

Factors Affecting the Changes in Broker Credit Directives in Sri Lanka

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Abstract

Volatility is an inherent phenomenon in the stock market. However, high volatility can deteriorate the smooth functioning of the market, resulting in market collapses. Among many other factors, speculative activities of the leveraged investors create undesirable price fluctuations and excess market volatility. Therefore, regulators widely use change in market credit directives to control the destabilizing speculation of investors and inhibit excessive market volatility. The purpose of this study is to investigate the factors that compelled the regulators to change the broker credit directives in the Sri Lankan Stock Market. This study considers the monthly returns based on the All Share Price Index of the Colombo Stock Exchange, and the regulatory changes in broker credit directives by the Securities and Exchange Commission over the period from the year 2010-2019. The Generalized Autoregressive Conditional Heteroskedasticity model was used to estimate the market volatility over the sample period. The study also used a Binary Probit regression model to identify the factors affecting the change in broker credit directives. According to the Probit regression results, Sri Lankan macro-economic factors significantly affect credit directive changes. It is also evidenced that the regulators change credit directives in response to market factors that create a suspected speculative behavior of market participants.

Keywords: *broker credit controls, destabilizing speculation, market volatility*

1. Introduction

The study of stock market volatility has taken paramount importance among investors, regulators, and many academics since it affects asset pricing and the determination of investment returns. In many developed and developing markets, the availability of market credit and the resultant personal leverage by investors leads to excessive market volatility. This phenomenon follows the theory of the

“pyramiding and de-pyramiding effect” introduced by Bogen and Kroos as cited by Chen (2016). In addition, Schwert (1990) highlights that investors’ abuse of stock market credit creates market destabilization and moves the prices away from its fundamentals during their purchase and sell decisions.

Among the number of ways regulators use to limit the investible investor funds, the changes in the broker credit directives are widely seen as a regulatory tool in the Sri Lankan stock market. In Sri Lanka, from 2010 to 2019, there had been nine credit directive changes that had taken place to control market volatility. Even though the changes in credit directives are concentrated on controlling market volatility caused by leveraged investor activities, volatility itself is impacted by many other macro and market factors. Hence, it is intuitive to presume that the effective use of credit directives as a policy tool will depend on the underlying causes that prompt such market volatilities. Cohen (1966) highlights several factors that cause the change in stock market credit directives: the volume of security credit, economic conditions, the volume of speculative activity, stock market price fluctuations, short-term bank rate on business loans, and the gross national product representing the general economic conditions.

However, Hardouvelis (1990) and Hardouvelis and Panayiotis (2002) argue that the regulatory decision of changing the stockbroker credit directives has no impact from the current volatility in equity markets. Accordingly, the decision to increase credit directives are due to rising stock returns, rapid expansion in stock market credit, high trading volume, inflationary pressure, and an expanding economy. The decisions to decrease in credit directives are due to drops in stock market credit and the disappearance of other indicated factors. Brumm et al. (2015) also indicate that the regulators frequently change stock market credit directives in response to economic conditions in the country. According to Salinger (1989), the main reason for the regulators to change the stockbroker credit directives is the rising or falling price levels beyond fundamentals and the resultant changes in stock market returns. Hence, this paper attempts to empirically investigate the factors that impact the decision of the Securities and Exchange Commission of Sri Lanka (SEC) to change credit directives to control the market excesses.

2. Methodology

This study considers the All Share Price Total Return Index (ASPTRI) of the Colombo Stock Exchange from 2010 to 2019. The Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model of Bollerslev (1986) is used to measure the monthly volatility of the Sri Lankan stock market. Following Hardouvelis (1990), this study uses the real rate of return (R_r) to calculate the monthly volatility of stock returns using the nominal rate of return (NR) of ASPTRI minus the inflation

rate (*IR*) as measured by the Colombo Consumer Price Index (CCPI).

The status of stock market broker credit directives was categorized as “change in broker credit directives” and “no change in broker credit directives” and assigned values 0 and 1, respectively. Following Cohen (1966), Hardouvelis (1990), and Hardouvelis and Panayiotis (2002), this study identifies two types of independent variables as market factors and macro factors to proxy for the causes for regulator credit control changes. Market factors include stock market returns (*R*), growth of broker credit (*CGR*), growth in trade volume (*VL*), market volatility (δ^2) while macro factors include inflation (*I*) and growth in the industrial production index (*FIP*). All the independent variables listed above are tested for stationarity using the Augmented Dicky-Fuller test (Dickey & Fuller, 1979). Since the dependent variable of the study is converted into a dichotomous variable, a Binary Probit Regression, as specified in equation (1), was used as the main analytical tool.

$$\text{Log}(y) = \alpha_1 I_{t-1} + \alpha_2 FIP_{t-1} + \alpha_3 R_{t-1} + \alpha_4 CGR_{t-1} + \alpha_5 VL_{t-1} + \alpha_6 \delta_{t-1}^2 \text{ ----- (1)}$$

In equation 1, $\text{Log}(y) \equiv 1$ if the stock market broker credit directive changes and $\text{Log}(y) \equiv 0$ if the stock market broker credit directive does not change.

