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Review Article

# The Impact of the VIX Volatility Index on the ISX Index of the Iraq Stock Exchange under Portfolio Investment for the Period 2016-2023

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**Abstract:** The research aimed to identify the volatility index (VIX) and its trend path during 2016-2023, as well as clarify the relationship between the (VIX) and ISX indices using the ARDL model, and test the stability of both indices. The research concluded that the ISX index for the Iraqi market is selected in a way that allows the index to reflect the state of the capital market. It is calculated through price changes, which does not reflect the reality of the market. The results of the ARDL model also showed the insignificance of the relationship in the short and long term, as the probability P (0.5280) appeared, which is higher than 0.05, which means that the VIX index did not have any effect on the ISX, whether the VIX rose or fell, and this indicates the isolation of the Iraqi Stock Exchange from international markets and its progress in modern trading tools and methods. Among the recommendations for the purpose of developing the ISX index, statistical methods and formulas should be adopted that reflect the actual market reality and simulate international markets and indices. Adopting advanced and modern methods in trading and integrating with international financial institutions and markets through gaining experience, field visits and keeping up with developments.

**Keywords:** VIX, ISX, Portfolio Investment.

## INTRODUCTION

Investor confidence, emotions and psychology contribute to the market's success contribute to the market's success to rise or failure to fall. This confidence is linked to the extent of the progress of the markets and their financial and international connections and financial globalization that contributed to the convergence of markets and the increase in financial flows, due to the financial instruments used, and the progress of indicators of greed and fear to avoid risk before the collapse, so these markets attracted more investors and refrained from investing in underdeveloped markets, and therefore any country that does not have advanced indicators that warn investors or market dealers of risk or that market indicators depend on traditional indicators that are not affected by developments and international indicators, investors will move to other markets, and the market remains narrow in investment. Keep in mind that fear and greed are the two main forces driving the market, and giving in to these emotions can have a negative and significant effect on investors' portfolios and the stock market. Investment entered the Iraq Stock Exchange after 2006, and investment in it was a positive thing, but the problem was that it quickly declined despite its decline, so the reason may be that the market used primitive methods, or that investors moved to markets that have fear indicators such as the United States of America for the Chicago Stock Exchange, which has the fear index or volatility measure (VIX) So we will see in this research the effect of the fear index (VIX) on the Iraq Stock Exchange Index (ISX))

- Importance of the research: Clarifying the volatility measure (VIX) for its importance in knowing the fear of investors, and thus contributes to the retreat from investment in times of fear. And the benefit of the Iraq Stock Exchange from the experiences and indicators used in the field of risk caution.
- Research hypothesis: There is no effect of the (VIX) index on the Iraq Stock Exchange Index (ISX), due to the delay of the Iraqi market from developments in international financial markets.
- Research objectives: Identifying the volatility measure index (VIX) and its trend path during 2016-2023, as well as clarifying the relationship between the (VIX) and (ISX) indices using the ARDL model, and testing the stability of both indices.

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**First - Volatility Index (VIX)**

(VIX) The Chicago Board Options Exchange (CBOE) Volatility Index, a widely used indicator of stock market expectations for volatility based on S&P 500 index options, is known by its common name and trade symbol. It's also known as the fear gauge or index.

Brenner and Galai suggested developing a number of volatility indices, beginning with one measuring stock market volatility and progressing to interest rate and foreign exchange volatility. The volatility index has its roots in financial economics studies conducted by Dan Galai and Menachem Brenner. In a sequence of scholarly articles starting in 1989, (krzeczewska & jasiniak, 2014: 125).

