Factors that affect Stock Price and Beta CAPM of Vietnam Banks and Enhancing Management Information System – Case of Asia Commercial Bank

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Abstract

This paper aims to improve Risk management information system (RMIS) that is becoming an important element in MIS system of banking sector in Vietnam in recent years and in future.

This study mainly use combination of quantitative methods including OLS regression for the case of Asia Commercial Bank (ACB).

Research results indicate that GDP growth (G), CPI and Risk free rate (Rf) have highest effects on both ACB beta CAPM and stock price.

Besides, this study also give out recommendations for enhancing management information system (MIS) for upgrading roles of banks in Vietnam economic development. Then, we can suggest suitable plans for sustainable management strategies.

Our research limitation is within bank sector, then we can expand for other industries and markets as well.

1. Introduction

We get some definitions of bank risks. Risks in commercial banks' business operations There are many different conceptions about risks associated with menstrual activity Bank business, according to the author, the risks in banking business activities is the possible loss that the bank can afford unpredictable, in terms of space and time.

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, Minisitry of Finance, banks, etc.

The study organized with introduction, literature review, methodology, main results, discussion and conclusion.

2. Literature Review

First, Trivelas and Satouridis (2013) stated that in Greece a) the externally focused Management Information System (MIS) effectiveness archetypes (OS, RM) reflecting innovation, creativity, goal setting and planning enhance task productivity b) the Internal process (IP) model of MIS effectiveness influences negatively task productivity.

Arasu et al (2014) found the Internet has revolutionized services across institutions. The Banking sector has registered significant change in the quality of service owing to the bandwidth of information flow ensuring greater customer-satisfaction. This has also brought into perspective the security environment within which information flow takes place.

Moreover, Gupta (2019) specified that Information system (IS) is important in almost all the functional areas of any bank i.e. HR, Marketing, Finance, etc. It also helps in risk management and cash management along with maintaining long run customer relationship.

Then, We summarize previous studies as follows:

Table 1 – Summary of Previous Studies

Authors	Year	Contents, results
Karim, A.J	2011	Management Information Systems (MIS) is the key factor to facilitate and attain efficient decision making in an organization.
Avegrou, C.	2008	Information system (IS) in emerging markets research has expanded the IS research agenda and developed new understanding of IS innovation phenomena, mainly through its attention to social context and strategic concerns associated with socio-economic development. and macro-level institutions.
Krishna	2015	Between stock price and macro factors there are causal relation.
Kulathunga	2015	In Sri Lanka, stock market curtailed bu increasing deposit rates
Ahmad and Ramzan	2016	Investors might consider macro effects in portfolio of stock investment
Giebe et al	2019	a progressive tool for providing customer-oriented services and products, in the banking sector, is currently defined as "Big Data & Analytics".

3. Methodology

Method and Data

This study mainly use combination of quantitative methods and qualitative methods including synthesis, inductive and explanatory methods. And it emphasizes again important roles of internet data in sustainable modern bank management

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

Data is collected from reliable internet sources and websites as website of State Bank of Vietnam, Bureau of Statistics, Ministry of Finance, banks, etc.

Looking at descriptive statistics below, we see that: standard deviation of exchange rate and SP500 are highest values.

Figure 1 – ACB Stock Price and other Factors

	STOCKPRI...	CPI	G	IM	R	RF	VNINDEX	EX_RATE	SP500	TRADEBA...
Mean	18.76000	0.068270	0.056730	154.4800	0.132500	0.073505	490.1750	21864.80	1701.587	-232.2000
Median	17.85000	0.063850	0.056500	153.9500	0.125000	0.065275	492.8800	21780.00	1734.160	-162.5000
Maximum	25.70000	0.181300	0.066800	194.8000	0.190000	0.132000	593.0500	23230.00	2103.840	498.0000
Minimum	15.40000	0.006300	0.043800	117.4000	0.100000	0.046000	351.5500	20618.00	1292.280	-1162.000
Std. Dev.	3.490368	0.059925	0.007141	25.76659	0.031380	0.024419	83.37681	876.1553	327.3917	465.6620
Skewness	0.682770	0.921046	-0.361761	0.145331	0.844274	1.469319	-0.196155	0.108851	-0.061715	-0.405459
Kurtosis	2.363377	2.637092	2.181881	1.849123	2.335049	4.388549	1.735476	1.708458	1.360020	2.975371
Jarque-Bera	0.945829	1.468753	0.497001	0.587084	1.372230	4.401524	0.730387	0.714782	1.126987	0.274248
Probability	0.623183	0.479805	0.779970	0.745618	0.503528	0.110719	0.694062	0.699499	0.569217	0.871862
Sum	187.6000	0.682700	0.567300	1544.800	1.325000	0.735050	4901.750	218648.0	17015.87	-2322.000
Sum Sq. Dev.	109.6440	0.032319	0.000459	5975.256	0.008862	0.005367	62565.23	6908834.	964668.1	1951570.

