

## RESEARCH ARTICLE

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## The Impact of Business and Consumer Confidence on Stock Market Risk Premiums: Evidence From Vietnam

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### ABSTRACT

This research examines the impact of business confidence and consumer confidence on stock market risk premiums. The result showed that consumer confidence has positive influence on stock market risk premiums. The variability of stock market risk premiums is explained by 4.72% of the variability of consumer confidence and 95.28% of the variability of itself in the second month. In the third month, the variability of stock market risk premiums is explained by 6.17% of the variability of consumer confidence and 93.82% of the variability of itself. After six months, the variability of stock market risk premiums is explained by 6.74% of the variability of consumer confidence and 93.26% of the variability of itself, this ratio is maintained stably for the next months. The result of using OLS estimation method has shown that business confidence and consumer confidence explained 10.29% of the variability of stock market risk premiums. However, the research has not found evidence of the impact of business confidence on the stock market risk premiums yet.

**Keywords:** Business confidence, Consumer confidence, Stock market risk premiums, Vietnam Stock Market Exchange

### Introduction

Gross private investment and household spending are important elements in measuring the strength of economy. Thus, business confidence and consumer confidence will affect the economy's output through the private investment and personal consumption. The consumer confidence significantly related to real GDP growth rate of the economy (Howrey, 2001). According to Bernanke (1983), the consumers and entrepreneurs' hesitation about spending and investment may make the economy fall into recession. The empirical research of Fisher & Statman (2003) showed that profits from stock market strongly correlate with consumer confidence. Cevik et al. (2012) found evidence for the business confidence's influence on stock gains of US industrial production sectors. The research of Chen (2011) by Markov transformation model based on S&P 500 indicator revealed that consumer confidence has asymmetric impacts on profits from stock market.

Some researchers, such as Jansen & Nahuis (2003), Lemmon & Portniaguina (2006), Bremmer (2008), found evidence of the relation between stock price, asset price and consumer confidence. Sum (2014) studied the influences of business confidence and consumer confidence on stock gains with data from 31 countries, and the results showed that both business confidence and consumer confidence have positive influence on stock gains, and the consumer confidence has greater influence than business confidence. This finding suggested that market assessment, investment

and risk management should consider the role of business confidence and consumer confidence. In 2012, an empirical research of Sum & Chorlian (2013) about the relation between business confidence, consumer confidence and risk premium in US stock market showed that both business confidence and consumer confidence have positive influence on risk management of stock market.

Therefore, most of researches are taken in advanced countries, and only focused on consideration of the relations between business confidence, consumer confidence and stock gains in the market. There are not many researches to consider the relations of business confidence, consumer confidence and risk management from the stock market (Sum & Chorlian, 2013). However, in Vietnam, no research on this issue has been conducted till now. Thus, this paper aims at filling the gap by considering the influence of business confidence and consumer confidence on risk management in the Vietnam stock market.

### Method and Data

#### Research model:

The research of Sum & Chorlian (2013) considered the impact of business confidence and consumer confidence on risk premium of stock market and specified the important relation between business confidence and consumer confidence in predicting market risk premium through the variance decomposition analysis and implementation of estimation by using OLS method which is about the

relation between changes of business confidence and consumer confidence with market risk premium. Sum & Chorlian (2013) model is proposed as followings:

$$R_{mt} - R_{ft} = \alpha + \sum_{i=1}^p \phi_i (R_{m-t-i} - R_{ft-t-i}) + \sum_{i=1}^p \lambda_i \Delta BC_{t-i} + \sum_{i=1}^p \varphi_i \Delta CC_{t-i} + \varepsilon_t \quad (1)$$

$$\Delta BC_t = \alpha + \sum_{i=1}^p \phi_i (R_{m-t-i} - R_{ft-t-i}) + \sum_{i=1}^p \lambda_i \Delta BC_{t-i} + \sum_{i=1}^p \varphi_i \Delta CC_{t-i} + \varepsilon_t \quad (2)$$

$$\Delta CC_t = \alpha + \sum_{i=1}^p \phi_i (R_{m-t-i} - R_{ft-t-i}) + \sum_{i=1}^p \lambda_i \Delta BC_{t-i} + \sum_{i=1}^p \varphi_i \Delta CC_{t-i} + \varepsilon_t \quad (3)$$

$$R_{mt} - R_{ft} = \alpha + \beta \Delta BC_t + \gamma \Delta CC_t + \varepsilon_t \quad (4)$$

where:

