



## RELATIONSHIP BETWEEN CONSUMER CONFIDENCE AND STOCK MARKET INDEX IN VIETNAM: RESEARCH IMPACTS OF THE PASSION OF COVID-19

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ARTICLE INFO	ABSTRACT
<p>DOI: 10.52932/jfm.vi3.404</p> <p><i>Received:</i> March 12, 2023</p> <p><i>Accepted:</i> June 20, 2023</p> <p><i>Published:</i> June 25, 2023</p> <p><b>Keywords:</b> Consumer confidence; Stock market index.</p> <p><i>JEL Code:</i> O16; G23; H83</p>	<p>The article, studies the relationship between consumer confidence and the stock market index in Vietnam's stock market in the context of the Covid-19 pandemic shock, data collected from 2012Q1 to 2021Q4 from Nielsen data sources. Consumer confidence is measured by the consumer confidence index (CCI), and the stock market index (SMI). The authors use the P.VAR model to solve the set goals. Research results show that there is a strong positive relationship between consumer confidence and the stock market index in Vietnam in the period from 2012 to 2021. In addition, shocks of the past CCI and SMI value also affect current CCI and SMI values. This shows that when consumer confidence is in a positive direction, the SMI will also be in a positive direction and vice versa. In addition, the results showed that Covid 19 did not significantly affect the above relationship. From the research results, the authors propose governance implications to attract more investors to participate in the stock market, contributing to promoting capital in the circulating economy more effectively.</p>

### 1. Introduction

Vietnam's stock market in the period 2012 to 2021 has many innovations as on February 6th, 2012, the VN30 index was first launched and changed the payment period by shortening the payment period from T+4 down to T+3. In 2016, this period continued to change and

only 2 days remained, and in 2017, derivative securities appeared and the VN-Index at this time increased to 984 points. On April 9th, 2018, VN-Index set a new peak of 1,204 points and by the end of 2019, the VN-Index decreased to 961 points. However, by 2020, due to the impact of the COVID-19 pandemic, Vietnamese stocks experienced sharp declines. Despite a decline in 2020, Vietnam's stock market quickly recovered in 2021. According to Mirae Asset Vietnam Securities Co., Ltd.,

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Vietnam's economy initially picked up again in October 2021 as provinces have gradually eased social distancing and promoted vaccination against COVID-19. Sharing the same view, analysts from VNDIRECT Securities Joint Stock Company said that market sentiment was more positive in October 2021 after the government introduced a policy to ease the distance in Hanoi and Ho Chi Minh City, at the end of the trading session on November 2nd, 2021, the VN-Index increased to 1,452.46 points. With positive belief, investors just started to use their idle money to switch to the stock investment channel, and investors with large profits made the cash flow continue to pour strongly into stocks. So why has such a large fluctuation is related to investors' confidence in the stock market? This is an issue that always attracts domestic and foreign managers and researchers. To date, there have been many studies on the impact of consumer confidence on the stock market index, but research on the interrelationship of these two factors in Vietnam is still very limited, especially in the Covid-19 pandemic. Therefore, the authors want to study to clarify this research gap, and from the research results will propose implications to help investors make the most reasonable investment decisions. That's why the authors chose the topic "*Relationship between consumer confidence and stock market index in Vietnam: Research impacts of the passion of Covid-19*" to research and answer the questions posed.

## 2. Theoretical basis and research

### 2.1. The concept of the consumer confidence index

The concept of the consumer confidence index: According to Katona (1968), consumer confidence is a way to measure expected changes in income. Katona also argues that consumer confidence includes emotional and intellectual factors. It is the emotional element

of optimism and pessimism that has spread to other consumers. United Nations Statistics Division (2015), believes that this is a statistical indicator used to forecast consumer spending trends, and provides information for assessing the current situation and prospects of the economy of a country.

#### *Related studies on the method of measuring consumer confidence index*

Research by Curtin, Presser & Singer (2000) shows that factors affecting consumer confidence include: income, inflation, economic growth, unemployment, savings, discretionary spending. The author uses a four year consumer confidence index data set from 1996 to 1999 from Russia and the United States, and there is no need to use a weighted method to calculate the consumer confidence index because the author thinks that with this calculation and the calculation using weights, there is no difference.

