INTRODUCTION

Nowadays, under 4.0 industry and Basel impacts, Vietnam banks such as Vietcombank (VCB), Asia Commercial Bank (ACB) and Sacombank (STB) pay attention more to risk management, esp. New perspectives in governance, management and risk models. This is the 1st reason we conduct this research paper. Second, macro policy makers will need to look at risk management in banking industry and impacts of macro factors on market risk in order to adjust macro policies. What we need to adjust in trade balance, exchange rate, lending rate and risk free rate policies? This is the 2nd reason for us to conduct this study. Third, how does effective internal control link to market risk in banks?

Therefore, this study will calculate and figure out not only inflation but other macro factors, both internal and external, such as GDP growth, risk free rate, lending rate, SP500, trade balance and exchange rate, etc. affecting the market risk level during the pre-low (L) inflation period (2011-2015). The paper is organized as follows: after the introduction it is the research issues, literature review, conceptual theories and methodology. Next, section 3 will cover main research findings/results. Section 4 gives us some discussion and conclusion and policy suggestion will be in the section 5.

BODY OF MANUSCRIPT

Research Issues

The scope of this study is:

- Issue 1: What are impacts of internal macro variables such as inflation, GDP growth, VN-Index, risk free rate… on market risk of 3 big banks, VCB, ACB and STB?
- Issue 2: Evaluating impacts of external macro variables such as balance of trade, exchange rate and S&P500 on market risk of VCB, ACB and STB measured by Beta CAPM
- Issue 3: Better risk management by reducing risk will establish internal control effectively in banks.

This paper also tests two (2) below hypotheses:

- Hypothesis 1: the beta or risk level of listed bank (VCB, ACB and STB) will increase if inflation increase and it will decrease if GDP growth increases.
- Hypothesis 2: If exchange rate decreases (VND appreciation), beta CAPM will decrease.

LITERATURE REVIEW

Fama, Eugene F., and French, Kenneth R., (2004) also indicated in the three factor model that “value” and “size” are significant components which can affect stock returns. They also mentioned that a stock’s return not only depends on a market beta, but also on market capitalization beta. The market beta is used in the three factor model, developed by Fama and
French, which is the successor to the CAPM model by Sharpe, Treynor and Lintner. Dimitrov (2006) documented a significantly negative association between changes in financial leverage and contemporaneous risk-adjusted stock returns.

Umar (2011) found that firms which maintain good governance structures have leverage ratios that are higher (forty-seven percent) than those of firms with poor governance mechanisms per unit of profit. Chen et all (2013) supported regulators’ suspicions that over-reliance on short-term funding and insufficient collateral compounded the effects of dangerously high leverage and resulted in undercapitalization and excessive risk exposure for Lehman Brothers. The model reinforces the importance of the relationship between capital structure and risk management. And Gunaraththa (2013) revealed that in different industries in Sri Lanka, the degree of financial leverage has a significant positive correlation with financial risk.

During the financial crisis 2007-2009 in Viet Nam and global financial markets, high inflation causing high lending rates have created risks for many industries such as medicine and the whole economy. Mohamad et all (2014) showed that financial risk is vital through using both return on asset and return on equity in the performance equation. This result also implied that we cannot avoid the inverse relation of financial risk and performance; therefore, bank system would be better to make a trade-off between risk and performance.

Wang et all (2014) presented results showing that firms with long-term institutional investors receive significantly positive abnormal returns around the offering announcement. Then, Gunaraththa (2016) revealed that whereas firm size negatively impacts on the financial risk, financial leverage and financial risk has positive relationship. Hami (2017) showed that financial depth has been affected negatively by inflation in Iran during the observation period. The below table will summarize previous studies relating to risk management under macro impacts topic:

**Table 1** - Summarize previous studies

| Domestic researches                                                                 | Authors name                          | Results, contents                                                                 |
|-------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------|
| 1. Systemic risk and the problem of determining Beta coefficient in Vietnam          | Vượng Đức Hoàng Quân (2012)           | In the first stage, in general, the information from the Vietnam stock market is not sufficient in quantity and quality to estimate the beta coefficient according to the traditional method, which is regression analysis of stock returns volatility compared to indices. VN-Index to value the listed companies and stocks. |
| 2. Fama-French 3-Factor Model: The empirical evidence from the Ho Chi Minh City Stock Exchange | Trương Đồng Lộc and Dương Thị Hoàng Trang (2014) | The research results show that earnings of stocks are positively correlated with market risk, firm size and the book value to market value (BE / ME) ratio. In other words, the Fama - French 3-factor model is suitable in explaining the change in profits of stocks listed on HOSE. |
| 3. The econometric model for stock prices in the period 2008-2011 - Case of stock prices ACB, VN-Index, risk free rate and S&P 500 | Bình Trần Ngọc Huy (2015) | Analyze the impact of VN-Index and internal and external macro variables on the stock price of ACB. |
| 4. The theory of average return of K-Marx and model of capital asset pricing        | Nguyễn Thị Hương (2017)               | The limitation of Vietnam’s stock market is the lack of beta in stock analysis. However, as the market portfolio matures, beta will keep pace with the development of the market. |
| 5. Analyzing Accounting Profit of Vietinbank under Effects of Internal Factors - A Case Study in Vietnam Listed Banks | Hoàng Thanh Hạnh, Bình Trần Ngọc Huy (2021) | Presenting a regression model analyzing the impact of internal macro variables (inflation in Vietnam, lending rate, risk-free rate) and external (US inflation, exchange rate, S&P and 500) on stock prices CTG. |
| 6. Systemic risks in banking business - periods of crisis                            | Nguyễn Thanh Bé, Bùi Quang Hưng (2019) | Presented in Vietnam, the risk management system at commercial banks has been paid attention to a certain extent in the past few years, but due to its structural and technical |
**CONCEPTUAL THEORIES**