A rise in the volatility index indicates a greater expectation of volatility in asset prices, reflecting more doubt or fear in the market, while a fall in the volatility index indicates the opposite. If The market is in a downward trend when more people are purchasing put options than call options, which causes the index to climb. But if there are more call option purchasers than put option purchasers, this means that investors expect the market to rise, which pushes the volatility index down, and the market is in a state of reassurance. Therefore, it can be said that the VIX index measures the extent of investors' willingness to take risks and their reluctance to take them. According to the following criteria:

1. If the index value is 10-15, this indicates that the markets are stable and reliable.
2. If the index value is between 20-30, this indicates that the markets are volatile and unstable.
3. If the value is above 30 points, this means a sharp decline in the markets (Faour, 2018: 113)

In 2008, the volatility index reached extraordinary heights of more than 50% during the financial crisis. At one point during the crisis, the index hit 85%, indicating that options traders anticipated 50% market volatility over the ensuing year. Extreme levels of the volatility index rarely last for extended periods of time, even though they might be quite high during times of crisis. This is because people act to lower their risk exposure as a result of market conditions. This lowers the level of terror (MORAN, 2022:3).

Volatility increases when there is demand for options contracts. This occurs when the S&P 500 falls. Investors seek to buy financial assets such as put options. When the S&P 500 rises, demand for financial assets decreases. This results in a decrease in the VIX.

S&P 500 options on a collection of significant U.S. stocks are subject to the VIX. Contracts that grant the right to purchase or sell assets at a given price within a given time frame are known as options contracts, and they are associated with this index.

The prices of S&P 500 options that are about to expire are used to calculate the VIX. The market's projections of future volatility over a 30-day period are used to calculate the VIX. The VIX value increases when put and call option prices rise (https://blog.arab-platform.com).

**Second** - Causes of greed and fear

1. High prices are a sign of significant prospective capital gains, which incites investor greed. For many investors, the prospect of becoming wealthy overnight appears like a dream come true because market greed is fuelled by speculation, expectation, and high pricing. As demonstrated by the 1973 oil price crisis, when OPEC countries chose to impose an oil embargo and halt their exports to the United States and its allies, high prices are typically the result of speculation and expectation about the organization's future profits based on current statistics. An economic
2. Crisis ensued in the United States and many other industrialised nations as a result of the severe scarcity and significant increase in oil prices. As a result, oil market indicators decreased .Crises such as the dot-com bubble, which reached its peak of excitement at the turn of the millennium. Investors, from institutions to ordinary people, began pumping money into the stocks of any company with the name ".com", regardless of its business model or profitability. Lectures and the price of shares rose to unimaginable heights and this expectation led to an increase in demand for dot-com stocks. Investors became greedy as prices rose and expected that more investment would lead to higher future gains. The end result was a stock market bubble where stock prices rose dramatically. Investors fell into the trap of greed, and many global financial institutions were on the brink of collapse. Ending the crisis required unprecedented government bailouts, and recovery took about 10 years, after the world lost millions of jobs and billions of dollars (Alberto & Ventura, 2011: 8))
3. Fear of losing good deals, fear of holding them for too long, fear of incurring losses, fear of a market crash, fear of entering or exiting too early or too late. In short, fear arises at a point in the cycle when the price stops rising, and greed at a point when the price stops falling, such as the 1997 Asian Crisis. A sense of optimism was sparked by speculative capital flows from developed nations to East Asian economies, or the so-called "Asian Tigers"—Thailand, Indonesia, Malaysia, Singapore, Hong Kong, and South Korea—which resulted in an excessive buildup of credit and debt in these nations' economies. Due to a lack of foreign exchange sources, the Thai government was compelled to end its long-standing fixed exchange rate of its currency against the US dollar in July 1997. As a result, Asian financial markets experienced a wave of fear., which was quickly reflected in foreign investments

worth billions of dollars. As panic spread through the markets and investors grew increasingly concerned about potential East Asian government bankruptcies, fears of financial collapse began to spread around the world, and it took years to recover. Jyoti, 2023:4)).