Maguire & Eugenia (2014), conducted a survey of consumer confidence in 7 cities, namely Ho Chi Minh City, Hanoi, Da Nang, Can Tho, Hai Phong, Nha Trang, and Dong Hoi with 1000 samples by direct interview method. ANZ calculates the consumer confidence index using the amplification method for 5 questions and each question has 3 answers. The survey subjects are people aged 14 years and over and ANZ publishes the monthly consumer confidence index.

Curtin (2007) conducted consumer surveys in 37 countries. The author divided into 3 main groups based on the difference in reference time.

*Group 1:* This group covers more than half of the countries, using the EU harmonized questionnaire.

*Group 2:* Use questions for the past and present with a reference period of 12 months and longer.

*Group 3:* Using a reference period of 6 months.

The author also offers 3 methods to calculate the consumer confidence index for countries as Equilibrium value method, amplification method, and relative value method.

European Commission (2021), the first survey was the harmonized business survey in the manufacturing industry conducted in 1962, but in 1972 it was extended to the European consumer confidence survey. The program is implemented in 27 EU member states and 5 EU candidate countries: Albania, Montenegro, North Macedonia, Serbia, and Turkey. The questions in the questionnaire relate to the financial situation of households, general economic situation, savings, and intention to make large purchases.

## 2.2. The concept of the stock market index

Is a statistical value and this value will reflect the situation of the stock market. The stock list will be aggregated according to the calculation methods to form a stock market index. Typically, the stock list will be set up so that the stocks must have certain things in common, such as having the same listing on the same stock exchange, the same industry, or the same market capitalization,... A country stock index will represent the performance of the stock market in a country and reflect investor sentiment on the state of the economy. Thereby, securities investors or market managers can make reasonable investment decisions

*Related studies on stock index measurement methods*

- (1) CAPM model: The Capital Asset Pricing Model (CAPM) is intended to forecast the return of security through the beta value of that security. Recent empirical evidence shows that in addition to beta, there are variables such as the price-to-earnings (P/E) ratio and market-to-book value (PBV). This shows that the CAPM model predicts the return of security through the values of the variables beta, P/E, and PBV.
- (2) Fama and French model: With the research results in 1993, Fama and French built a

model of three Fama-French factors: Size, BE/ME value and market factor. The model is as follows:

$$E(R_i) = R_f + [E(R_M) - R_f]\beta_i + s_i E(SMB) + h_i (HML)$$

$E(R_i)$ : return for stock list  $i$

$R_f$ : risk-free return

$E(R_M)$ : the expected return of the entire market

$s_i$ : regression coefficient for factor SMB

SMB: the historical average of small company stock list return - large company stock list return

HML: the historical average of high (book value/market) return - low (book value/market) list return

$\beta_i$ : regression coefficient for the risk premium factor of the stock list

Fama French's model for the US market during 1963-1991 showed an inverse relationship between size and average return and a positive correlation between BE/ME and medium return.

(3) Experimental model of Chen & Zhang (2010):

Chen & Zhang (2010), built the model on NYSE, AMEX, and NASDAQ from January 1972 to December 2006 as follows:

$$E(r_i) - r_f = \alpha_i + \beta_{MKT}^i E(r_{MKT}) + \beta_{INV}^i E(r_{INV}) + \beta_{ROA}^i E(r_{ROA}) + e_i$$

$r_f$ : Risk-free return

$\beta_{MKT}^i$ ,  $\beta_{INV}^i$ ,  $\beta_{ROA}^i$ : coefficients measuring the sensitivity of stock returns

$E(r_{MKT})$ ,  $E(r_{INV})$ ,  $E(r_{ROA})$ : market risk premium, investment allocation, return on total assets premium

The author has concluded that expected return has a negative relationship with investment on I/A assets, with asset growth with the ME/BE ratio, and with past long-term revenue growth. In addition, the author also thinks that return has a positive relationship with ROA.

### ***2.3. Relationship between the consumer confidence index and stock index***

There are many studies on the impact of consumer confidence and stock index:

Jansen & Nahuis (2003) used data from 11 European countries including Belgium, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Spain, Portugal, and the UK. Data from January 1986 to August 2001, excluding Greece from 1988 to October 2001, Portugal from 1988 to January 2001, and Spain from 1986 to July 2001. The author uses Granger causal model to determine the relationship between CCI and SMI. The research results show that stock returns and changes in sentiment are positively correlated for nine countries: Belgium, Denmark, France, Switzerland, Italy, the Netherlands, Spain, and Portugal, USA excluding Germany and UK.