Positive sides of low inflation: Low (not negative) inflation reduces the potential of economic recession by enabling the labor market to adjust more quickly in a downturn, and reduces the risk that a liquidity trap prevents monetary policy from stabilizing the economy. This is explaining why many economists nowadays prefer a low and stable rate of inflation. It will help investment, encourage exports and prevent boom economy. Negative side of low inflation: it

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### International researches

| 7. Factors affecting the return rate of listed stocks from the Fama French 5-factor model | Trinh Minh Quang et al (2019) | Referring to factors of market change will strongly affect the share prices of large companies |
| --- | --- | --- |
| 1. The Impact of Macroeconomic and Financial Variables on Market Risk: Evidence from International Equity Returns | Patro et al (2002) | They found that a number of variables including imports, exports, inflation, market capitalization, dividend yield, and a book-to-book price ratio significantly influence a person’s world market risk at national level. |
| 2. Do economic factors influence stock returns? A firm and industry level analysis | Butt et al (2010) | The results revealed that market returns are primarily changes in stock returns, but macroeconomic variables and industry-related variables add explanatory power in describing volatility, stock returns. |
| 3. Macroeconomic factors and micro-level bank risk | Claudia et al (2010) | The risk of about a third of US banks increases in response to monetary easing. |
| 4. Impact of Macroeconomic Factors on Banking Index in Pakistan | Saeed và Akhter (2012) | In Karachi stock market, Regression results show that exchange rate and short-term interest rate have a significant impact on the Banking index. Macroeconomic variables such as money supply, exchange rate, industrial production and Short-term interest rate and exchange rate have a negative effect on banking index while oil price has a positive effect on the bank index. Banking index. |
| 5. Impact of Macroeconomic Indicators on Stock Market Performance: The Case of The Istanbul Stock Exchange | Arnes (2014) | Their analysis has shown that for investors interested in Turkey, first of all, be careful not to assume that relationships that existed in the past will continue into the future. We also find that depending on the sector, the effects of changes in macroeconomic variables will also differ. For policymakers and lawmakers, however, our findings indicate that keeping interest rates low has been a good policy for the past 20 years. |
| 6. Bank Leverage Ratios and Financial Stability: A Micro- and Macroprudential Perspective | Emilios (2015) | The leverage cycle can cause financial instability and the impact of limited leverage on bank governance performance. |
| 7. Effect of Macroeconomic Variables On Stock Market Returns For Four Emerging Economies: Brazil, Russia, India, And China | Gay (2016) | According to the hypothesis, the relationship between the exchange rate and the security’s price should be in the same direction. |
| 8. The Impact of Macroeconomic Factors on the German Stock Market: Evidence for the Crisis, Pre- and Post-Crisis Periods | Celebi and Honig (2019) | In Germany, the aggregate index (OECD), the Economic Research Institute’s Export Expectations index, the climate index, exports, CPI, as well as the 3-year German government bond yield has a delayed effect on stock returns |
| 9. Impacts of macro variables on Starbucks Corp. | Kumaresan (2019) | Indicates that compared to internal corporate factors, macroeconomic factors (exchange rate) have a greater effect on firm performance. |

Source: Search data.
leads to low aggregate demand and economic growth, recession potential and high unemployment. Production becomes less vibrant. Low inflation makes real wages higher. Workers can thus reduce the supply of labor and increase rest time. On the other hand, low product prices reduce production motivation.

The central bank can use monetary policies, for instance, increasing interest rates to reduce lending, control money supply or the Ministry of finance and the government can use tight fiscal policy (high tax) to achieve low inflation. According to the International Federation of Accountants (IFAC), "The internal control system is the plan of the entity and all the methods and work steps that the managers of the business adhere. The Internal Control System helps managers achieve their objectives with certainty in order and business efficiency, including respecting management regulations; keep assets safe, prevent and detect wrongdoing and fraud; make complete and accurate planning records, timely and reliable financial statements. So internal control focuses on reducing bank risk."