3. Results and Discussion

According to Table 1, inflation rate and growth in industrial production are significant at 5 percent level of significance. However, it is observed that the SEC is more likely to change the broker credit directives in response to the inflationary pressures in the economy and less likely to change the broker credit directives in response to expanding economic activities. The SEC might not always consider changing broker credit directives in response to changes in the general economy unless they suspect possible destabilizing speculation in market activities. Hardouvelis and Peristiani (1990, 1992) indicate that macro variables do not influence the SEC to change the margin requirements in the US stock exchanges. In support of the view that the change in macro factors does affect the decision of stock market regulators, Cohen (1966) indicates that the SEC is likely to lessen its restriction in stock exchanges, given the tight controls experienced in the macroeconomy. Even though the situations are different in developed countries compared to a developing country such as Sri Lanka, the association of changes in broker credit directives and macroeconomic variables can be justified by the fact those emerging markets are highly impacted by changes in macro conditions of the economy (Peiris & Peiris, 2007).

Table 1: Factors Contributing to the Changes in Broker Credit Directives

Pseudo $R = .416, p < .001$			
Variable	Coefficient	Variable	Coefficient
I_{t-1}	0.076**	VL_{t-1}	-0.002**
FPI_{t-1}	-0.006*	δ^2_{t-1}	0.289**
R_{t-1}	0.004	$R_{t-1} \times VL_{t-1}$	0.000*
CRG_{t-1}	0.000	$R_{t-1} \times CRG_{t-1}$	0.000**

Notes: **, * indicate significance at 1% and 5% respectively

Source: Author compiled based on Stata output

Among the market factors, the growth in trade volumes and stock market volatility is significant at the 5 percent significance level. Nevertheless, results suggest that the SEC is less likely to change broker credit directives in response to the growth in trade volumes at the CSE. Schwert (1989, 1990) indicates that the increase in volumes can be a cause of the trading strategies of some investors. Largay (1973) concludes that stock prices had shown a bullish trend, and the volumes too were increasing rapidly before the margin imposition. However, since the SEC is less likely to respond to growth in trade volumes by changing credit directives, it is possible that the resultant volume growth is less attributable to investor speculative trading strategies than other factors such as improved market conditions and liquidity. Accordingly, if other reasons except speculative investor strategies impact trade volume growth, the SEC will not see the need to change the broker credit directives to manage subsequent market volatility. Hardouvelis and Peristiani (1990, 1992) mention that volatility itself had not been a reason to change margin requirements of the US, but other macro and market variables that caused volatility have been the reasons for such changes. The finding of Hardouvelis and Peristiani (1990, 1992) can be rationalized given that the market volatility is impacted by many reasons, and the change in the credit directives will not be the only solution for all the volatility conditions of the market. However, in Sri Lanka, it is visible that the SEC reacts to the market volatility itself in taking the decisions regarding broker credit directives. This might be due to the nature of the market, where the market is influenced by the investors who follow the activities of a very few investors. According to Morawakage and Nimal (2016), Sri Lankan stock market volatility is more pronounced in negative shocks than to positive shocks in the market.

The stock market returns and growth in credit volumes show no impact on the SEC’s decision to change the broker credit directives. However, the exciting

finding of this model is the combined effect of stock returns and trading volume, and stock returns and the credit growth in the market captured by the two interaction terms of the model. These new variables show a significant impact on the SEC's decision to change the stock market credit directives at the 5 percent level of significance. This is a possible speculative activity by investors where the market return and the trade volume are rising simultaneously. Hence, the SEC's response can be rationalized to control the resultant speculative activities and the market volatility. Cohen (1966), Hardouvelis (1990) and Hardouvelis and Peristiani (1992) also indicate that the trade volume and stock returns are factors that the regulator responds in terms of changes in credit directives in the US stock exchanges. Even though it was evident in developed countries (Hardouvelis, 1990; Hardouvelis & Peristiani, 1992), that the regulator changes the credit directives in response to the growth in market credit, the behavior of the Sri Lankan market regulator was observed to be not the same. Despite the fact that the growth in broker credit did not affect the SEC's decision directly, the results suggested that the combined effect of broker credit and stock returns in the market has a significant impact on changing credit directives. In other words, this implies that the change in credit directives in response to stock returns depends on the growth in broker credit in the market as well.