Hsu, Lin & Wu (2011) used monthly panel data for 21 countries from 1999 to 2007. The author used FE, MG, cointegration test and Granger causality method to determine the relationship between CCI and SMI. The research results show that there is no long-term relationship between the stock index and the consumer confidence index, but only a short-term relationship.

Van Zandweghe (2019) using the S&P 500 index and the University of Michigan consumer sentiment index and using the Granger test confirmed that the CCI and SMI are highly correlated, and change from time to time. In addition, the study also shows that in the crisis period, these two indicators are more closely linked than in the normal period.

Ayben & Akkaya (2017) use monthly data for the period January 2007 and June 2016. Using Markov vector autoregression model (MS(M)-VAR(p)). The results show that stock returns impact the S&P 500 price index and show that market pessimism has a larger impact on stock returns during declining markets.

Sum (2014) uses monthly data from 31 countries. The sample size used is quite large

at 7206 monthly observations of the countries. Least squares regression (OLS) was used to estimate the coefficients related to consumer confidence and the data was pooled together for regression analysis. The results of the study suggest that consumer confidence has a positive impact on stock market returns.

Fisher & Statman (2003) used AR time series models for consumer confidence data series from January 1978 to December 2002 (University of Michigan) and from May 1977 to December 2002 (Conference Board) and stock index data for the S&P 500, Small-Cap and Nasdaq from 1995 to 2002, monthly, six months, and twelve months. The author believes that there is an inverse relationship between consumer confidence and stock returns in the next month, in the next 6 months, and in the next 12 months. Although there is a reverse relationship between consumer confidence and stock returns in the future, there is a relationship and statistical significance between changes in consumer confidence and profits stock, that high profits stock boosts consumer confidence.

Bannigidadmth (2020), using monthly data on Indonesia stock index returns and consumer confidence index from Datastream and FRED Economic Data. The sampling period of the data is from March 2003 to April 2019. The author uses a time series regression model and shows that changes in consumer sentiment do not predict excess returns over the Indonesian market index. However, the author argues that lagged changes in consumer sentiment will positively predict stock returns in three sectors: oil, gas, consumer goods, and consumer services.

### **3. Research model and methods**

Nitin et al. (2017), used an econometric approach using the VEC model to determine the relationship between the consumer sentiment index and the Indian stock market index. The results indicate that the Indian stock market

is highly sensitive to consumer sentiment in the short term as well as in the long term. The Consumer Sentiment Index (CSI) data is provided by the Bombay Stock Exchange (BSE), the Center for Monitoring the Indian Economy (CMIE) and the Center for Survey Research, University of Michigan. Data has been released on a daily basis. The author has sourced daily index data from the National Stock Exchange (NSE). The data were obtained between March 1st, 2016 and February 1st, 2017. The model is defined as follows:

$$NIFTY_t = \beta_0 + \beta_1 CSI_t + \mu_i$$

$NIFTY_t$  : NSE Nifty market index

$\mu_i$  : surplus

$CSI_t$ : consumer sentiment index

Sum (2014) based on monthly data analysis of 31 countries, the results show that business confidence and consumer confidence have a positive influence on stock market returns. The author argues that a change in consumer confidence has a stronger impact on stock market returns across countries than a change in business confidence. The sample size used by the author is quite large, with 7.206 monthly observations of different countries.

$$RR_{it} = a + \phi \Delta BC_{it} + \psi \Delta CC_{it} + \varepsilon_{it}$$

$RR_{it}$ : stock market returns.

$\varepsilon_{it}$ : surplus

$BC_t$ : business confidence

$CC_t$ : consumer confidence

Inheriting the above studies, the author will implement the PVAR model between the consumer confidence index and stock index for Vietnam to consider the interaction of the relationship of the two variables as follows:

$$SMI_t = \beta_0 + \beta_1 CCI_t + \beta_2 SMI_{t-i} + \mu_i$$

$$CCI_t = \beta_0 + \beta_1 SMI_t + \beta_2 CCI_{t-i} + \mu_i$$

$SMI_t$ : stock index quarter t

$SMI_{t-i}$ : stock index quarter t-i

$\mu_i$ : surplus

$CCI_t$ : consumer confidence index quarter t

$CCI_{t-i}$ : consumer confidence index quarter t-i

Research data: The author will collect data on the consumer confidence index and stock market index of Vietnam. The author will collect secondary information from Nielsen data and VNIndex from 2012Q1 to 2021Q4 for Vietnam.

