

Meanings Of Weighted Beta Capm Index And Beta Derminants Of Vietcombank In Vietnam During Pre-Low Inflation Time 2011-2016 In The Concept Of Sustainability

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ABSTRACT

The aim of this study is to figure out the meanings of weighted beta index in bank sector and beta determinants of Vietcombank -VCB during pre-low (L) inflation period 2011-2016.

In reality Vietcombank has gained many achievements but also there are certain weaknesses. Hung and Liu (2005) tested the volatility of airline betas in the capital asset pricing and three-factor pricing models, as well as exploring the potential factors affecting their values. While Fama and French (2004) suggest to add firm size into traditional formula of beta CAPM.

The study results tell us that Market risk can increased and This may be caused by the increase in lending rate and decrease in both CPI and G (from our regression OLS).

Therefore, governmental agencies need to reduce lending rate and increase GDP growth and not decreasing much CPI.

Key words: pre-low inflation, bank sustainability, Vietnam banks, beta CAPM, economic development

JEL: M21, G30, G32, G38

1.Introduction

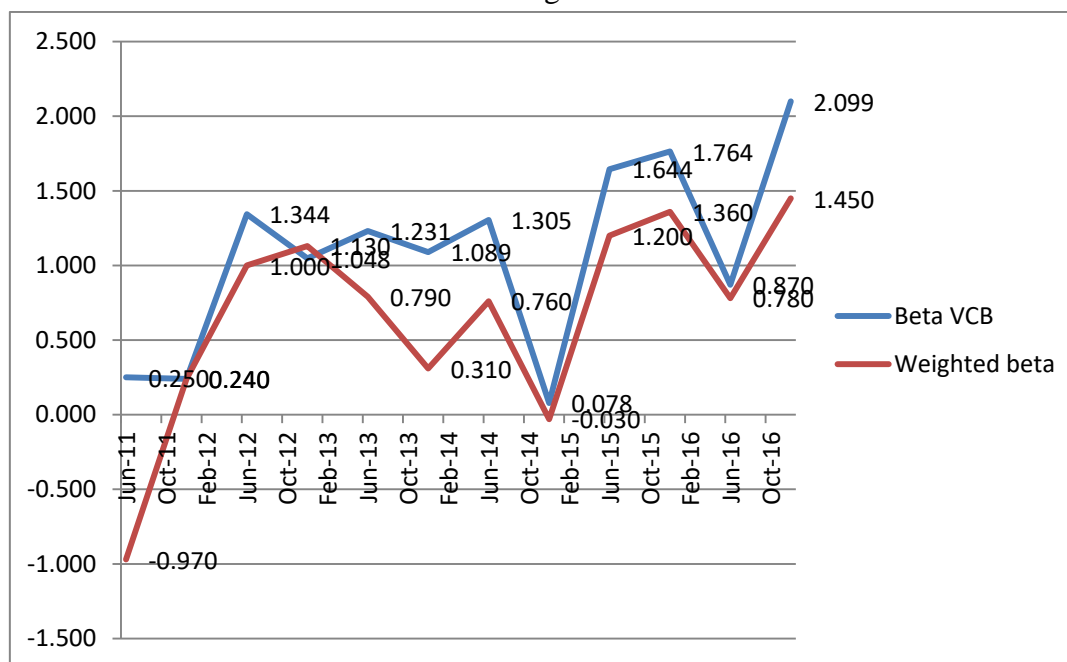
First, we recognize the importance of digital technology in banking also increase to a new level in recent years.

Once again, Fama and French (2004) confirmed that beta CAPM, developed by Sharpe (1964) and Lintner (1965) had wide applications in evaluating performance of managed portfolios.

Next, We emphasize that the role of new concept of bank sustainable development or banking sustainability in relation to risk management approach.

And the below chart 1 show us that beta VCB is little higher than weighted beta index.

Chart 1 - Movement of beta VCB and weighted beta



(source: authors calculation and stock exchange)

Research question:

What are beta determinants and comparison effects on weighted beta index with beta CAPM of Vietcombank - VCB?

2. Literature review

First, Melicher (1974) said that Research in portfolio management area and capital markets led to development of a market risk fundamental concept.