Studies have suggested that emotional responses to price changes may be self-developed for financial and investment purposes, and that A minimal degree of emotional reaction could be one element of successful trading. In this situation, psychology will be the judge because trading is likely to include profits that transcend mathematical calculations, and it is well-established that instinctive emotional reactions like fear and greed frequently triumph over financial transactions. A competent investor interprets events rationally rather than emotionally, thus it should not be surprising that this leads to strong trading performance to the extent that emotional reactions impede more complicated decision-making skills, such as those that emerge during financial crises. Investigations are also being conducted into the relationship between trading performance and emotional state, particularly the dynamic elements including the synchronisation of financial and emotional states. Lastly, the substantial amount of neuroimaging research offers a multitude of (Andrew & Repin, 2005:8).

**Third -** Explanation of the Volatility Index (VIX)

To gauge the anticipated implied volatility of the market over a 30-day period, the Chicago Board Options Exchange (CBOE) established the Volatility Index (VIX) contract in 1993. It was based on the S&P 100 OEX (OEX is the trade symbol used to identify index options) (CBOE 2009). The narrow OEX index was selected over the more general S&P 500 index, possibly because OEX options accounted for roughly 75% of the volume of index options traded at the time. Rather of the previous derivation from the Black-Scholes equation, the new VIX is now based on the fair value of future variance (Kownatzki, 2016:41).

Classical finance theory states that the underlying mechanism is solely responsible for the statistical characteristics of price movements. For instance, because news intensity fluctuates over time, volatility clustering occurs. For instance, some traders rely on technical analysis principles like moving averages when making trading decisions, while others merely anticipate that prices will revert to their fundamental levels. Nonlinear interactions between agents can result in complex (chaotic) price changes. The trading behaviour of agents is typified by both fear and greed. Although they support bull markets, they become alarmed if prices shift too sharply. Agents also switch between two activity levels. They are quite tranquil when past market volatility is low, and vice versa. Being well-informed on what's happening in (Westerhoff, 2004:636).

**Fourth -** Volatility Indicators (VIX) (Maddodi, 2024:178)

1. Market Momentum: The S&P 500 is compared to its 125-day moving average using this indicator. Greed is evident if the S&P 500 is currently trading much over this threshold.
2. The number of equities at their 52-week highs and lows is compared to determine the stock price strength. A 52-week upward trend in stocks is a sign of greed.
3. Stock Price Breadth: Examines how many stocks are increasing in value in comparison to how many are declining. There is currently more trading activity in rising stocks than in falling stocks, which suggests greed.
4. Call and Put Options: Calculates the average ratio of call options, which offer investors the right to purchase at a specific price, to put options, which give investors the right to sell at a specific price, during the previous five days. Greed is evident if the puts-to-calls ratio is decreasing.
5. 5-Market Volatility: This indicator shows flat market volatility, a neutral signal, when compared to its 50-day moving average. if the indicator is consistent with the state of the market.
6. Safe Haven Demand: This metric contrasts the past 20-day returns of Treasury bonds, which are safer investments, with those of stocks, which are riskier assets. When stocks beat bonds, it's a sign of greed.

**Fifth -** Iraq Stock Exchange Index

The index is an absolute numerical value in the form of averages or standard numbers used to make comparisons, observations and measurements of cross-sectional changes and time series that occur in companies listed in the financial markets for a specific period of time (Dagher, 2005: 298).

The importance of the index lies in knowing the practical role of the activity of companies listed in the market. If it is on an upward curve, it indicates good activity for those companies, and if the curve is downward, it indicates weak activity of companies. It can also be used to know the efficiency hypotheses that the market has reached. The stock market index reflects the level of firms' prices in the market, since it is based on a sample of shares of companies that are traded regularly, and the sample is often chosen in such a way that the index can represent the state of the capital market. As for the Iraq Stock Exchange Index, it is calculated through the change in prices (points) of listed companies, according to the formula:

The point = (closing price of the current session * company weights) / (base closing price * company weights), while the company weights = (company

capital) / (total capital of the sample companies) (Khalaf, & Fadhel, 2015: 88).