**METHODOLOGY**

We use the data from the stock exchange market in Viet Nam (HOSE and HNX) during the pre-low (L) inflation period 2011-2015 in order to estimate systemic risk results. We perform both fundamental data analysis and financial techniques to calculate beta CAPM values. In this study, analytical research method and specially, comparative analysis method is used, combined with quantitative data analysis. Analytical data is from the situation of listed bank (VCB and STB) in Vietnam stock exchange.

Analysis of the effects of 9 macro variables on market risk of listed commercial bank, VCB, ACB and STB. Weekly data collected from 2011-2015 for bank stock price to measure Beta and other macro data from reliable sources such as the General Statistics Office and commercial banks. Beta CAPM is a function with 9 macro variables (x1: GDP growth rate (g), x2: Risk-free rate Rf (i), x3: Loan interest rate (r), x4: Exchange rate (ex-rate), x5: S&P 500, x6: VN-Index, x7: trade balance, x8: industrial production index, x9: CPI). We use OLS regression. Finally, we use the results to suggest policy for 3 banks VCB, ACB and STB, relevant organizations and government. Total 9 macro variables are described with sources in the below table:

**Table 1 - Variables description**

| Variable name               | Sign | Data source       | Reference source                                                                 |
|-----------------------------|------|-------------------|---------------------------------------------------------------------------------|
| Dependent variable          |      | Market risk (BetaCAPM) | BetaCAPM HOSE and HNX                                                            |
| Independent variables       |      | GDP growth        | Bureau statistics                                                               |
|                             |      | VNIndex           | HOSE and HNX                                                                     |
|                             |      | Risk free rate    | Ministry of Finance (MOF)                                                        |
|                             |      | Lending rate      | Commercial bank                                                                  |
|                             |      | Exchange rate     | Commercial bank                                                                  |
|                             |      | S&P500            | NYSE                                                                             |
|                             |      | BOT (trade balance)| Bureau statistics                                                               |
|                             |      | IM (Industrial manufacturing index) | Author synthesis                  |

**Source:** Search data.
In the below table (VCB), we see statistics for 9 variables. We find our standard deviation of Exchange rate and trade balance with highest values, while std. deviation of CPI, GDP growth, Rf as lowest values.

**Figure 1 - Descriptive statistics for 9 macro variables - Case VCB**

| Variable       | Beta | CPI | Exchange Rate | GDP | Rf | SP500 | VTBindex |
|----------------|------|-----|---------------|-----|----|-------|----------|
| **Mean**       | 0.989810 | 0.688370 | 2.1566.80 | 0.057300 | 154.4800 | 0.132500 | 0.075500 | 1701.57 | 2303.2000 | 486.7560 |
| **Median**     | 1.100048 | 0.683650 | 2178.00 | 0.055050 | 153.9500 | 0.125000 | 0.062250 | 1731.15 | -1625.5000 | 492.1800 |
| **Maximum**    | 1.764024 | 0.813000 | 2323.00 | 0.069800 | 194.8000 | 0.190000 | 0.132000 | 2102.84 | -492.0000 | 593.5600 |
| **Minimum**    | 0.077529 | 0.063500 | 2616.00 | 0.043800 | 117.4000 | 0.100000 | 0.040000 | 127.2000 | -1182.0000 | 361.5500 |
| **Std. Dev.**  | 0.622300 | 0.659920 | 816.1653 | 0.007141 | 25.76609 | 0.023180 | 0.032419 | 327.3917 | 461.6620 | 981.7681 |
| **Skewness**   | -0.418580 | 0.521164 | 108.8185 | -0.361761 | 0.154331 | 0.844774 | 0.148319 | -0.01715 | -0.405459 | -0.196156 |
| **Kurtosis**   | 1.792164 | 2.637962 | 1704.6530 | 2.161681 | 1.845123 | 2.359048 | 4.385649 | 1.360000 | 2.637671 | 1.739476 |
| **Jaque-Bera** | 9.945151 | 1.468713 | 0.747482 | 0.459701 | 0.598704 | 1.737230 | 4.491524 | 1.269977 | 2.742448 | 0.738381 |
| **Probability** | 0.622477 | 0.479605 | 0.599499 | 0.779976 | 0.756518 | 0.503228 | 0.119719 | 0.590217 | 0.671662 | 0.569662 |

**Source:** Search data.

In case of STB, we see statistics for 9 variables. We find our standard deviation of Exchange rate and trade balance and SP500 with highest values, while std. deviation of CPI, GDP growth, Rf as lowest values.

Comparing 3 cases, we find out std. deviation of beta of STB is smaller than (<) that of VCB (<) that of ACB (0.38 < 0.6 < 0.78).