Figure 2 – ECB beta and and other factors

	BETAACB	CPI	G	IM	R	RF	VNINDEX	EX_RATE	SP500	TRADEBA...
Mean	0.547200	0.068270	0.056730	154.4800	0.132500	0.073505	490.1750	21864.80	1701.587	-232.2000
Median	0.492500	0.063850	0.056500	153.9500	0.125000	0.065275	492.8800	21780.00	1734.160	-162.5000
Maximum	1.421000	0.181300	0.066800	194.8000	0.190000	0.132000	593.0500	23230.00	2103.840	498.0000
Minimum	0.008000	0.006300	0.043800	117.4000	0.100000	0.046000	351.5500	20618.00	1292.280	-1162.000
Std. Dev.	0.438093	0.059925	0.007141	25.76659	0.031380	0.024419	83.37681	876.1553	327.3917	465.6620
Skewness	0.604368	0.921046	-0.361761	0.145331	0.844274	1.469319	-0.196155	0.108851	-0.061715	-0.405459
Kurtosis	2.598282	2.637092	2.181881	1.849123	2.335049	4.388549	1.735476	1.708458	1.360020	2.975371
Jarque-Bera	0.676009	1.468753	0.497001	0.587084	1.372230	4.401524	0.730387	0.714782	1.126987	0.274248
Probability	0.713192	0.479805	0.779970	0.745618	0.503528	0.110719	0.694062	0.699499	0.569217	0.871862
Sum	5.472000	0.682700	0.567300	1544.800	1.325000	0.735050	4901.750	218648.0	17015.87	-2322.000
Sum Sq. Dev.	1.727330	0.032319	0.000459	5975.256	0.008862	0.005367	62565.23	6908834.	964668.1	1951570.

Figure 3 – ACB Stock Price and other Factors

Correlation Matrix										
	STOCKPRI...	CPI	G	IM	R	RF	VNINDEX	EX_RATE	SP500	TRADEBA...
STOCKPRI...	1.000000	0.358759	-0.265827	0.490567	0.183615	0.391606	-0.399640	-0.475061	-0.456484	0.073327
CPI	0.358759	1.000000	0.090566	0.500206	0.428665	0.580486	-0.861426	-0.382440	-0.844053	0.156409
G	-0.265827	0.090566	1.000000	0.440105	0.223263	-0.421402	-0.016434	0.519076	0.136776	-0.107369
IM	0.490567	0.500206	0.440105	1.000000	0.663798	0.117679	-0.664368	0.038528	-0.613771	0.161388
R	0.183615	0.428665	0.223263	0.663798	1.000000	-0.045403	-0.746263	0.006143	-0.664122	0.553061
RF	0.391606	0.580486	-0.421402	0.117679	-0.045403	1.000000	-0.444136	-0.772931	-0.652624	0.264192
VNINDEX	-0.399640	-0.861426	-0.016434	-0.664368	-0.746263	-0.444136	1.000000	0.295409	0.950618	-0.375438
EX_RATE	-0.475061	-0.382440	0.519076	0.038528	0.006143	-0.772931	0.295409	1.000000	0.476195	-0.491811
SP500	-0.456484	-0.844053	0.136776	-0.613771	-0.664122	-0.652624	0.950618	0.476195	1.000000	-0.485719
TRADEBA...	0.073327	0.156409	-0.107369	0.161388	0.553061	0.264192	-0.375438	-0.491811	-0.485719	1.000000

Figure 4 – ACB Beta and and other Factors

	BETAACB	CPI	G	IM	R	RF	VNINDEX	EX_RATE	SP500	TRADEBA...
BETAACB	1.000000	-0.258130	0.149107	0.455796	0.413247	-0.170619	-0.090113	-0.028256	-0.128350	0.633302
CPI	-0.258130	1.000000	0.090566	0.500206	0.428665	0.580486	-0.861426	-0.382440	-0.844053	0.156409
G	0.149107	0.090566	1.000000	0.440105	0.223263	-0.421402	-0.016434	0.519076	0.136776	-0.107369
IM	0.455796	0.500206	0.440105	1.000000	0.663798	0.117679	-0.664368	0.038528	-0.613771	0.161388
R	0.413247	0.428665	0.223263	0.663798	1.000000	-0.045403	-0.746263	0.006143	-0.664122	0.553061
RF	-0.170619	0.580486	-0.421402	0.117679	-0.045403	1.000000	-0.444136	-0.772931	-0.652624	0.264192
VNINDEX	-0.090113	-0.861426	-0.016434	-0.664368	-0.746263	-0.444136	1.000000	0.295409	0.950618	-0.375438
EX_RATE	-0.028256	-0.382440	0.519076	0.038528	0.006143	-0.772931	0.295409	1.000000	0.476195	-0.491811
SP500	-0.128350	-0.844053	0.136776	-0.613771	-0.664122	-0.652624	0.950618	0.476195	1.000000	-0.485719
TRADEBA...	0.633302	0.156409	-0.107369	0.161388	0.553061	0.264192	-0.375438	-0.491811	-0.485719	1.000000

Also, we find out ACB stock price and beta CAPM have negative correlation with VNIndex and exchange rate.