The Iraq Stock Exchange Index is a trend indicator to follow the movement in trading of stocks, and reflects the size of the selected sample, as the market launched the stock price index (ISX60) in 2015 and is calculated based on a new electronic system (X-Stream) and in each session a sample of (60) companies was selected according to the companies that achieve the highest turnover, such as the banking sector, which is the largest trading volume. (Iraq Stock Exchange Report, 2015: 100), and after 2004, laws and instructions facilitated the globalization of the Iraqi market and its entry into the field of financial liberalization and the entry of foreign investors into the market to buy and sell stocks, and 90% of buying and selling was concentrated in the banking sector (market reports for various years). The banks were influential in the number of stocks and contributed to the index in recent years. It is concluded from the index of buying stocks by foreign investors shown in Table (1) that the index of buying stocks by foreign investors recorded its highest levels in eleven years in 2013 during the period between (2012-2022) The value of shares purchased by foreign investors in the Iraq Stock Exchange in the same year reached (1149.809) billion, while the index of stock purchases by foreign investors in 2019 recorded its lowest levels in eleven years in the period between (2012-2022) The value of shares purchased by foreign investors in the Iraq Stock Exchange in 2019 reached (9.978) nine billion nine hundred and seventy-eight million dinars.

Anyone following the market's activities can infer from the data presented in Table (1) that the movement of the stock purchase index by foreign investors who have international investment portfolios and are affected by the events and financial crises that occur in the countries of the world. Therefore, we see that the fluctuation of international indicators such as the (Vix) index pushes them to invest in other countries such as Iraq. It recorded a noticeable fluctuation during the period between (2016-2023) between a significant rise and a significant decline due to foreign investors' fears of the repercussions of the political and economic situation in Iraq, as the movement of the stock purchase index by foreign investors recorded a noticeable and somewhat regular decline starting from 2016 and continuing until 2019, recording the largest decline, while the movement of the stock purchase index by foreign investors returned to record an increase in 2020 that continued until 2021, so that the movement of the stock purchase index by foreign investors returned to a noticeable decline in 2022, so that the value of shares purchased by foreign investors in the Iraq Stock Exchange reached (35.342).

**Table 1: Foreign investors' trading in the Iraq Stock Exchange during the period (2016-2023)**

| Year | Foreign investors purchase index (billion dinars) | Annual percentage change in purchases by foreign investors | The percentage of foreign investors buying to the total investors in the market | Foreign investors selling index (billion dinars) | Annual percentage change in sales by foreign investors | Percentage of sales by foreign investors to total investors in the market |
|---|---|---|---|---|---|---|
| 2016 | 53.835 | | 12.61% | 38.126 | | 8.93% |
| 2017 | 41.480 | -12.355 | 10.72% | 46.569 | 8.443 | 12.04% |
| 2018 | 46.592 | 5.112 | 11.28% | 27.825 | -18.744 | 7.39% |
| 2019 | 9.978 | -36.614 | 7.36% | 23.835 | -3.99 | 12.29% |
| 2020 | 32.845 | 22.867 | 10.05% | 18.683 | -5.152 | 8.37% |
| 2021 | 49.669 | 16.824 | 6.10% | 49.245 | 30.562 | 6% |
| 2022 | 31.541 | -18.128 | 6% | 34.353 | -14.892 | 6.60% |
| 2023 | 35.342 | 3.801 | 8% | 33.353 | -1 | 7.63% |

**Source: Annual Reports of the Iraq Stock Exchange**

**Sixth -** Practical analysis

1- Description and stability test

In this section, we will look into the appropriate standard tests to extract the best results, and we will start with the stability test, and if the data is not stable at the original level, we apply the Autoregressive distributed lag test (ARDL), which is suitable for short-term and long-term flexibility.

According to the principles of applied economics, it requires describing the variables of the models and their expected sign, i.e. determining the model variables as in the table(2).According to the principles of econometrics, the elements of financial safety are independent variables, while the dependent variable is the Iraq Stock Exchange Index (ISN) As in Table (2).