**Figure 2 - Descriptive statistics - Case STB**

**Figure 3 - Descriptive statistics - Case ACB**

**MAIN RESULTS**

**General Data Analysis**

First, we look at the below figure, we find out correlation matrix of internal variables. We see that in case of VCB, increase in industrial manufacturing index and CPI will cause Beta CAPM decreases while decrease in SP500 will make it decreases.
Empirical Research Findings and Discussion

In the below section, data used are from 2011-2015 with stock price of VCB and STB, live data on VN stock exchange (HOSE and HNX mainly). Different scenarios are created by comparing 2 scenarios: macro internal factors impacts and macro external variables effects. We model our data analysis as in the below figure:

**Figure 7 - Analyzing market risk under impacts from macro factors in 2 scenarios**

| Low inflation period 2011-2015 | Stock price | Beta CAPM | Other statistic measures | Gap |
|--------------------------------|-------------|-----------|-------------------------|-----|
| Internal variables            | Scenario    | Scenario  | Scenario...              | Analysis |
| Source: Search data.          |             |           |                         |     |

Using OLS regression from EViews, we find out: industrial production and VN-Index have positive correlation with market risk of VCB while CPI, GDP growth and risk free rate has negative correlation with Beta CAPM of CTG.

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Figure 8 – Internal impacts on Beta CAPM – Case VCB

| Variable   | Coefficient | Std. Error | t-Statistic | Prob. |
|------------|-------------|------------|-------------|-------|
| G          | -0.827290   | 0.163240   | -5.12310    | 0.0000 |
| G          | -0.637450   | 0.121240   | -5.26750    | 0.0000 |
| R          | 0.006560    | 0.000150   | 4.06540     | 0.0000 |
| RF         | 0.000040    | 0.000001   | 4.06540     | 0.0000 |
| VNMINDEX   | 0.000040    | 0.000001   | 4.06540     | 0.0000 |
| C          | 0.000040    | 0.000001   | 4.06540     | 0.0000 |

R-squared: 0.847250
Adjusted R-squared: 0.847250
S.E. of regression: 0.163240
Sum squared resid: 0.000000
Log likelihood: -2.89540
Durbin-Watson stat: 2.02410

Source: Search data.

For external effects in case VCB, we recognize all factors (exchange rate, SP500 and trade balance) have positive correlation with VCB Beta.

Figure 9 – External impacts on Beta CAPM – Case VCB

| Variable       | Coefficient | Std. Error | t-Statistic | Prob. |
|----------------|-------------|------------|-------------|-------|
| DX_RATE        | 0.000030    | 0.000001   | 3.05430     | 0.0473 |
| SP500          | 0.000010    | 0.000001   | 3.05430     | 0.0473 |
| TRADEBALANCE   | 0.000000    | 0.000001   | 3.05430     | 0.0473 |
| C              | -0.000000   | 0.000001   | -3.05430    | 0.0473 |

R-squared: 0.847250
Adjusted R-squared: 0.847250
S.E. of regression: 0.163240
Sum squared resid: 0.000000
Log likelihood: -2.89540
Durbin-Watson stat: 2.02410

Source: Search data.

Looking at the below figure we see internal effects on Beta CAPM of STB: Industrial product, Risk free rate, lending rate and VN-Index have positive correlation with Beta, then CPI and GDP growth have negative correlation with Beta CAPM. If risk free rate increases, market risk will increase.

Figure 10 – Internal impacts on Beta CAPM – Case STB

| Variable   | Coefficient | Std. Error | t-Statistic | Prob. |
|------------|-------------|------------|-------------|-------|
| CPI        | 0.000000    | 0.000000   | 0.000000    | 1.0000 |
| G          | 0.000000    | 0.000000   | 0.000000    | 1.0000 |
| R          | 0.000000    | 0.000000   | 0.000000    | 1.0000 |
| RF         | 0.000000    | 0.000000   | 0.000000    | 1.0000 |
| VNMINDEX   | 0.000000    | 0.000000   | 0.000000    | 1.0000 |
| C          | 0.000000    | 0.000000   | 0.000000    | 1.0000 |

R-squared: 0.847250
Adjusted R-squared: 0.847250
S.E. of regression: 0.163240
Sum squared resid: 0.000000
Log likelihood: -2.89540
Durbin-Watson stat: 2.02410

Source: Search data.

Next, we figure out that SP500 and trade balance have positive correlation with Beta CAPM.
Looking at the below figure we see internal effects on Beta CAPM of ACB: Industrial product, Risk free rate, and exchange rate have positive correlation with Beta, then CPI and GDP growth have negative correlation with Beta CAPM. If risk free rate increases, market risk will increase.