Research method: In this study, the author uses the PVAR model between the consumer confidence index and stock index to analyze the interaction between two variables CCI and SMI, specifically as follows: (1) Test the stationarity of two data series CCI and SMI through graph analysis, autocorrelation function analysis and autocorrelation diagram, unit root test and @ trend variable regression to consider the trend for CCI, SMI. (2) Find the optimal delay for the PVAR model and test Granger causality. (3) Estimating the PVAR model with variables after testing for stationarity. Then conduct an analysis of variance decomposition, analysis of repulsion function, and stability of the model.

## 4. Research results

### 4.1. Stationarity test

Based on analysis of stationary testing through graph analysis, analysis of autocorrelation function and autocorrelation diagram, unit root test, and regression of @trend variable to consider trend calculation for variables CCI, SMI, CCI\_PCA, and SMI\_PCA. To perform the stationary series test of the variables in the study, the author uses the Augmented Dickey-Fuller test. The results after testing:

**Table 1.** Stationarity test results (CCI and SMI)

Variable	ADF	Significance level 1%	Significance level 5%	Significance level 10%	P-value	Result
CCI	-2.012	-3.6156	-2.9411	-2.6091	0.2807	Non-stationary series
SMI	1.240	-3.6105	-2.9390	-2.6079	0.9979	Non-stationary series

The p-value = 0.2807 >  $\alpha = 10\%$  or the absolute value of the statistic  $\tau$  of the CCI variable is 2.0120 < the value  $\tau$  at the 1%, 5%, and 10% significance levels, so the hypothesis  $H_0$  is accepted. The CCI series has a unit root, the CCI series is a non-stationary series. The p-value = 0.9979 >  $\alpha = 10\%$  or the absolute value

of the statistic  $\tau$  of the SMI variable is 1.2403 < the value  $\tau$  at the 1%, 5%, and 10% significance levels, so the hypothesis  $H_0$  is accepted. The SMI series has a unit root, the SMI series is a non-stationary series. Therefore, the author continues to take the first difference for the variables and test the stationarity.

**Table 2.** Stationarity test results (CCI and SMI)

Variable	ADF	Significance level 1%	Significance level 5%	Significance level 10%	P-value	Result
DCCI	-10.096	-4.2191	-3.5331	-3.1983	0.0000	Stationary series
DSMI	-4.8078	-4.2191	-3.5331	-3.1983	0.0022	Stationary series

After performing the first difference, the CCI and SMI data series have become stationary data series. The p-value = 0.0000 is very small <  $\alpha = 10\%$  or the absolute value of the statistic  $\tau$  of the CCI and SMI variables > the value  $\tau$  is at 1%, 5%, and 10% significance level, so hypothesis  $H_0$  is not accepted. is a CCI series,

SMI has no unit root, CCI and SMI series are stationary series. Therefore, DCCI and DSMI can be included in the PVAR model to estimate

#### 4.2. Implementation of the PVAR model

##### *The optimal delay*

**Table 3.** The optimal delay

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-314.9451	-	152106.0000	17.6081	17.6960	17.6388
1	-305.5928	17.1459*	113066.3000*	17.3107*	17.5746*	17.4028*
2	-303.7443	3.1834	127784.4000	17.4302	17.8701	17.5838
3	-300.7089	4.8904	135686.9000	17.4838	18.0996	17.6988

After estimating and finding the optimal delay, the authors found that the appropriate optimal delay is 1.

##### *Granger causality test*

In the PVAR model, the Granger causality test tells which variable in the model is affected. The results of the Granger causality test with lag 1 are as follows:

**Table 4.** Granger causality test

	Ho: DCCI has no Granger relationship with DSMI	Ho: DSMI has no Granger relationship with DCCI
Granger Value	0.0276	0.0442

Looking at the parameters in the table above, the author has a basis to confirm that at the 10% level of significance, CCI has a causal effect on SMI and conversely, SMI also has a causal effect on CCI.

#### *The PVAR model*

Through the process of testing the delay of the PVAR model, the author decided to use the model at lag 1. The estimated results are as follows.