**Table 2: Description of the Symbols of the variables used**

| Independent Variable | Symbols | Expected signal | Dependent variable | Symbols |
|---|---|---|---|---|
| Volatility Index | VIX | Positive When VIX increases ISX rises | Iraq Stock Exchange ISX Index | ISX |

**Source: Prepared by the researcher**

In order to measure the effect of the independent variable on the dependent variable for the period 2016-2320, the function takes the following simple double logarithmic form:-

$$Lnyi = \propto_0 + Ln \propto 1\ X1 + Et$$

If:- Lny$i$= ISX; $LnX1$ = VIX

Therefore, the quarterly time series for the VIX and ISX indices will be included, and through the data in Table (3), their graphs will be as in Figures (1) and (2).

**Table 3: Quarterly data for the Vix and ISX indices**

| Year | Month | Vix | ISX |
|---|---|---|---|
| 2016 | March | 14.04 | 576.86 |
| | June | 13.29 | 539.47 |
| | September | 25.76 | 561.01 |
| | November | 14.74 | 649.48 |
| 2017 | March | 11.04 | 664.46 |
| | June | 9.51 | 576.11 |
| | September | 10.02 | 587.22 |
| | November | 12.37 | 580.54 |
| 2018 | March | 28.34 | 632.57 |
| | June | 11.68 | 579.06 |
| | September | 13.77 | 532.11 |
| | November | 19.97 | 510.12 |
| 2019 | March | 13.43 | 452.46 |
| | June | 15.32 | 496.31 |
| | September | 15.4 | 475.48 |
| | November | 13.71 | 493.76 |
| 2020 | March | 22.75 | 444.9 |
| | June | 25.83 | 434.94 |
| | September | 35.12 | 484.38 |
| | November | 65.54 | 508.03 |
| 2021 | March | 17.22 | 566.18 |
| | June | 20.81 | 573.66 |
| | September | 15.62 | 587.82 |
| | November | 20.81 | 569.2 |
| 2022 | March | 21.67 | 609.18 |
| | June | 31.62 | 574.27 |
| | September | 27.31 | 605.07 |
| | November | 20.81 | 585.95 |
| 2023 | March | 12.45 | 641.46 |
| | June | 17.52 | 667.17 |
| | September | 13.44 | 835.53 |
| | November | 18.7 | 893.15 |

**Source:**
**1-VIX column based on INDEXCBOE: VIX**
**2-ISX column based on Iraq Stock Exchange reports**

We note from Figure (1) that the highest monthly value reached by the index in 2020, as it reached (65.5) in November, which is the highest level since the financial crisis in 2008 due to a combination of the VIX and the Covid-19 pandemic. We note that there is stability in the index.