Supporting these results, Chen (2016) indicates that large fluctuations in prices can be attributed to the abuse of leverage by investors. Galbraith (1955), as cited in Chen (2016), also attributes the underline cause of the South Sea Bubble to the use of unlimited leverage by the investors. Hence, the abuse of leverage by investors can cause large fluctuations in stock prices and lead the market to a condition of destabilization. Guo et al. (2011) also conclude that credit-based trading activities enhance investors' speculation and result in high market volatility. Further, the speculation based on the abuse of leverage by investors creates stock price pyramiding and de-pyramiding effect (Guo et al., 2011). Therefore, the combined effect of stock market returns and the growth in broker credit at the CSE can be attributed to the abuse of leverage resulting large fluctuations in the market. Thus, the effect of these variables is defined as "destabilizing speculation based on broker credit" by investors. Therefore, the excess speculative volatility can be reduced by controlling the leverage or the credit availability of investors, thereby restraining their investment activities. It is evident that the SEC had identified this speculative situation and correctly addressed it through the necessary changes in the credit availability.

The findings of the significant interaction between stock returns and growth in trade volumes, and stock returns and growth in credit growth imply that the SEC does not change broker credit directives only by considering market returns.

Contrary to this, past studies conclude that stock returns significantly impact regulatory changes in market credit. However, the results of the Sri Lankan market imply that the SEC changes broker credit directives in response to changes in market returns combined with the growth in trade volumes and the growth in broker credit facilities. This implies that the SEC is more likely to respond when they experience possible speculative behavior of investors in the stock market.

4. Conclusions

The effectiveness of the regulatory changes in credit directives depends on its responsiveness to the underlying factors that cause excess market volatility conditions. The current study aims to identify macro and market factors that the regulators are likely to consider before changing credit directives. The study shows that the SEC is more compelled to change credit directives when they experience speculative investor behavior in the stock market. More specifically, the results indicate that when the market experiences a simultaneous increase in stock return and trading volume or stock return and the credit growth, the SEC is more likely to respond through the changes in credit directives and constrain investors' speculative activities that cause excess market volatilities.

Even though the results show that macro factors are likely to affect the regulatory response, the policy decision will reap full benefit only if these factors lead to a possible investor destabilizing speculation in the market. Hence, to get the expected outcome of credit directive changes, it is vital to identify the conditions that lead to market speculation through personal leverage by investors. Therefore, the SEC needs to pay more attention to the same factors that they respond through these policy tools and ensure it addresses the exact market conditions. Otherwise, these policy decisions may lead to further market destabilization and collapses.

The results of this study will also be helpful, especially for the retail investors who trade based on market credit facilities. Accordingly, investors can expect more changes in broker credit at times of excessive volatility, growth in trade volume and suspected speculative activities. Having a better understanding of these factors will enable investors to take proactive investment decisions. For instance, if the SEC is more likely to restrict the credit availability to investors, existing investors can adjust their market portfolios by reducing the credit exposure or selling off profitable assets at a reasonable price at the present with the expectations of possible changes in the future. On the other hand, if they do not take proactive actions due to poor understanding, brokers will force sell the most liquid assets that might not be the most profitable to the investor and comply with the new credit rules. This creates an unfavorable situation for investors.

References

- Bollerslev, T. (1986). Generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics*, 31(3), 307-327.
- Brumm, J., Grill, M., Kubler, F. and Schmedders, K. (2015). Margin regulation and volatility. *Journal of Monetary Economics*, 75, 54-68.
- Chen, M. (2016) 'The Impact of Margin Trading on Volatility of Stock Market: Evidence from SSE 50 Index'. *Journal of Financial Risk Management*, 5(3).
- Cohen, J. (1966). Federal Reserve Margin Requirements and the Stock Market. *The Journal of Financial and Quantitative Analysis*, 1(3), 30-54
- Engle, R. F., Ghysels, E. and Sohn, B. (2013). 'Stock Market Volatility and Macroeconomic Fundamentals'. *Review of Economics and Statistics*, 95(3), 776-797.
- Guo, W.-C., Wang, F.Y. and Wu, H.-M. (2010). Financial leverage and market volatility with diverse beliefs. *Economic Theory*, 47(2-3), 337-364.
- Hardouvelis, G. A. and Peristiani, S. (1990). 'Do Margin Requirements Matter ? Evidence from U . S . and Japanese Stock Markets'. *Quarterly Review*, 16-35.
- Hardouvelis, G. A. and Theodossiou, P. (2002) 'The Asymmetric Relation between Initial Margin Requirements and Stock Market Volatility across Bull and Bear Markets'. *The Review of Financial Studies*, 15(5), 1525-1559.
- Morawakage, P.S. and Nimal, PD (2016). Equity market volatility behaviour in Sri Lankan context. *Kelaniya Journal of Management*, 4(2), 1.
- Peiris, T. U. and Peiris, T. S. (2007) 'Measuring Stock Market Volatility in an Emerging Economy'. *International Research Journal of Finance and Economics*, 8(8), 127-133.
- Salinger, M.A. (1989). Stock market margin requirements and volatility: Implications for regulation of stock index futures. *Journal of Financial Services Research*, 3(2-3), 121-138.
- Schwert, G. W. (1990) 'Stock Market Volatility'. *Financial Analysts Journal*, 46(3), 23-34.