Then, We summarize previous studies as follows:

Table 1 – Summary of previous studies

Authors	Year	Contents, results
Hung and Liu	2005	The beta value, an indicator of systematic risk, is used to estimate the costs of equity and the evaluation of a stock's reasonable price. It is useful to airlines because their capital assets and operations are relatively

		sensitive to systematic risks. To obtain better estimates, it is useful to identify the causes for fluctuations in beta values. This The findings suggest that airline betas are volatile over time and that crashes and stock market trends may also impact them. The business cycle, operating and financial leverage, and capital structure all positively influence the sample airlines' betas as well. The effects of return on equity on betas are negative, and liquidity might also affect betas.
Karim, A.J	2011	Management Information Systems (MIS) is the key factor to facilitate and attain efficient decision making in an organization.
Blanco	2012	tests the American NYSE market, the expected returns of a portfolios selection according to the CAPM and Fama and French Three Factor Model. The portfolios have been constructed according to the size and BV/MV. Empirical results point out that Fama and French Three Factor Model is better than CAPM according to the goal of explaining the expected returns of the portfolios
Satrio	2015	Relationship between expected return, the size of the firm, and the firm's value empirically tested in this study, with testing in developing countries, namely the Indonesian capital market. This study seeks to test the CAPM model that proposed by Sharpe (1964), Lintner (1965), Mossin (1966), and three-factor model of Fama and French (1993). The results showed that CAPM is alive and well, and the three-factor model is a powerful model for explaining the stock returns in Indonesia and provide a better explanation.
Huy, D.T.N, Loan,	2020	Suggest build risk model under

B.T.T, & Anh, P.T		macro effects for Vietcombank stock price in Vietnam
Gupta	2019	In various areas of bank functions including finance, HR, etc. IS - information system roles are important to serve for client relation.
Grabowska and Orłowski	2020	market risk should play a stronger role in macroeconomic modeling and forecasting than it has been recognized thus far in the literature

3. Methodology

Method and Data

This study mainly use combination of quantitative methods and qualitative methods including synthesis, inductive and explanatory methods.

For quantitative analysis, the study is supported with OLS regression.

All internet data such as stock price, exchange rate, inflation, GDP growth, risk free rate we take from reliable internet data sources , esp. from website of State Bank of Vietnam, Bureau of Statistics, Ministry of Finance, banks, etc.

Looking at statistics below, we see:

- We experience standard dev get highest values in case of exchange rate and SP500 (figure 1)
- We experience Correlation b.t trade balance and weighted beta higher than that between beta and SP500 (figure 2)
- Highest values of standard deviation belong to: VNIndex (figure 3)
- Correlation between IM and beta VCB lower than that between beta and R (figure 4)

Figure 1- VCB and external descriptive

	BETA_VCB	EX_RATE	SP500	TRADEBA...
Mean	0.951417	21966.92	1785.692	-243.5000
Median	1.068500	22030.00	1856.630	-162.5000
Maximum	1.764000	23230.00	2238.830	498.0000
Minimum	0.078000	20618.00	1292.280	-1162.000
Std. Dev.	0.560118	831.8935	355.6315	430.5632
Skewness	-0.235542	-0.184123	-0.245780	-0.353671
Kurtosis	1.830915	1.779555	1.481990	3.242509
Jarque-Bera	0.794341	0.812546	1.272993	0.279572
Probability	0.672220	0.666128	0.529143	0.869545
Sum	11.41700	263603.0	21428.30	-2922.000
Sum Sq. Dev.	3.451055	7612515.	1391211.	2039231.

(source: author calculation and stock exchange)

Figure 2- VCB and external correlation

Correlation Matrix				
	BETA VCB	EX RATE	SP500	TRADEBA...
BETA VCB	1.000000	-0.011462	0.224229	0.338854
EX RATE	-0.011462	1.000000	0.540064	-0.495971
SP500	0.224229	0.540064	1.000000	-0.437273
TRADEBA...	0.338854	-0.495971	-0.437273	1.000000

(source: author calculation and stock exchange)