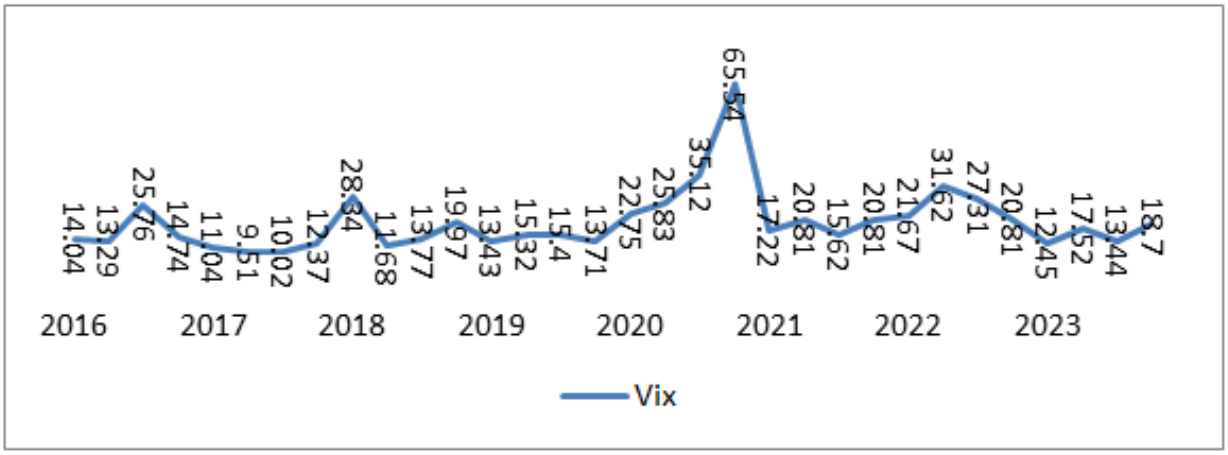


**Figure 1: VIX Index Trend for the Period 2016-2023**
**Source: Based on 10 Eviews**

As we can see from Figure (2), the highest monthly value reached by the index in 2023, as it reached (893.15) points in November, which is the highest level since the financial crisis in 2016 due to the improvement in the financial conditions and stability that the economy experienced during this period. We note that there is stability in the index.

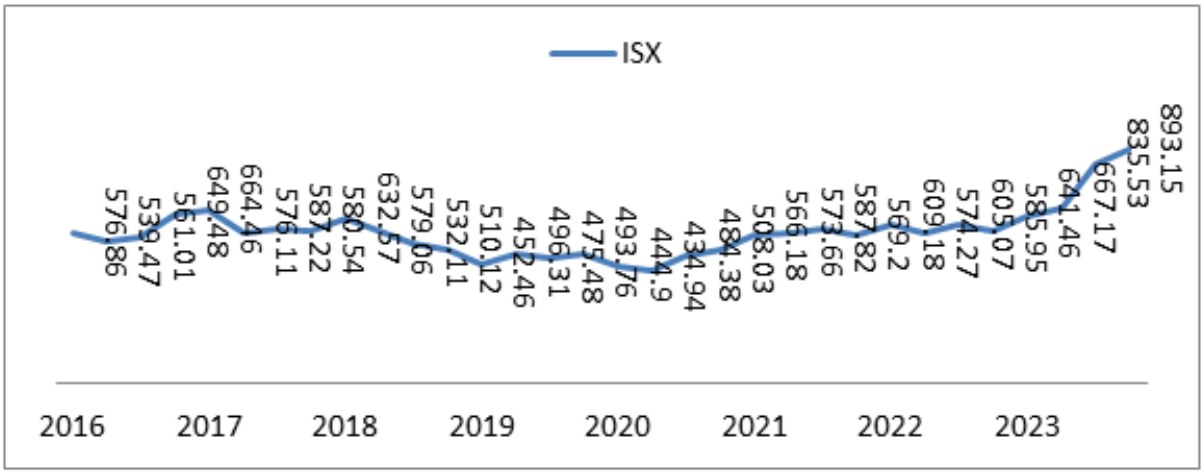


**Figure 2: VIX Index Trend for the Period 2016-2023**
**Source: Based on 10 Eviews**

As we notice from tables (1) (2) (3) according to the Phillips-Perron test, the VIX index is stable at the level, intersection and trend, and without intersection and trend because the probability P reached the level (0.0053) which is less than the significance level (0.5).

**Table 4: Phillips-Perron test At level For indicator VIX**

| | | | |
|---|---|---|---|
| Null Hypothesis: VIX has a unit root | | | |
| Exogenous: Constant | | | |
| Bandwidth: 0 (Newey-West automatic) using Bartlett kernel | | | |
| | | Adj. t-Stat | Prob.* |
| Phillips-Perron test statistic | | -3.918506 | 0.0053 |
| Test critical values: | 1% level | -3.661661 | |
| | 5% level | -2.960411 | |
| | 10% level | -2.619160 | |
| *MacKinnon (1996) one-sided p-values. | | | |