**DISCUSSION FOR FURTHER RESEARCHES**

We can continue to analyze risk factors behind the risk scene (FDI, public debt, etc.) in order to recommend suitable policies and plans to control market risk better. In order to enhance risk management culture at VCB, ACB and STB, big listed joint stock commercial banks in Vietnam, we have to consider some following action plans:

- improving risk management processes
- enhancing risk management models

**CONCLUSION AND POLICY SUGGESTION**

As shown from the above regression model and equation, Government and Ministry of Finance need to increase GDP growth and reduce CPI for lower market risk. GDP growth might increase more than trade balance increase.
This research paper provides evidence that the market risk is affected much more by CPI, GDP growth, risk free rate and lending rate. It means that the role of bank system in trying to control credit growth and rates reasonably. Our model also shows that other macro factors such as VN-Index and exchange rate just have slight impact on Beta CAPM. And macro external factors have small effects on market risk of 3 banks.

Good market risk management of banks will enhance internal control.

**Management implications**

Suggestions, to establishing internal control to effective risk management at enterprise and bank level, are the following risk management activities:

- Make a risk recognition report; Promulgating the Code of Professional Ethics; Regulations that employees are not allowed to disclose internal information; Strengthen legal communication to raise awareness and compliance; Issue the Internal Control Procedures

- With the application of macro-variable impact analysis on Beta CAPM, businesses and banks need to develop two risk causation analyzes according to the 5M model as follows (from which proposing solutions to minimize risks): Man-Machine-Method-Material-Money.

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**REFERENCES**

ABADI, H.R.D.; FATHI, S.; ZARE, M. 'Analyze the impact of financial variables on the market risk of Tehran Stock Exchange companies', *Interdisciplinary Journal of Contemporary Research in Business*, 2012, vol.10, no.3, p.664-671.

ADHIKARI, N. 'Determinants of Systemic Risk for Companies Listed on Nepal Stock Exchange', *Global Journal of Management and Business Research: C Finance*, 2015, vol.15, no.5, p. 75-83.

AHMAD, N.; RAMZAN, M. 'Stock Market Volatility and Macroeconomic Factor Volatility', *International Journal of Research in Business Studies and Management*, 2016, 3 (7), p. 44.

AHMED, A.; EJAZ, A.; ALI, R.; ISHFAQ AHMAD, I. Sectoral integration and investment diversification opportunities: evidence from Colombo Stock Exchange, *Entrepreneurship and Sustainability Issues*, 2018, vol.5, no.3, p. 514-527. Available at: https://doi.org/10.9770/jesi.2018.5.3(8). Access: May 26, 2021.

AKHARI, P.; MOHAMMADI, E. 'A Study of the Effects of Leverages Ratio on Systematic Risk based on the Capital Asset Pricing Model Among Accepted Companies in Tehran Stock Market', *Journal of Educational and Management Studies*, 2013, vol.3, no.4, p. 271-277.

AL-QAISI, K.M. 'The Economic Determinants of Systematic Risk in the Jordanian Capital Market', *International Journal of Business and Social Science*, 2011, vol.2, no.20, p. 85-95.

ANDERSSEN, T.G.; BOLLERSLEV, T.; DIEBOLD, F.X.; WU, J. 'A Framework for Exploring the Macroeconomic Determinants of Systematic Risk', *Financial Economics, Macroeconomics, and Econometrics*, 2005, vol.95. no.2, p. 398-404.

ARNES, S.K. 'Impact of Macroeconomic Indicators on Stock Market Performance: The Case of The Istanbul Stock Exchange', *Master Thesis*, Copenhagen Business School, 2014. Available at: https://research-api.cbs.dk/ws/portalfiles/portal/58450158/sibel_arnes.pdf. Access: May 26, 2021.
BASU, D.; STREME, A. CAPM and Time-Varying Beta: The Cross-Section of Expected Returns, SSRN Working paper series, 2007.

BOHACHOVA, O. ‘The Impact of Macroeconomic Factors on Risks in the Banking Sector: A Cross-Country Empirical Assessment’, IAW Discussion Papers 44, Institut für Angewandte Wirtschaftsforschung (IAW), 2008.

BOWMAN, R.G. ‘The Theoretical Relationship Between Systematic Risk and Financial (Accounting) Variables’, The Journal of Finance, 1979, vol. 34, no.3, p. 617-630.

BUTT, B.Z.; REHMAN, K.U. ‘Do economic factors influence stock returns? A firm and industry level analysis’, African Journal of Business Management, 2010, vol.4, no.5, pp. 583-593

CELEBI, K.; HONIG, M. ‘The Impact of Macroeconomic Factors on the German Stock Market: Evidence for the Crisis, Pre- and Post-Crisis Periods’, International Journal of Financial Studies, 2019, vol.7, no.18. Available at: https://doi.org/doi:10.3390/ijfs7020018. Access: May 26, 2021.

CLAUDIA, M.P.; SANDRA, E.; ESTEBAN, P. ‘Macroeconomic factors and micro-level bank risk’, Discussion Paper Series 1: Economic Studies 2010, No 20/2010.

CURRAN, M.; VELIC, A. ‘The CAPM, National Stock Market Betas, and Macroeconomic Covariates: A Global Analysis’, Trinity Economics Papers 0618, Trinity College Dublin, Department of Economics, 2018.