**Table 5.** Granger causality test

Variable	DCCI	DSMI
DCCI(-1)	-0.4061	-5.7633
DSMI(-1)	-0.0190	0.2955

#### *Analysis of the decomposition of variance*

**Table 6.** The decomposition of variance of DCCI

Period	S.E	DCCI	DSMI
1	4.2675	100.000	0.0000
2	4.8789	92.5454	7.4546
3	5.0254	92.8880	7.1120
4	5.0691	92.6063	7.3937
5	5.0809	92.6219	7.3781
6	5.0844	92.6064	7.3936
7	5.0854	92.6068	7.3932
8	5.0857	92.6059	7.3941
9	5.0857	92.6059	7.3941
10	5.0858	92.6058	7.3942

The author considers the decomposition of variance to measure the effect of CCI and SMI shocks. The results show that in the first period, the CCI shock depends on itself. However, by

the 2nd period, the CCI shock only contributed 92.5454% to itself and the SMI shock affected 7.4546% to the CCI shock. This shows that in the beginning the CCI shock is affected by itself, and in the long run, the CCI is an additional effect of the SMI shock, which is approximately 7.3942%.

**Table 7.** The decomposition of variance of DSMI

Period	S.E	DCCI	DSMI
1	71.0087	2.6854	97.3146
2	76.9310	9.8501	90.1499
3	78.3185	9.9132	90.0868
4	78.5716	10.3237	89.6763
5	78.6412	10.3548	89.6452
6	78.6556	10.3843	89.6157
7	78.6598	10.3883	89.6118
8	78.6608	10.3905	89.6095
9	78.6611	10.3909	89.6091
10	78,6611	10.3910	89.6089

And the SMI shock in the first period contributed 97,3146% to itself, the CCI shock affected 2.6854% of the SMI. In the long run, the ratio of the impact of the CCI shock on SMI gradually increases, while the SMI shock on itself decreases gradually.

#### *Analysis of the impulse response function*

The authors use the push response function IRF to consider the effects of shocks of CCI and SMI variables. Results of the push response of the variables in the research model

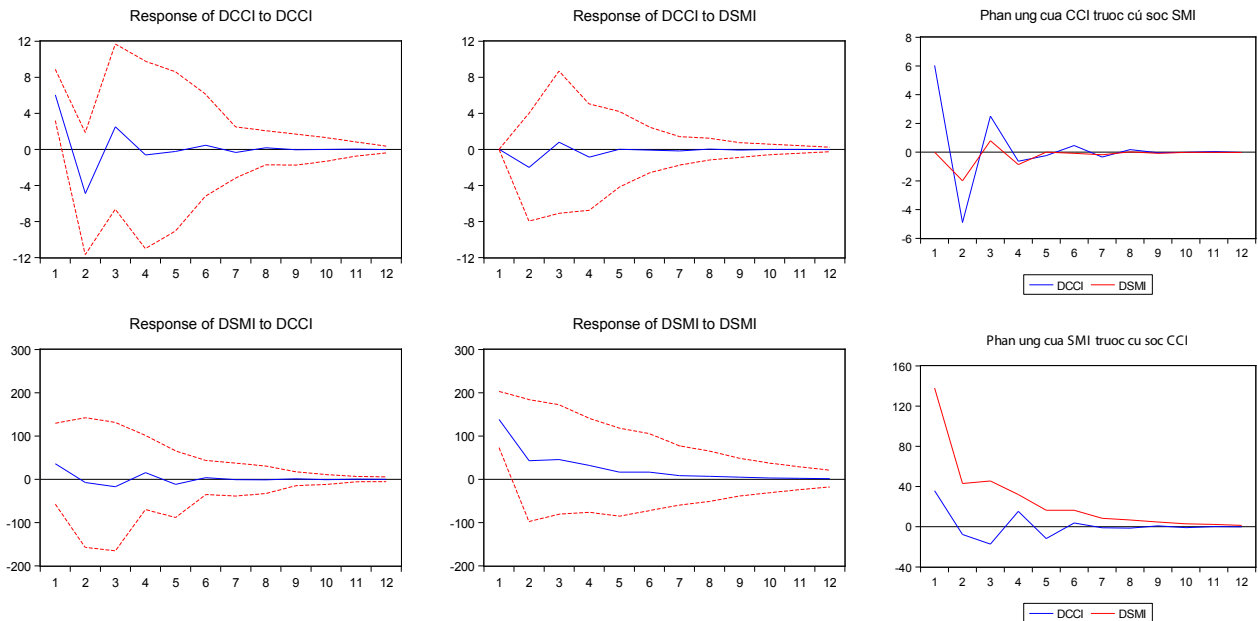
*Firstly*, if the value of CCI in the past decreases, the current CCI also decreases, from the second quarter to the third quarter, it tends to increase, the fourth quarter decreases, and in the fifth quarter, it begins to stabilize.