**Source: Based on 10 Eviews**

**Table 5: Phillips-Perron test at an intersection and in general direction for indicator VIX**

| Null Hypothesis: VIX has a unit root | | | |
|---|---|---|---|
| Exogenous: Constant, Linear Trend | | | |
| Bandwidth: 1 (Newey-West automatic) using Bartlett kernel | | | |
| | | Adj. t-Stat | Prob.* |
| Phillips-Perron test statistic | | -3.987991 | 0.0198 |
| Test critical values: | 1% level | -4.284580 | |
| | 5% level | -3.562882 | |
| | 10% level | -3.215267 | |
| *MacKinnon (1996) one-sided p-values. | | | |

**Source: Based on 10 Eviews**

**Table 6: Phillips-Perron test No intersection and no general direction for indicator VIX**

| Null Hypothesis: VIX has a unit root | | | |
|---|---|---|---|
| Exogenous: None | | | |
| Bandwidth: 2 (Newey-West automatic) using Bartlett kernel | | | |
| | | Adj. t-Stat | Prob.* |
| Phillips-Perron test statistic | | -1.253099 | 0.1887 |
| Test critical values: | 1% level | -2.641672 | |
| | 5% level | -1.952066 | |
| | 10% level | -1.610400 | |
| *MacKinnon (1996) one-sided p-values. | | | |

**Source: Based on 10 Eviews**

As we note from Tables (7) (8) (9) according to the Phillips-Perron test, the ISX index is not stable at the level, intersection and trend, and without intersection and trend because the probability P reached the level (0.9816), which is higher than the significance level (0.5).

**Table 7: Phillips-Perron test at the level of the index ISX**

| Null Hypothesis: ISX has a unit root | | | |
|---|---|---|---|
| Exogenous: Constant | | | |
| Bandwidth: 3 (Newey-West automatic) using Bartlett kernel | | | |
| | | Adj. t-Stat | Prob.* |
| Phillips-Perron test statistic | | 0.441660 | 0.9816 |
| Test critical values: | 1% level | -3.661661 | |
| | 5% level | -2.960411 | |
| | 10% level | -2.619160 | |
| *MacKinnon (1996) one-sided p-values. | | | |
| **Source: Based on 10 Eviews** | | | |

**Table 8: Phillips-Perron test At an intersection and in general direction For indicator ISX**

| Null Hypothesis: ISX has a unit root | | | |
|---|---|---|---|
| Exogenous: Constant, Linear Trend | | | |
| Bandwidth: 7 (Newey-West automatic) using Bartlett kernel | | | |
| | | Adj. t-Stat | Prob.* |
| Phillips-Perron test statistic | | 0.573183 | 0.9991 |
| Test critical values: | 1% level | -4.284580 | |
| | 5% level | -3.562882 | |
| | 10% level | -3.215267 | |
| *MacKinnon (1996) one-sided p-values. | | | |

**Source: Based on 10 Eviews**

**Table 9: Phillips-Perron test No intersection and no general direction For indicator ISX**

| Null Hypothesis: ISX has a unit root | | |
|---|---|---|
| Exogenous: None | | |
| Bandwidth: 2 (Newey-West automatic) using Bartlett kernel | | |
| | Adj. t-Stat | Prob.* |
| Phillips-Perron test statistic | 1.051392 | 0.9194 |

| | | | |
|---|---|---|---|
| Test critical values: | 1% level | -2.641672 | |
| | 5% level | -1.952066 | |
| | 10% level | -1.610400 | |
| *MacKinnon (1996) one-sided p-values. | | | |

**Source: Based on 10 Eviews**

**2- ARDL Model**

Using the (ARDL) model for the dependent variable, the Iraq Stock Exchange Index (ISX), and the independent variable, the volatility measure (VIX), for the purpose of extracting the impact coefficient.

It is clear from Table (10) that there is a difference in the impact of some independent variables in the short and long term, as well as the significance of the test limits model, which is reflected by the value of the F-statistic, which was (5.68), which is greater than the minimum and maximum limits and at the 1% level.