CHATTERJEA, A.; JERIAN, J. A.; JARROW, R. A. Market Manipulation and Corporate Finance: A new Perspectives, 1994 Annual Meeting Review, SouthWestern Finance Association, Texas, USA, 2001.

CHEN, R. R.; CHIDAMBARAN, N. K; IMERMAN, M. B.; SOPRANZETTI, B. J. Liquidity, Leverage, and Lehman: A Structural Analysis of Financial Institutions in Crisis, Fordham School of Business Research Paper, 2013, No.2279686.

CHENG, L.Y.; WANG, M.C.; CHEN, K.C. Institutional Investment Horizons and the Stock Performance of Private Equity Placements: Evidence from the Taiwanese Listed Firms, Review of Pacific Basin Financial Markets and Policies, 2014, 17 (2).

DEGENNARO, RAMON, P.; KIM, SANGPHILL. The CAPM and Beta in an Imperfect Market, SSRN Working paper series, 2003.

DIMITROV, V.; JAIN, PC. The Value Relevance of Changes in Financial Leverage, SSRN Working Paper, 2006.

EMILILOS, A., ‘Bank Leverage Ratios and Financial Stability: A Micro- and Macroprudential Perspective’, Working Paper, 2015, No.849, Levy Economics Institute

Eugene FF, French KR. The Capital Asset Pricing Model: Theory and Evidence, Journal of Economic Perspectives, 2004.

GALAGEDERA, D.U.A. ‘An alternative perspective on the relationship between downside beta and CAPM beta’, Emerging Markets Review, 2007.

GALAGEDERA, D.U.A. An alternative perspective on the relationship between downside beta and CAPM beta, Emerging Markets Review, 2007.

GAY, R.D. ‘Effect Of Macroeconomic Variables On Stock Market Returns For Four Emerging Economies: Brazil, Russia, India, And China’, International Business & Economics Research Journal, 2016, vol.15, no.3.
GUNARATHA V. The Degree of Financial Leverage as a Determinant of Financial Risk: An Empirical Study of Colombo Stock Exchange in Sri Lanka, 2nd International Conference on Management and Economics Paper, 2013.

GUNARATHNA, V. How does Financial Leverage Affect Financial Risk? An Empirical Study in Sri Lanka, Amity Journal of Finance, 2016, 1 (1), p. 57-66.

GIZYCKI, M. ‘The Effect Of Macroeconomic Conditions on Bank Risks and Profitability’, Research Discussion Paper 2001-06, 2001, System Stability Department Reserve Bank of Australia. Available at: https://www.rba.gov.au/publications/rdp/2001/pdf/rdp2001-06.pdf. Access: May 26, 2021.

HAC, L.D. et al. Enhancing risk management culture for sustainable growth of Asia commercial bank -ACB in Vietnam under mixed effects of macro factors, Entrepreneurship and Sustainability Issues, 2021, 8 (3).

HANG, T.T.B., et al. Where Beta is going-case of Viet Nam hotel, airlines and tourism company groups after the low inflation period, Entrepreneurship and Sustainability Issues, 2020, 7 (3).

HANH, H.T. Analyzing accounting profit of vietinbank under effects of internal factors - a case study in Vietnam Listed Banks. Turkish Journal of Computer and Mathematics Education (TURCOMAT), 2021, vol.12, n.12. Available at: https://www.turcomat.org/index.php/turkbilmat/article/view/8202. Access: Jun. 20, 2021.

HANH, H.T. Evaluating impacts of internal control and risk management on real estate projects in Vietnam - and factors affecting disclosure of accounting information. Linguistica Antverpiensia, 2021, vol. 2021, n.3. Available at: https://hivt.be/linguistica/article/view/1416. Access: Jun. 20, 2021.

HANH, H.T. What Affect Accounting net revenue of company? - a case in Vietnam commerce sector. Laplage in Journal, 2021, 7(2), p.645-654. Available at: https://doi.org/10.24115/S2446-6220202172961p.645-654. Access: Jun. 20, 2021.

HOA, N. T. Et al. Human resource for schools of politics and for international relation during globalization and EVFTA, Elementary education online, 2021, 20 (4).

HOJAT, S. ‘The Impact of Monetary Policy On the Stock Market’, Doctoral dissertation, Walden University. 2015. Available at: https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=2602&context=dissertations. Access: May 26, 2021.

HUEY-YEH, L.; NURAENI, H.F.; MEIHUA, K. ‘The Impact of Macroeconomic Factors on Credit Risk in Conventional Banks and Islamic Banks: Evidence from Indonesia’, International Journal of Financial Research, 2016, vol.7, no. 4.

HUY D.T.N. et al. 'Impacts of Internal and External Macroeconomic Factors on Firm Stock Price in an Expansion Econometric model–A Case in Vietnam Real Estate Industry', Data Science for Financial Econometrics-Studies in Computational Intelligence, 2021, vol.898, Springer. Available at: http://doi-org-443.webvpn.fjmu.edu.cn/10.1007/978-3-030-48853-6_14. Access: May 26, 2021.