- $R_{mt}$  : Indicator of stock gains in Month t
- $R_{ft}$  : Treasury bond rates in Month t
- $R_{m-t-i}$  : Indicator of stock gains in Month t-i
- $\Delta BC_t$  : Differentials of indicator of business confidence between month t and month t-1
- $\Delta CC_t$  : Differentials of indicator of consumer confidence between month t and month t-1
- $\Delta BC_{t-i}$  : Changes of indicator of business confidence in month t-i
- $\Delta CC_{t-i}$  : Changes of indicator of customer confidence in month t-i
- $\varepsilon_t$  : Random error

This research is based on model of Sum & Chorlian (2013) in order to consider the impact of business confidence and consumer confidence on risk premium in Vietnam stock market.

**Data types and resource:**

This research uses 3 data chains including the differentials of business confidence, the differentials of consumer confidence and the market risk premium. The indicator of business confidence is collected basing on the survey results and quarterly announcement of Financial and Informative Service Company World Vest Base Vietnam, the figures that were proclaimed from Third Quarter in 2008 to the research time was Third Quarter in 2013. The indicator of consumer confidence is collected from the survey results and quarterly announcement of Marketing Research and Global Advertising Company Nielsen Vietnam from Third Quarter in 2008 for the same period with business confidence. The indicator of stock gains, which is collected from VN-Index on Ho Chi Minh City Stock Exchange, also started from Third Quarter in 2008. The Government bond rates are collected with average interest of the month, which belongs to 5-year term Government bond rates from the website of Hanoi Stock Exchange.

VN-Index is collected by date from 1/7/2008 to 30/9/2013 on Ho Chi Minh City Stock Exchange. Daily VN-Index is calculated by the arithmetic mean between

opening price and closing price of that day. Monthly VN-Index is calculated by the arithmetic mean of the dates in a month. On this basis, monthly market profits ( $R_m$ ) are calculated as follow:

$$R_m = \frac{VNI_t - VNI_{t-1}}{VNI_{t-1}} \quad (5)$$

where:  $VNI_t$ : VN-Index of month t

Because the indicator of consumer confidence and business confidence are collected quarterly and the indicator of business confidence in Vietnam started publishing from the third quarter of 2008, quarterly figures will be interpolated by month to ensure necessary model size for the research. The method for interpolation is shown in Table 1. The first-month confidence index in the quarter is also calculated by the confidence index of that quarter. The second-month confidence index is calculated by the arithmetic mean of the first-month confidence index of that quarter with the first-month index of the quarter after. The third-month confidence index is calculated by the arithmetic mean of the second-month index of that quarter with the first-month index of the quarter after.

Year	Quarter	Month	Quarterly Index	Index interpolation by month	Index by month
2008	3	1	97	= 97	97
		2		= (91+97)/2 =94	94
		3		= (91+94)/2 =92.5	92.5
	4	4	91	= 91	91

**Table 1.** Method to interpolating the data of consumer confidence index

After data-collecting and data-processing, the research implements to test the stationarity of the data chain, then applying methods of Ordinary Least Squares (OLS) to take consideration of the impact level of business confidence and consumer confidence on stock market risk premium, and implementing the variance decomposition and impulse response.

**Data Analysis and Results**

**Sample characteristics:**

As the business confidence index just began to proclaim from the third quarter of 2008 and the published data from Financial and Informative Service Company World Vest Base Vietnam until now is the third quarter of 2013, the data of 61 months corresponding with 61 observations. The result of statistical description of the sample is presented in Table 2.

Variables	Observations	Mean	Standard Deviation
$R_{mt} - R_{ft}$	61	-9.94	8.97
$\Delta BC_t$	60	0.267	10.43
$\Delta CC_t$	60	0.0001	3.92

**Table 2.** Descriptive statistics

The result of statistical description has shown the average value of  $R_{mt} - R_{ft}$ , which is negative. This shows the decrease of stock gains index in research time. This result is suitable in Vietnam because of the start from 2008 when the global economy fell into recession, so the decline of Vietnam stock market was clearly shown. The average index of consumer confidence and

business confidence are 96.6 and 116.2. However, because of taking the differentials between two consecutive months, the averages of these indexes are 0.267 and 0.0001. Looking at changeable trend of consumer confidence index and business confidence index shown in Figure 1, the decrease of this trend can be seen clearly, which shows pessimistic attitude of both consumers and enterprises when the economy fell into recession and when there were no signs of significant rehabilitation since 2008.