The VIX coefficient indicates the presence of an adverse effect on the ISX index, as well as the insignificance of the probability relationship (P) which reached (0.5280), which is higher than 0.05, as the value of elasticity in the long run reached (7.441779 -), which means that the VIX has no effect on the Iraq Stock Exchange index, and this means that an increase in the VIX by (100%) will not be followed by an increase or decrease in the VIX, and this shows that the Iraq Stock Exchange is still in the stage of integration and financial liberalization of the markets, and needs advanced technology, major investors, financial brokers and analysts.

**Table 10: The relationship between the VIX and ISX indices according to the (ARDL) model**

| | | | | |
|---|---|---|---|---|
| ARDL Long Run Form and Bounds Test | | | | |
| Dependent Variable: D(ISX) | | | | |
| Selected Model: ARDL(1, 0) | | | | |
| Case 2: Restricted Constant and No Trend | | | | |
| Date: 01/06/25 Time: 21:44 | | | | |
| Sample: 1 32 | | | | |
| Included observations: 31 | | | | |
| Conditional Error Correction Regression | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -56.69780 | 79.26631 | -0.715282 | 0.4804 |
| ISX(-1)* | 0.093522 | 0.124762 | 0.749606 | 0.4597 |
| VIX** | 0.695972 | 0.936205 | 0.743397 | 0.4634 |
| * p-value incompatible with t-Bounds distribution. | | | | |
| ** Variable interpreted as Z = Z(-1) + D(Z). | | | | |
| Levels Equation | | | | |
| Case 2: Restricted Constant and No Trend | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| VIX | -7.441779 | 11.64671 | -0.638960 | 0.5280 |
| C | 606.2491 | 213.6055 | 2.838171 | 0.0083 |
| EC = ISX - (-7.4418*VIX + 606.2491 ) | | | | |
| F-Bounds Test | | Null Hypothesis: No levels relationship | | |
| Test Statistic | Value | Signif. | I(0) | I(1) |
| | | | Asymptotic: n=1000 | |
| F-statistic | 5.680055 | 10% | 3.02 | 3.51 |
| k | 1 | 5% | 3.62 | 4.16 |
| | | 2.5% | 4.18 | 4.79 |
| | | 1% | 4.94 | 5.58 |
| Actual Sample Size | 31 | | Finite Sample: n=35 | |
| | | 10% | 3.223 | 3.757 |
| | | 5% | 3.957 | 4.53 |
| | | 1% | 5.763 | 6.48 |
| | | | Finite Sample: n=30 | |
| | | 10% | 3.303 | 3.797 |
| | | 5% | 4.09 | 4.663 |
| | | 1% | 6.027 | 6.76 |

**Source: Based on 10 Eviews**

## CONCLUSIONS

1. According to the ISX index, the sample is selected in a way that allows the index to reflect the state of the capital market. It is calculated through price changes, which does not reflect the reality of the market.
2. Foreign investors' data recorded a noticeable fluctuation during the period (2016-2023) between a significant rise and a significant fall due to foreign investors' fears of the repercussions of the political and economic situation in Iraq, and reliance on international indicators such as VIX
3. There is stability in the VIX index during the period (2016-2023) and stability in the ISX index, but this stability did not contribute to achieving an advantage for the market.
4. The results of the ARDL model showed the insignificance of the relationship in the short and long term, as the probability P (0.5280) appeared, which is higher than 0.05, which means that the VIX index did not exert any influence on the ISX, whether the VIX rose or fell, and this indicates the isolation of the Iraqi Stock Exchange from international markets and its progress in modern trading tools and methods.

## RECOMMENDATIONS

1. For the purpose of developing the ISX index, statistical methods and formulas should be adopted that reflect the actual market reality and simulate international markets and indicators.
2. Adopting advanced and modern methods in trading and integration with international financial institutions and markets through gaining experience, field visits and reviewing developments.
3. Developing an incentive program for foreign investors and providing facilities.

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