Figure 3- VCB and internal descriptive

	BETA VCB	CPI	G	IM	R	RF	VNIINDEX
Mean	0.951417	0.062275	0.057550	157.9250	0.127917	0.071463	516.5733
Median	1.068500	0.053900	0.056500	163.9000	0.115000	0.063500	525.1300
Maximum	1.764000	0.181300	0.068100	194.8000	0.190000	0.132000	664.8700
Minimum	0.078000	0.006300	0.043800	117.4000	0.100000	0.046000	351.5500
Std. Dev.	0.560118	0.056352	0.007277	24.95659	0.030411	0.022599	97.65861
Skewness	-0.235542	1.157131	-0.270524	-0.135918	1.073834	1.756510	-0.132524
Kurtosis	1.830915	3.217708	2.260704	1.845200	2.812611	5.433403	1.865595
Jarque-Bera	0.794341	2.701604	0.419646	0.703729	2.323797	9.131377	0.678563
Probability	0.672220	0.259032	0.810728	0.703375	0.312892	0.010403	0.712282
Sum	11.41700	0.747300	0.690600	1895.100	1.535000	0.857550	6198.880
Sum Sq. Dev.	3.451055	0.034931	0.000582	6851.142	0.010173	0.005618	104909.3

(source: author calculation and stock exchange)

Figure 4- VCB and internal correlation

Correlation Matrix							
	BETA VCB	CPI	G	IM	R	RF	VNIINDEX
BETA VCB	1.000000	-0.630923	-0.362034	-0.340323	-0.027243	-0.313611	0.248715
CPI	-0.630923	1.000000	0.055118	0.386897	0.464299	0.597007	-0.788603
G	-0.362034	0.055118	1.000000	0.508115	0.065833	-0.425075	0.181795
IM	-0.340323	0.386897	0.508115	1.000000	0.454293	0.037760	-0.264605
R	-0.027243	0.464299	0.065833	0.454293	1.000000	0.033608	-0.765116
RF	-0.313611	0.597007	-0.425075	0.037760	0.033608	1.000000	-0.469239
VNIINDEX	0.248715	-0.788603	0.181795	-0.264605	-0.765116	-0.469239	1.000000

(source: author calculation and stock exchange)

Figure 5- weighted beta and external descriptive

	WEIGHTE...	EX RATE	SP500	TRADEBA...
Mean	0.668333	21966.92	1785.692	-243.5000
Median	0.785000	22030.00	1856.630	-162.5000
Maximum	1.450000	23230.00	2238.830	498.0000
Minimum	-0.970000	20618.00	1292.280	-1162.000
Std. Dev.	0.688514	831.8935	355.6315	430.5632
Skewness	-1.095298	-0.184123	-0.245780	-0.353671
Kurtosis	3.633148	1.779555	1.481990	3.242509
Jarque-Bera	2.599794	0.812546	1.272993	0.279572
Probability	0.272560	0.666128	0.529143	0.869545
Sum	8.020000	263603.0	21428.30	-2922.000
Sum Sq. Dev.	5.214567	7612515.	1391211.	2039231.

(source: author calculation and stock exchange)

Figure 6- weighted beta and external correlation

Correlation Matrix				
	WEIGHTE...	EX_RATE	SP500	TRADEBA...
WEIGHTE...	1.000000	0.322915	0.470435	0.211795
EX_RATE	0.322915	1.000000	0.540064	-0.495971
SP500	0.470435	0.540064	1.000000	-0.437273
TRADEBA...	0.211795	-0.495971	-0.437273	1.000000

(source: author calculation and stock exchange)

Figure 7- weighted beta and internal descriptive

	WEIGHTE...	CPI	G	IM	R	RF	VNIINDEX
Mean	0.668333	0.062275	0.057550	157.9250	0.127917	0.071463	516.5733
Median	0.785000	0.053900	0.056500	163.9000	0.115000	0.063500	525.1300
Maximum	1.450000	0.181300	0.068100	194.8000	0.190000	0.132000	664.8700
Minimum	-0.970000	0.006300	0.043800	117.4000	0.100000	0.046000	351.5500
Std. Dev.	0.688514	0.056352	0.007277	24.95659	0.030411	0.022599	97.65861
Skewness	-1.095298	1.157131	-0.270524	-0.135918	1.073834	1.756510	-0.132524
Kurtosis	3.633148	3.217708	2.260704	1.845200	2.812611	5.433403	1.865595
Jarque-Bera	2.599794	2.701604	0.419646	0.703729	2.323797	9.131377	0.678563
Probability	0.272560	0.259032	0.810728	0.703375	0.312892	0.010403	0.712282
Sum	8.020000	0.747300	0.690600	1895.100	1.535000	0.857550	6198.880
Sum Sq. Dev.	5.214567	0.034931	0.000582	6851.142	0.010173	0.005618	104909.3

(source: author calculation and stock exchange)