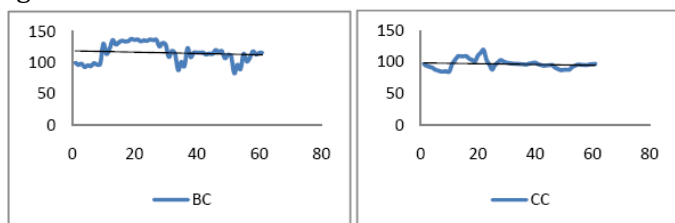


Figure 1. Trends of changing in BC and CC

Table 3 shows that there is a significant relationship between  $\Delta CC_t$  and  $R_{mt} - R_{ft}$  but there is not a significant relationship between  $\Delta BC_t$  and  $R_{mt} - R_{ft}$ . The level of correlation between  $R_{mt} - R_{ft}$  and  $\Delta CC_t$  (correlation coefficient is 0.268) is greater than the level of correlation between  $R_{mt} - R_{ft}$  and  $\Delta BC_t$  (correlation coefficient is 0.169)

Variables	$R_{mt} - R_{ft}$	$\Delta BC_t$	$\Delta CC_t$
$R_{mt} - R_{ft}$	1		
$\Delta BC_t$	0.169	1	
$\Delta CC_t$	0.268*	-0.0238	1

Table 3. Correlation matrix, Note: \*significant at 10%

**Stationarity testing**

Data chain must ensure the stationarity to get reliable estimate result before estimating the OLS methods. Data research uses the three chains including the differentials between market profits and treasury bond rates which are called stock market risk premium ( $R_{mt} - R_{ft}$ ), the differentials of business confidence index between two consecutive months ( $\Delta BC_t$ ) and the differentials of consumer confidence index between two consecutive months ( $\Delta CC_t$ ). In order to have a check for stationarity in research, this research uses ADF testing (Augmented Dickey-Fuller) to find out the existent condition of unit root (a Unit root Test). Besides, to increase the accuracy of the conclusion of variables' stationarity, the research also uses PP testing (Philips-Perron).

Data	Test Statistic	Critical Value 5%	P-Value
$R_{mt} - R_{ft}$	-5.044	-2.922	0.000
$\Delta BC_t$	-12.496	-2.923	0.000
$\Delta CC_t$	-5.394	-2.923	0.000

Table 4. Augmented Dickey-Fuller test for Unit root

The result of PP testing (Philips-Perron) also shows the same result. Based on the finding from Table 4, the p-value of the PP testing ( $p = 0.000$ ) is less than the alpha value of 0.05. Therefore, data chains in research can ensure the stationarity.

The results of causality test are reported in Table 5 below, Granger causality tests is implemented with the lag(1) (follow SBIC and HQIC standard). The result indicated that  $\Delta CC_t$  and  $R_{mt} - R_{ft}$  are found to be significant at 5 % significance level, but  $\Delta BC_t$  and  $R_{mt} - R_{ft}$  are not found to be significant.

Regressors	Dependent Variables (p-value)		
	$R_{mt} - R_{ft}$	$\Delta BC_t$	$\Delta CC_t$
$R_{mt} - R_{ft}$	-	0.312	0.029
$\Delta BC_t$	0.964	-	0.305
$\Delta CC_t$	0.048	0.868	-

Table 5. Granger causality Wald tests

**OLS time-series regression results**

Multiple regression analysis was used in this research to evaluate and determine the relationships between the consumer confidence, business confidence and stock market risk premium. The result of the multiple regression analysis was presented in Table 6. The model is significant (p-value = 0.000) and the adjusted R<sup>2</sup> is 10.29%.