*Second*, when there is a shock from the decrease in CCI, the SMI also dropped sharply until the second quarter, it increased again. However, by the third and fourth quarters, it continued to decrease and stabilize later on.

*Third*, the shock from SMI has an impact on CCI but is not strong. Starting from the third quarter, CCI tends to be stable

*The push-reaction function for the period 2019Q1 to 2021Q4 - The period with the shock of the Covid-19 pandemic*

*Fourth*, the shock from the past SMI strongly affects the current SMI, it will be more stable in the fourth quarter.



**Figure 1.** Impulse response results

The authors use the impulse response function IRF to examine the effects of shocks of CCI and SMI variables during the Covid-19 pandemic period from 2019Q1-2021Q4. The following results:

*First*, the impact of the stock market index (SMI) on consumer confidence (CCI): From 2019Q1 - 2020Q4 shows that CCI and SMI fluctuate quite strongly. When SMI increases, CCI also increases and the degree of increase is more than that of SMI increases and vice versa when SMI decreases, CCI also decreases. However, from 2021Q1, the SMI tends to increase, but the CCI tends to decrease.

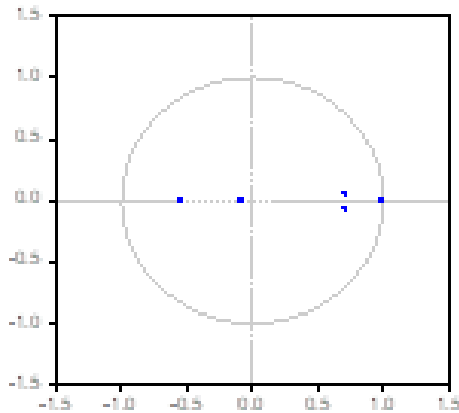
consumer confidence tends to decrease, while SMI increases slightly. However, in 2020Q3, and 2020Q4, the impact of CCI on SMI is in the same direction. In 2021, when consumer confidence decreases but SMI increases significantly, specifically on April 20th, 2021, the VN-Index set a historic peak after 20 years at 1,268.28 points, until 2021Q4 consumer confidence with only a slight increase, the VN-Index reached 1500.81 points on November 25th, 2021, the highest in 21 years of operation. In addition, during the Covid-19 pandemic, the correlation between the CCI and SMI was weak (0.138), but still a positive correlation.

*Model stability*

*Second*, the impact of consumer confidence (CCI) on the stock market index (SMI) tends to be different, specifically in 2020Q1 when consumer confidence tends to increase, the SMI will decrease strongly. In 2020Q2,

The results show that all solutions are inside the unit circle, no solution is outside the unit circle. This shows that the PVAR model responds to stability.





**Figure 2.** Model stability test results

### 4.3. Research results

The results obtained from the stability test of the PVAR model and the impulse response analysis show that the solutions are all inside the unit circle, so the authors can confirm the application of the PVAR model with delay 1 is stable and consistent. The model is as follows:

$$\text{DCCI} = -0.3344 * \text{DCCI}(-1) - 0.0221 * \text{DSMI}(-1) - 0.1502 * \text{CCI}(-1) + 0.0028 * \text{SMI}(-1) + 15.9797$$

$$\text{DSMI} = -5.7093 * \text{DCCI}(-1) + 0.2909 * \text{DSMI}(-1) - 0.0199 * \text{CCI}(-1) + 0.0033 * \text{SMI}(-1) + 22.4987$$

### 5. Conclusion from the study

The author has used the PVAR model to achieve the objective of testing the two-way reciprocal relationship between CCI and SMI

in Vietnam in the period 2012Q1 to 2021Q4. The research results show that there exists a close cause and effect relationship between consumer confidence and the stock market index in Vietnam during the survey period. In addition, the shocks of the past CCI and SMI values also affect the current CCI and SMI values. This shows that when consumer confidence is in a positive direction, the SMI will also be in a positive direction and vice versa. However, when considering the shock in the covid-19 pandemic alone, the correlation between CCI and SMI variables is quite weak, but still a positive correlation.

From the research results, the authors propose the following implications:

- The stock market operates transparently to increase consumer confidence. Thus, attracting consumers to invest in the stock market.

- Securities listed companies disclose clear, transparent and complete information to help investors have sufficient information when looking up to make decisions, thus increasing consumer confidence, contributing to promoting the stock market efficiently.

- There should be a consulting support department to provide information to investors so that they can increase their confidence when making investments in the stock market.

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