Figure 8- weighted beta and internal correlation

Correlation Matrix							
	WEIGHTE...	CPI	G	IM	R	RF	VNIINDEX
WEIGHTE...	1.000000	-0.656105	0.130500	0.110509	0.051269	-0.660912	0.443081
CPI	-0.656105	1.000000	0.055118	0.386897	0.464299	0.597007	-0.788603
G	0.130500	0.055118	1.000000	0.508115	0.065833	-0.425075	0.181795
IM	0.110509	0.386897	0.508115	1.000000	0.454293	0.037760	-0.264605
R	0.051269	0.464299	0.065833	0.454293	1.000000	0.033608	-0.765116
RF	-0.660912	0.597007	-0.425075	0.037760	0.033608	1.000000	-0.469239
VNIINDEX	0.443081	-0.788603	0.181795	-0.264605	-0.765116	-0.469239	1.000000

(source: author calculation and stock exchange)

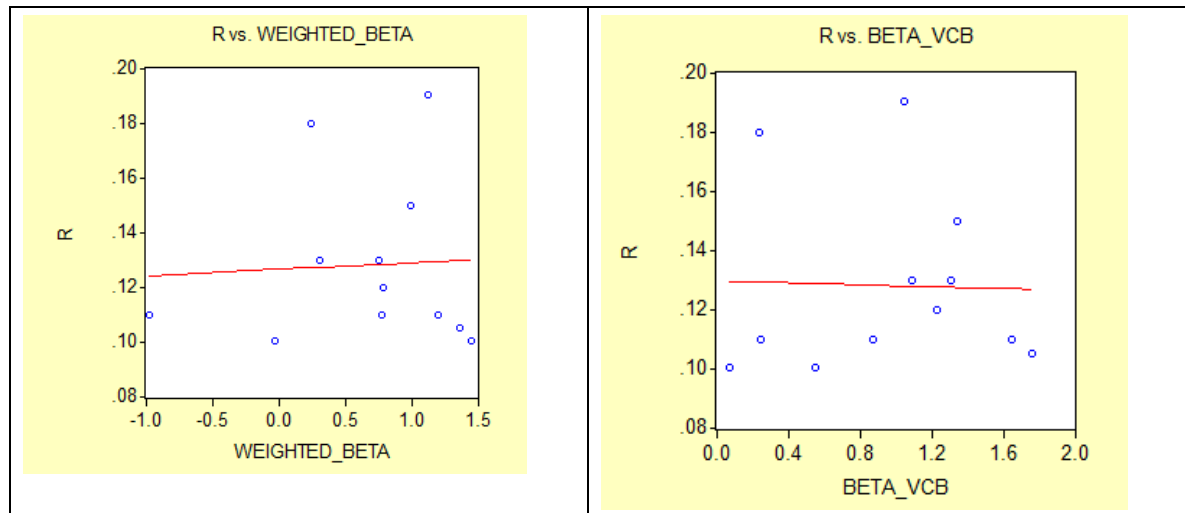
4. Main results

4.1 Overall results

As seeing in below charts, we find that:

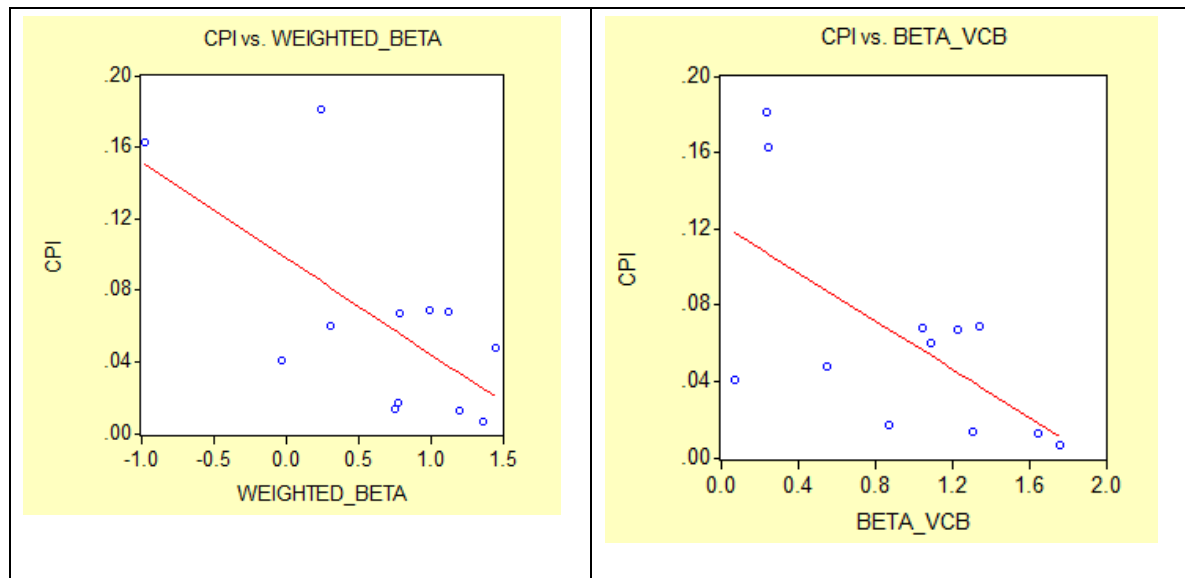
- Between CPI and beta: there is negative relation (chart 2)
- Between lending rate and beta : there are positive relation in case weighted beta, but negative in case beta VCB(chart 1)
- Between VNIndex and beta: there is also positive relation (chart 3)