HUY, D. T. N.; Thuy, N. T. Education for students to enhance research skills and meet demand from workplace-case in vietnam, Elementary education online, 2021, 20(4).

HUY, D. T.N.; DAT, P. M.; VÀ ANH, P. T. ‘Building and econometric model of selected factors’ impact on stock price: a case study’, Journal of Security and Sustainability Issues, 2020, vol.9 (M), p. 77-93. Available at: https://doi.org/10.9770/jssi.2020.9.M(7). Access: May 26, 2021.

HUY, D.T.N.; AN, T.T.B.; ANH, T.T.K.; NHUNG, P.T.H. Banking sustainability for economic growth and socio-economic development – case in Vietnam, Turkish Journal of Computer and Mathematics Education, 2021,12 (2), p. 2544-2553.
KRISHNA, R.C. 'Macroeconomic Variables impact on Stock Prices in a BRIC Stock Markets: An Empirical Analysis, Journal of Stock & Forex Trading, 2015, vol.4, no.2. Available at: https://doi.org/10.4172/2168-9458.1000153. Access: May 26, 2021.

KULATHUNGA, K. Macroeconomic Factors and Stock Market Development: With Special Reference to Colombo Stock Exchange, International Journal of Scientific and Research Publications, 2015, vol.5, no.8, p. 1-7.

KUMARESAN, R. 'THE Effects of Macroeconomics Factors towards the Starbucks Corporation', MPRA Paper No. 97243, 2019. Available at: https://mpra.ub.uni-muenchen.de/97243/1/MPRA_paper_97243.pdf. Access: May 26, 2021.

KHWAJA, A. I.; MIAN, A. Unchecked intermediaries:Price manipulation in an emerging stock market, Journal of Financial Economics2005, 78, p. 243 – 241.

LI, L.; PORNCHAI, C. Income Structure, Competitiveness, Profitability, and Risk: Evidence from Asian Banks, Review of Pacific Basin Financial Markets and Policies, 2014, 17 (3).

LOC, T.D.; TRANG, D.T.H. Mô hình 3 nhân tố Fama-French: Các bằng chứng thực nghiệm từ Sở giao dịch chứng khoán TPHCM, Can Tho scientific journal, 2014, 32 (4), p. 61-68.

MARTIN, K.; SWEDER, V.W. On Risk, leverage and banks: Do highly leveraged banks take on excessive risk?, Discussion Paper Ti 12-022/2/DSF31, Tinbergen Institute, 2012.

NAWAZ. R.; AHMED, W.; IMRAN, SABIR, S.; ARSHAD, M., 'Financial Variables and Systematic Risk', Chinese Business Review, 2017, vol. 16, no. 1, p. 36-46. https://doi.org/10.17265/1537-1506/2017.01.004. Access: May 26, 2021.

OZLEN., S.; ERGUN, U. 'Macroeconomic Factors and Stock Returns', International Journal of Academic Research in Business and Social Sciences, 2012, vol.2, no.9, p. 315-343.

PAMANE, K.; VIKPOSSI, A.E., 'An Analysis of the Relationship between Risk and Expected Return in the BRVM Stock Exchange: Test of the CAPM', Research in World Economy, 2014, vol.5, no.1, p. 13-28.

PARK, J.C.; ALI, F.D.; MBANGA, C. Investor sentiment and aggregate stock returns: the role of investor attention, Review of Quantitative Finance and Accounting, 2019, 53 (2), p. 397 -- 428.

PATRO, D.K.; WALD, J.; WU, Y. 'The Impact of Macroeconomic and Financial Variables on Market Risk: Evidence from International Equity Returns', European Financial Management, 2002, 8 (4), p. 421 - 447. Available at: https://doi.org/10.1111/1468-036X.00198. Access: May 26, 2021

PERKOVIC, A. 'Research of Beta As Adequate Risk Measure - Is Beta Still Alive?', Croatian Operational Research Review (CRORR), 2011, vol. 2, p. 102-111. Access: May 26, 2021

PUSPITANINGTYAS, Z. 'Estimating systematic risk for the best investment decisions on manufacturing company in Indonesia', Investment Management and Financial Innovations, 2017, vol.14, no.1, p. 46-54. Available at: https://doi.org/10.21511/imfi.14(1).2017.05. Access: May 26, 2021.

QUAN, V.D.H. Rủi ro hệ thống và vấn đề xác định hệ số beta tại Việt Nam, Tập chí tài chính, truy cập tại, 2012. Available at: http://taphitaichinh.vn/nghien-cuu-trao-doi/rui-ro-he-thong-va-van-de-xac-dinh-he-so-beta-tai-viet-nam-1257.html. Access: Dec. 20, 2020.