Based on the finding from Table 6, the p value of the  $\Delta CC_t$  (p-value = 0.034) is less than the alpha value of 0.05. Therefore, the research concludes that  $\Delta CC_t$  is positively related to the stock market risk premium. The model explained 10.29% of the variables result of the stock market risk premium. It means that the stock market risk premium will increase 0.6178% if  $\Delta CC_t$  increases 1%. However, the result from Table 6 indicated that the p -value for the  $\Delta BC_t$  ( $p = 0.166$ ) is more than the alpha value of 0.05. Therefore, it may be concluded that the  $\Delta BC_t$  is not significantly related to the stock market risk premium. Testing the assumptions of OLS method such as variance change, multicollinearity meets the requirements.

Variables	Beta	Test Statistic	P-value
const	-10.185	-9.2	0.000
$\Delta BC_t$	0.1503	1.40	0.166
$\Delta CC_t$	0.6178	2.17	0.034
Durbin-Watson: 1.487		p-value: 0.000	

Table 6. Estimation results from OLS

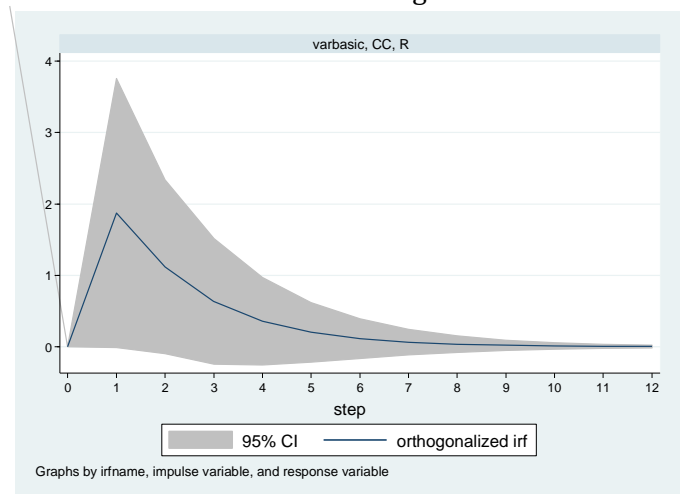
The values of Beta Coefficient of  $\Delta CC_t$  (0.6178) is much greater than Beta Coefficient of  $\Delta BC_t$  (0.1503), It may be concluded that the impact of consumer confidence on the market risk premium is greater than the impact of business confidence. This result is quite similar to research result of Sum & Chorlian (2013).

Based on the variance decomposition analysis, the results shows that the variability of stock market risk premium is mainly explained by the change of consumer confidence, the explanation for business confidence is almost zero. For examples, the variability of stock market risk premium is explained approximate about 4.72% of the movement of consumer confidence and 95.28% of the movement of itself in the second month. In the third month, the variability of market risk premium is explained about 6.17% of the movement of consumer confidence and 93.82% by the movement of itself. After six months, the variability of market risk premium is explained approximately about 6.74% of the movement of consumer confidence and 93.26% by the movement of itself. This ratio is stably maintained for the next months.

Months	$R_{mt} - R_{ft}$	$\Delta CC_t$
2	0.9528	0.472
3	0.9382	0.617
6	0.9326	0.674

Table 7. Variance decomposition of  $R_{mt} - R_{ft}$  and  $\Delta CC_t$

Impulse response functions analysis has foreseen a shock of consumer confidence; the reaction of market risk premium increased from the first month and reached the top from the next two months and after that it descended in the following months.



**Figure 2.** The orthogonal impulse response functions of stock market risk premiums to consumer confidence shock

### Conclusion

The research found the evidence of the impact of consumer confidence on the stock market risk premium, the level of consumer confidence impact is greater than the level of business confidence impact. In the second month, the variability of consumer confidence explained approximately about 4.72% of the stock market risk premium change and the stock market risk premium change is explained by 95.28% of the movement of itself. In the third month, the change of market risk premium is explained about 6.17% of the movement of consumer confidence and 93.82% by the movement of itself. After six months, the change of market risk premium is explained approximately about 6.74% of the movement of consumer confidence and 93.26% by the movement of itself. This ratio is stably maintained for the next months. At the same time, with a shock of consumer confidence, the reaction of market risk premium increased from the first month and reached the top from the next two months and after that it descends in the following months. However, the research has not found any evidence of the impact of the differentials of business confidence on the stock market risk premium yet. Because of the characteristics in Vietnam, the business confidence index and consumer confidence index are collected quarterly and the time for collecting is not long enough. Therefore, the observation for research is limited, data interpolation from quarter to month of consumer confidence index and business confidence index can influence on the result of research.

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