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Factors Affecting The Performance Of Brokerage Companies On The Vietnamese Stock Market

Tran Van Hai

Hanoi University of Natural Resources and Environment, Email: Haitv2008@gmail.com

Abstract: The study aims to analyze the factors affecting the performance of brokerage firms on the Vietnamese stock market. Forty securities brokerage firms on the Vietnamese stock market made up the study sample, which amounted to 649 observations from 2010 to 2019. The author has identified four factors affecting operational efficiency, including (1) size of the business; (2) short-term solvency (Cr); (3) age of the brokerage company (Age); and (4) inflation, using qualitative research (synthetic methods; interpretive and inductive methods); and quantitative research methods (linear regression methods) (CPI). Based on the research, the author provides a variety of discussions and evaluations on the significance of increasing operational efficiency, as well as financial solution recommendations aimed at enhancing the operational efficiency of brokerage firms on the Vietnam Stock Market and in other nations with comparable stock markets.

Keywords: Performance, securities brokerage company, Vietnam securities company.

1. INTRODUCTION

An economic category called "performance of securities brokerage firms" measures how effectively infrastructure, human capital, and financial resources are used to achieve the company's overall financial objectives or the specific financial goals of the securities brokerage company's business. Since maximizing profits for the company is the ultimate objective of all business operations, performance reflects the caliber of business activities and the amount of resource utilization (Nguyen Thi Odor & Nguyen Thi Hoai Le, 2010).

A corporation is said to be operating efficiently from the standpoint of a securities brokerage firm when it generates the highest degree of value for its owners and investment shareholders. Regarding investors, securities brokerage firms perform best when they assist investors in making profitable investments via advising and brokerage services that help clients save costs and time and maximize profits (Van Hai, Hung, & Ha, 2021).

According to managers, the effectiveness of securities brokerage firms will contribute to the market's ability to function safely and effectively. These firms give the market access to complete information, which helps to promote the market's ability to work and follow the law.

Therefore, the success of brokerage firms is crucial for the business, investors, and state management organizations. The company is doing well, and the capacity to spot profitable trends will increase earnings for the firm, its clients, and the market. The regulatory body can successfully monitor the operations of brokerage firms thanks to a well-implemented set of laws and rules (Van Hai, 2021).

2. LITERATURE REVIEW AND PREVIOUS RESEARCH STUDIES

In truth, there are many diverse perspectives on the performance of institutions with comparable

operational features and securities brokerage organizations throughout the globe, including Vietnam. A few of them must be stated here: According to Ho et al. (2008), in the study "Measuring online stockbroking performance," using a sample of 28 online securities brokerage firms in Taiwan between 2003 and 2005, the authors discovered a grouping between the performance and performance of the companies using the data packaging method (DEA) with the dependent variable of return on assets (ROA) (Ho &Oh, 2008). Online brokerage firms have the opportunity to expand and boost operational effectiveness as a result of the internet's expansion and the 4.0 industrial revolution. Online brokerage firms combine securities trading with the internet. Cummins et al. (2010) claim that a sample of US insurance businesses employed the data packaging approach (DEA) to analyze performance in their research "Economies of scope in financial services: A DEA efficiency analysis of the US insurance sector" between 1993 and 2006. (Cummins, Weiss, Xie, & Zi, 2010).

Consequently, insurers operating in the field of property liability are aware of cost savings of scale, but they are unaffected by unstable income. A disadvantage exists for insurance firms operating in the life industry in terms of both expenses and income. The authors advise insurers to concentrate on key business activities to increase operational effectiveness. The study's findings suggest that non-bank businesses like insurance and securities brokerage firms should concentrate on their strengths and competitive advantages to improve operational efficiency. According to Chen et al. (2021), the research "How Does Fin-Tech Affect the Profitability Growth of Securities Companies?: Take Brokerage Investment Consulting Business as An Example", which sought to understand how Fin-Tech affected the performance of brokerage firms, clarified and concluded: Fin-Tech positively affects the securities brokerage industry by increasing management activity efficiency, stabilizing investor and market mood, and enhancing revenue growth and brokerage company advantages (Jian, Yanzhen, Siru, & Yiheng, 2021). According to Ho et al. (2008), contemporary technology will aid securities brokerage businesses in increasing operational effectiveness. According to Cummins et al. (2005), the relationship between performance characteristics and company size was investigated using data from regression tables using the data packaging method. The study, "Efficiency and scale economies in the US property-liability insurance industry," included a sample of insurance finance companies from 1993 to 2002. (DEA).

According to the findings, most smaller-than-average enterprises were growing, while most of the larger companies saw their earnings rise as they evolved (Cummins &Xie, 2005). "Even though businesses are medium-sized, earnings remain stable. The research also discovered that elements influencing operational effectiveness, such as capitalization, organizational structure, and distribution channels, affected a company's success. The scope of operations may impact the performance of securities brokerage firms since operations are fairly similar to enterprises operating in the insurance sector. Alexander et al. (2008), authors used a mixed effect model to conduct a meta-analysis of the correlations between marketing capacity and performance in the paper "The Relative Impact of Marketing, Research-and-Development, and Operations Capabilities on Firm Performance" (Krasnikov & Jayachandran, 2008). The findings indicate that marketing skills generally influence a company's capacity to run more than research, development, and operating skills. In addition to influencing, factors like investor confidence, operational reputation, marketing prowess, distribution channel development, product

strategy, price strategy, or efficient communication complex use are relatively significant when it comes to securities trading activities and directly impact the performance of the securities brokerage company. According to Mary Thuku (2017), the information gathered for her research, "The Effect of Mobile Banking on the Financial Performance of Stock Brokerage Businesses in Kenya," examines the effect of mobile banking on stock brokerage firms' performance in Kenya, is secondary information. The findings indicate that performance and operational efficiency are positively impacted by the total amount of mobile banking revenue generated, and that operational efficiency is also positively impacted by the brokerage company's size. Cost-effectiveness, however, has little bearing on performance and operational efficiency (Thuku, 2017).

