-4.469516	0.0000
LTN_LFE	0.023061	0.003074	7.502091	0.0000
LTN_LFE(-1)	-0.002207	0.001529	-1.443527	0.1508
C	1.421067	0.213621	6.652267	0.0000
@TREND	0.003342	0.000594	5.622485	0.0000

R-squared	0.998702	Mean dependent var	8.411657
Adjusted R-squared	0.998654	S.D. dependent var	1.436312
S.E. of regression	0.052705	Akaike info criterion	-3.006961
Sum squared resid	0.441672	Schwarz criterion	-2.875732
Log likelihood	256.5777	Hannan-Quinn criterion.	-2.953694
F-statistic	20396.87	Durbin-Watson stat	1.585035
Prob(F-statistic)	0.000000		

The model's coefficient of determination is reported at 99.8253%, indicating that the variables together explain approximately 99.8253% of the variation in the stock market index. This result supports the acceptance of the fourth study hypothesis.

Table (6): The Result Fourth Hypothesis Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LINDEX(-1)	0.859091	0.020399	42.11491	0.0000
LVA	-0.446388	0.261930	-1.704227	0.0903
LVA(-1)	0.219560	0.111599	1.967397	0.0509
LFE	-0.400991	0.138635	-2.892429	0.0044
LFE(-1)	-0.077844	0.044556	-1.747102	0.0826
LTR_LFE	0.161514	0.041669	3.876145	0.0002
C	1.598850	0.807981	1.978821	0.0496
@TREND	0.002422	0.000680	3.560665	0.0005

R-squared	0.998253	Mean dependent var	8.411657
Adjusted R-squared	0.998175	S.D. dependent var	1.436312
S.E. of regression	0.061354	Akaike info criterion	-2.697318
Sum squared resid	0.594762	Schwarz criterion	-2.547343
Log likelihood	231.8774	Hannan-Quinn criterion.	-2.636442
F-statistic	12895.48	Durbin-Watson stat	1.563902
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

13- The moderating effect of exchange rate on the relationship between trading volume (LVO) and stock market index (LINDEX):

The results presented in Table (7) indicate a non-significant negative effect of the logarithm of trading volume (LVO) on the stock market index (LINDEX), with a p-value below 0.05. Additionally, the logarithm of the exchange rate (LFE) demonstrates a significant negative impact on the stock market index (LINDEX) at the same significance level.

Furthermore, the findings reveal that the logarithm of the exchange rate positively and statistically significantly influences the relationship between trading value (LVO) and the stock market index (LINDEX), with a significance level of less than 0.05. This result supports the acceptance of the third study hypothesis.

The model's coefficient of determination stands at 99.8269%, suggesting that the variables collectively account for approximately 99.8269% of the variation in the stock market index. This result indicates the acceptance of the fifth study hypothesis.

Table (7): The Result Fourth Hypothesis Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LSP(-1)	0.869461	0.024662	35.25563	0.0000
LVO	-0.255690	0.191585	-1.334601	0.1839
LVO(-1)	0.307210	0.102489	2.997491	0.0032
LFE	-0.333351	0.121383	-2.746265	0.0067
LVO_LFE	0.141398	0.038371	3.685062	0.0003
LTR_VO_LFE(-1)	-0.025137	0.013703	-1.834339	0.0685
C	0.679904	0.647852	1.049475	0.2956
@TREND	0.001936	0.000660	2.934007	0.0038
R-squared	0.998269	Mean dependent var		8.411657
Adjusted R-squared	0.998193	S.D. dependent var		1.436312
S.E. of regression	0.061063	Akaike info criterion		-2.706836
Sum squared resid	0.589128	Schwarz criterion		-2.556861
Log likelihood	232.6674	Hannan-Quinn criterion.		-2.645960
F-statistic	13019.02	Durbin-Watson stat		1.600710
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.

14- Discussion:

The findings of this study align with and expand upon several established theories and previous empirical research.
First, the positive long-run effect of trading volume and exchange rate on the stock market index supports market microstructure theory, which emphasizes the role of liquidity in efficient price formation. This is consistent with the works of Aduda et al (2012) and Karim and Chaudhary (2017) who emphasized that increased trading activity improve market performance by enhancing liquidity and investor confidence.
Second, the liquidity preference theory is reinforced by the observation that high trading volume corresponds with higher market index value. Investors prefer liquid assets that are easily tradeable, thereby reducing uncertainty and risk premiums. This reinforces the notion that liquidity is necessary condition for active market participation in emerging economies.
In terms of behavioral finance theory, the observed short-run effect of trading value and number of transactions suggest investor sentiment and reaction to market stimuli, particularly in volatile or uncertain environments like Syria. Similar patterns were noted by Jones, Kaul, and Lipson (2014), who found trading activity to be a reflection of investor expectations.
Importantly, the moderating role of the exchange rate offers new insight. The exchange rate significantly altered the strength and direction of the relationship between trading activity and stock market performance, highlighting the macroeconomic instability's critical role in investor behavior and price formation. These findings confirm previous assertions by Mishra et al (2009) and Adjasi et al (2011) that exchange rate volatility interacts with trading metrics, especially in developing markets.
While capital asset pricing model (CAPM) does not explicitly include exchange rates, its extended versions support inclusion of macroeconomic risks like currency fluctuations. The exchange rate's moderating role affirms this theoretical refinement in the Syrian context.
Overall, the results suggest that stock market liquidity indicators are significant drivers of market performance, but their influence is highly conditional on macroeconomic stability, particularly exchange rate behavior.

15- Limitations and Suggestions for Further Research:

Despite the contributions of this study, several limitations should be acknowledged:
-Geographic Limitation: The findings are confined to the Syrian market and may not be applicable to other emerging or developed economies with differing political and economic conditions.
- Data Constraints: Due to limited data availability, the study relies on monthly data and excludes other potentially influential variables such as interest rates, inflation, or political risk indices.
- Model Specification: Although the ARDL model is appropriate for mixed-order integration, it does not account for potential structural breaks in the data resulting from Syria's geopolitical events, which could affect the results.

-Exchange Rate Representation: The exchange rate is treated solely as a unidirectional moderator, without considering its bidirectional causality with market performance.
Future research could utilize panel data from multiple emerging markets to enhance the generalizability of the findings. Additionally, incorporating other macroeconomic variables like inflation, interest rates, or foreign direct investment could lead to a more comprehensive model. Implementing structural break tests could also improve the robustness of the results, especially in politically volatile contexts.
Furthermore, exploring non-linear models, such as threshold regression or Markov switching models, could capture asymmetries in these relationships more effectively.

16- Conclusion:

This study explored the relationship between stock market liquidity—measured by trading volume, trading value, and number of transactions—and the stock market index in Syria, specifically focusing on the moderating role of the exchange rate.
The findings indicate that both trading volume and exchange rate have significant long-term effects on the stock market index.
In the short term, trading value and the number of transactions also significantly impact the index.
Moreover, the exchange rate moderates the relationships among these three trading activity variables and the market index, underscoring its crucial role in influencing investor confidence and market stability.
These results reinforce theoretical constructs from market microstructure, liquidity preference, and behavioral finance theories, offering practical insights for policymakers and investors. For Syria, effectively managing exchange rate volatility is essential for enhancing market efficiency and supporting sustainable capital market development.

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