ROBICHECK, A.A.; COHN, R.A. 'The Economic Determinants of Systematic Risk', The Journal of Finance, 1974, Vol. 29, No. 2, p. 439-447.
SADEGHZADEH, K. 'The effects of microeconomic factors on the stock market: A panel for the stock exchange in Istanbul ARDL analysis', *Theoretical and Applied Economics Volume XXV*, 2018, vol.3, no.616, p. 113-134.

SADIA, S.; NOREEN, A. 'Impact of Macroeconomic Factors on Banking Index in Pakistan', *Interdisciplinary Journal of Contemporary Research in Business*, 2012, vol.4, no.6, p. 1200-1218.

SAEED, S.; AKHTER, N. 'Impact of Macroeconomic Factors on Banking Index in Pakistan', *Interdisciplinary Journal of Contemporary Research in Business*, 2016, vol.4, no.6.

SINGH, T.; MEHTA, S.; VERSHA, M.S. 'Macroeconomic factors and stock returns: Evidence from Taiwan', *Journal of Economics and International Finance*, 2010, vol.2, no.4, p. 217-227.

SIREGAR, E.I.; DIANA. 'The Impact of Political Risk and Macro Economics on Stock Return at Indonesia Stock Exchange-An Approach of Arbitrage Pricing Theory (APT)', *International Conference on Economics, Management, and Accounting (ICEMA)*, 2019, p.744-772. Available at: https://doi.org/10.18502/kss.v3i26.5412. Access: May 26, 2021

TAHMIDI, A.; WESTLUND, S.A.; SHELUDCHENKO, D. The Effect of Macroeconomic Variables on Market Risk Premium, Working paper, Mälardalen University, 2011. Available at: https://www.diva-portal.org/smash/get/diva2:429080/FULLTEXT01.pdf. Access: May 26, 2021.

TINH, D. T.; THUY, N. T.; HUY, D. T. N. Doing Business Research and Teaching Methodology for Undergraduate, Postgraduate and Doctoral Students-Case in Various Markets Including Vietnam, *Elementary education online*, 2021, 20 (1).

TOMULEASA, I.I. 'Macroprudential policy and systemic risk: An overview', *Procedia Economics and Finance*, 2015, 20, p. 645 - 653.

UMAR. Profits, Financial Leverage and Corporate Governance, *SSRN Working Paper*, 2011.
Linkages between Effective Internal Control and Evaluating Market Risk Via Beta CAPM of Listed Banks in Vietnam Under Macro Effects During Pre-Low Inflation Period - Case of VCB, STB and ACB

Vínculos entre controle interno efetivo e avaliação do risco de mercado via BETA CAPM de bancos listados no Vietnã sob efeitos macro durante o período de inflação pré-baixa - Caso de VCB, STB e ACB

Resumo
Este artigo de pesquisa tem como objetivo descobrir e fazer comparações sobre quanto efeitos no risco de mercado de dois grandes bancos comerciais vietnamitas listados, VCB e STB com dados semestrais. Por meio da análise, métodos estatísticos de síntese e método de materialismo dialético, combinado com modelo econômétrico com 9 variáveis macro, descobrimos que o crescimento do IPC e do PIB, taxa de empréstimos e taxa livre de risco (Rf) têm muito mais impactos no risco de mercado, enquanto fatores externos como câmbio e SP500 apenas têm pequeno efeito no BETA CAPM. Em seguida, uma de suas principais descobertas é a sugestão de políticas macro e de gestão de riscos para agências bancárias e governamentais relevantes. Nossa recomendação pode ser usada para referência em muitos outros mercados em desenvolvimento.

Keywords: Market risk management. Beta CAPM. Low inflation. Banking industry. Vietnam.

Resumen
Este trabajo de investigación tiene como objetivo averiguar y hacer una comparación sobre la cantidad de efectos en el riesgo de mercado de dos grandes bancos comerciales de Vietnam cotizados, VCB y STB con datos semestrales. A través del uso de análisis, métodos de estadísticas de síntesis y método de materialismo dialéctico, combinado con el modelo econométrico con 9 variables macro, descubrimos que el IPC y el crecimiento del PIB, la tasa de préstamos y el tipo de cambio tienen mucho más impacto en el riesgo de mercado, mientras que los factores externos como el tipo de cambio y SP500 solo tienen un pequeño efecto en la BETA CAPM. Luego, una de sus principales conclusiones es la sugerencia de políticas macro y de gestión de riesgos para los bancos y las agencias gubernamentales pertinentes. Nuestra recomendación se puede utilizar como referencia en muchos otros mercados en desarrollo.

Palabras-clave: Gestión del riesgo de mercado. Beta CAPM. Baja inflación. Sector bancario. Vietnam.
Exhibit 1 - Inflation, CPI over past 10 years (2007-2017) in Vietnam

Exhibit 1 - Loan/Credit growth rate in the past years (2012-2018) in Vietnam