4. Main Results

4.1 Overall Results

First, from below charts we recognize that:

ACB stock price and beta have negative relationship with external factors such as exchange rate and SP500 (the slope of beta is smaller than stock price).

For internal factors, stock price has positive correlation with Rf while beta has negative correlation with Rf.
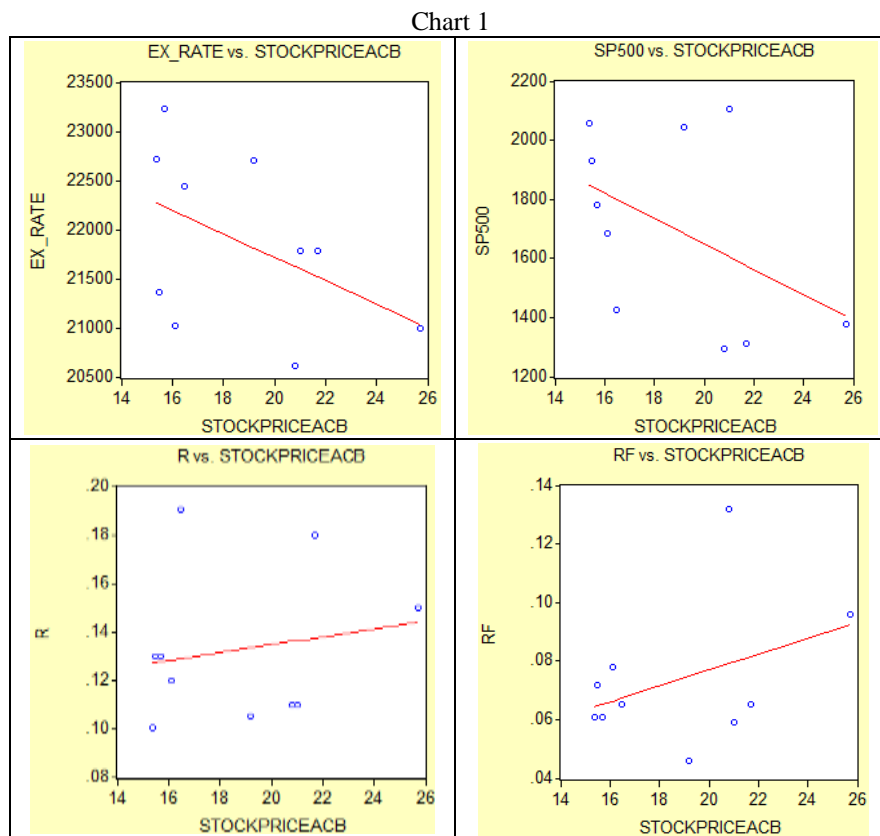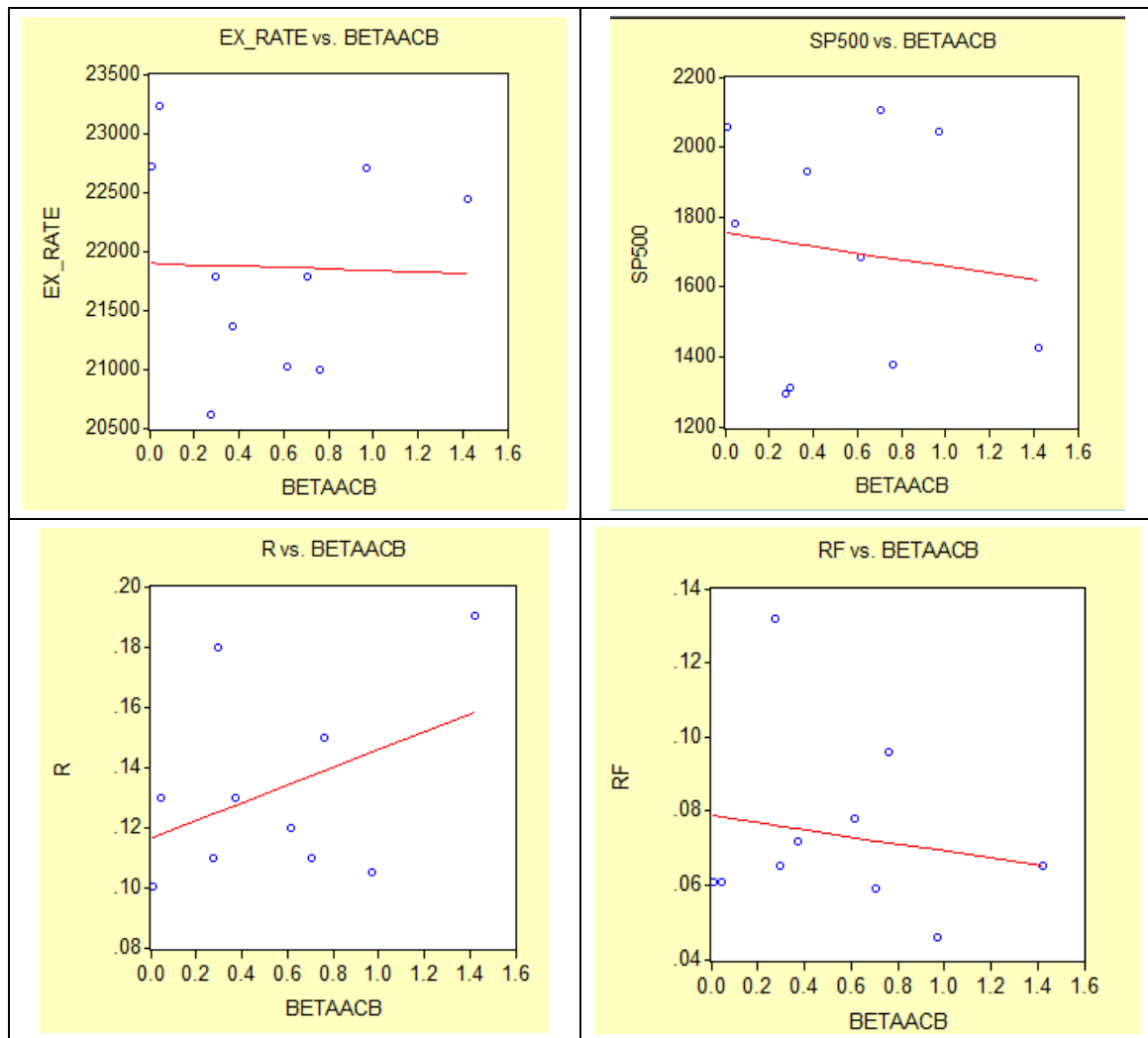
Chart 1