Chart 2 - R and two betas estimated



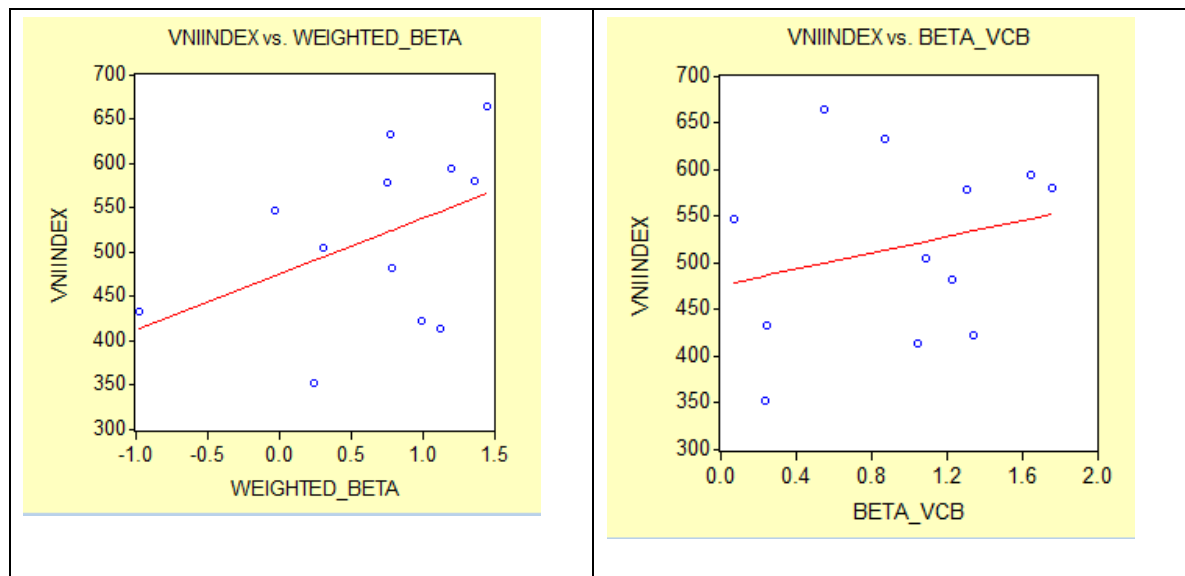
(source: author calculation and stock exchange)

Chart 3 - CPI and two betas estimated



(source: author calculation and stock exchange)

Chart 4 - VNIndex and two betas estimated



(source: author calculation and stock exchange)

4.2 OLS Regression results

In below section, we have result of OLS for 1 factor and see that:

- because coefficient calculated of -8.01, CPI and weighted beta 2011-16 has negative correlation (see figure 9)
- because coefficient calculated of 1.16, R and weighted beta 2011-16 has positive correlation (see figure 10)
- because coefficient calculated of 0.003, IM and weighted beta 2011-16 has positive correlation (see figure 11)

Figure 9 - OLS for CPI

Weighted beta 11-16

Dependent Variable: WEIGHTED_BETA

Method: Least Squares

Date: 07/28/21 Time: 11:26

Sample: 1 12

Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI	-8.016351	2.915816	-2.749265	0.0205
C	1.167552	0.240252	4.859705	0.0007
R-squared	0.430474	Mean dependent var		0.668333
Adjusted R-squared	0.373521	S.D. dependent var		0.688514
S.E. of regression	0.544962	Akaike info criterion		1.774809
Sum squared resid	2.969832	Schwarz criterion		1.855627
Log likelihood	-8.648855	F-statistic		7.558456
Durbin-Watson stat	1.591600	Prob(F-statistic)		0.020504

(source: author calculation and stock exchange)

Figure 10 - OLS for R

Dependent Variable: WEIGHTED_BETA

Method: Least Squares

Date: 07/28/21 Time: 11:26

Sample: 1 12

Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
R	1.160762	7.150145	0.162341	0.8743
C	0.519853	0.938017	0.554204	0.5916
R-squared	0.002629	Mean dependent var		0.668333
Adjusted R-squared	-0.097109	S.D. dependent var		0.688514
S.E. of regression	0.721170	Akaike info criterion		2.335128
Sum squared resid	5.200860	Schwarz criterion		2.415946
Log likelihood	-12.01077	F-statistic		0.026355
Durbin-Watson stat	1.021743	Prob(F-statistic)		0.874271

(source: author calculation and stock exchange)

Figure 11 - OLS for IM

Dependent Variable: WEIGHTED_BETA

Method: Least Squares

Date: 07/28/21 Time: 11:27

Sample: 1 12

Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IM	0.003049	0.008671	0.351612	0.7324
C	0.186858	1.384922	0.134923	0.8953
R-squared	0.012212	Mean dependent var		0.668333
Adjusted R-squared	-0.086567	S.D. dependent var		0.688514
S.E. of regression	0.717697	Akaike info criterion		2.325472
Sum squared resid	5.150886	Schwarz criterion		2.406290
Log likelihood	-11.95283	F-statistic		0.123631
Durbin-Watson stat	1.064046	Prob(F-statistic)		0.732425

(source: author calculation and stock exchange)

Next, we run OLS as follows:

Table 2 - OLS for external variables pre-L inflation 2011-2016 period

	Coefficients		
	Weighted beta index 2011-20	Weighted beta index 2011-16	Beta VCB
Exchange rate	0.00022	0.0002	8.39E
SP500	5.11E	0.001	0.00072
Trade balance	0.00026	0.0009	0.00070

SER	0.59	0.56	0.55
Akaike info criteria	1.98	1.97	1.92

(source: authors calculation and stock exchange)

Table 3 - OLS for internal variables 2011-16 period

	Coefficients		
	Weighted beta index 2011-20	Weighted beta index 2011-16	Beta VCB
CPI	-9.07	-5.7	-8.9
G	7.8	-24.2	-21.7
IM	0.004	0.009	-0.0003
R	7.3	10.02	4.1
Rf	-4.2	10.1	-0.5
VNIndex	0.0003	0.002	-0.001
C	-0.78	-1.02	3.07
R-squared	0.62	0.72	0.61
SER	0.44	0.53	0.51
Akaike info criteria	1.5	1.86	1.8

(source: authors calculation and stock exchange)

4. Discussion

During pre – L inflation:

In case of internal elements we find out: GDP growth and CPI have negative correlation with weighted beta and beta VCB 2011-2016, while R - lending rate has positive correlation with both beta.

Moreover, the coefficients for CPI, G and R are higher in 2011-2016.

In case of external variables we figure out: trade balance and SP500 and exchange rate, all factors have positive correlation with weighted beta index as well as beta VCB. That's happen during post –L inflation stage.

Additionally, the coefficients for SP500 and beta VCB and weighted beta is higher in 2011-2016.

5. Conclusion

Rostov (1960) mentioned quality of economic growth include series of continuing stages in which each country has passed. And researches has mentioned limitations for process of economic growth as well as inequalities in using resources.

In the scope of this study, we will keep bank sustainability for economic growth, if we can have better risk management with below suggested policies:

Market risk can increased and This may be caused by the increase in lending rate and decrease in both CPI and G (from our table 2 and 3).

Therefore, governmental agencies need to reduce lending rate and increase GDP growth and not decreasing much CPI.

Finally, Huy, D.T.N (2015) stated that we need to apply corporate governance standards such as Limited South Asian corporate governance model into corporations to reduce and control risk better.

Limitation of research

We can expand our research model for other industries and other markets.

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