Chart 2

4.2 OLS Regression Results

Run OLS regression with Eviews gives below results:

Table 2 - Regression results for Comparison of Internal and External Effects on ACB Stock Price During Pre-L Inflation Time

	Internal		External	
	Coefficient	T-statistic	Coefficient	T-statistic
G	38.3	-1.3		
CPI	-412	0.57		
R	-8.6	-0.09		
Rf	-19.4	-0.02		
VNIndex	0.03	0.4		
IM	0.15	1.7		
Exchange rate			-0.002	-1.5
SP500			-0.001	-0.6
Trade balance			-0.001	-0.5

Table 3 - Regression Results for Comparison of Internal and External Effects on ACB Beta CAPM during Pre-L inflation Time

	Internal		External	
	Coefficient	T-statistic	Coefficient	T-statistic
G	9.2	0.2		
CPI	-9.6	-1.1		
R	2.3	0.2		
Rf	5.8	0.5		
VNIndex	-0.003	-0.4		
IM	0.008	0.7		
Exchange rate			0.00016	0.9
SP500			0.00017	0.3
Trade balance			0.0008	2.4

Analysis

We can infer from the above tables that G, CPI and Rf has highest coefficients in case on ACB Beta CAPM and its stock price.

5. Discussion

During Pre – L Inflation

For internal factors we find out: Rf and lending rate have positive relationship with beta CAPM while negative correlation with ACB stock price.

For external factors we figure out: trade balance and exchange rate have positive correlation with beta while negative correlation with stock price of ACB.

6. Conclusion

Because lending rate and Risk free rate have positive relationship with beta CAPM while negative correlation with ACB stock price:

Ministry of Finance, State bank of Vietnam and relevant agencies need to control lending rate as well as rates of Treasury bonds (reduction preferred) toward benefits for managing risk.

Management Information System (MIS) Implications

Banks need to organize better management information system, esp. Risk information.

Mukhamadeev et al (2019) stated that the role of information systems for entrepreneurship education in developing countries on the example of the Azerbaijan education system and Internet

banking. The information systems role in entrepreneurship education was determined with the help of online questionnaire. As a result of the study, it was found out that about 29% of higher entrepreneurship education institutions use IT technologies and e-learning principles in the learning process.

Limitation of Research

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

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