3. METHODOLOGY AND PROPOSED MODEL

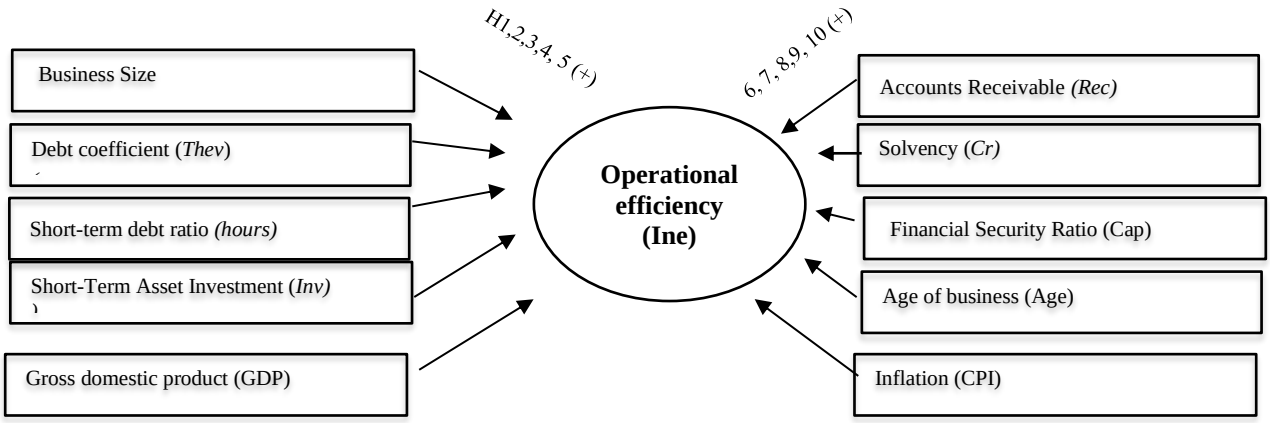
* Quantitative research objectives. The study used a linear regression model based on panel data Pooled OLS, FEM, and REM to test the impact of factors on the performance of brokerage companies on the Vietnamese stock market.

* Method. The study uses STATA 14 software to analyze regression model selection, test, and estimate array data regression models. For array data, a regression can be carried out according to 3 methods: Pooled Ordinary Least Square – Pooled OLS, Fixed-Effects Model, Covariance model, Within Estimate, Individual Dummy Variable Model, Least Squares Dummy Variable Model- Fem, Radom-Effects Model, Random Intercept, Partial Pooling Model-Re), experimental Hausman test, to select the suitable model out of 3 models. The chosen model continues to be tested for defects, and remediation is carried out for flaws in the model.

* Research data. The data used by the author is secondary data, taken from the Vietstock.vn page, the annual report of environmental enterprises, and the General Statistics Office (Gso.gov.vn) page. The research will omit newly founded or consolidated firms that make the data non-comparable and enterprises that do not provide enough relevant information in the study. The data set comprises financial statements of Vietnam's environmental enterprises for 2010 - 2019. According to Bollen (1989), when analyzing a linearly structured model, the sample size is calculated using the formula n=5*2i (i is the observed variable in the model). According to Tabachnick and Fidell (2007), multiple linear regression analysis sample sizes are calculated using the formula n= 50 + 8q (q is the number of independent variables in the model).

* Selection of variables in the model.

The dependent variable is performance (variable Inf measured by cost on net sales); independent variables represent the factor affecting the business's difference performance.



* Statistics of variables in the model, name and symbol variables, calculation formulas.

Ordinals	Names and variable symbols	Calculation formula	Expectations
Dependent variable: INE			
Independent variables:			
1	Business Size	Ln (Total Assets)	+
2	The debt-to-equity ratio (Lev)	Total Debt/Equity	-
3	Short-term debt ratio (Std)	Short-term liabilities/Liabilities	+
4	Fixed Asset Investment Rate (Inv)	Fixed Assets/Total Assets	+
5	The ratio of Receivables (Rec)	Receivables /Total Assets	+
6	Solvency (CR)	Short-term assets/Current liabilities	+
7	Available Capital Ratio (Cap)	Available Capital/Total Value of Risk	
8	Age of business (Age)	Ln (Year of the metric collection – Year of establishment)	+
9	Gross domestic product (GDP)	Annual growth of real GDP	+
10	Inflation (CPI)	Annual inflation growth rate	-

* The study model looks like: $INE = \beta_0 + \beta_1*Size_{it1} + \beta_2*Lev_{it2} + \beta_3*Std_{it3} + \beta_4*Inv_{it4} + +\beta_5*Rec_{it5} +\beta_6*Cr_{it6} + \beta_7*Cap_{it7} + \beta_8*Age_{it8} + \beta_9*GDP_{it9} + \beta_{10}*CPI_{it10} + v_i + \varepsilon_{it}$ with i =1.2,...,n and t = 1.2,..,t (*)

Inside:

β_0 : Blocking factor

β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8: are the slope coefficients of independent variables

$\mu_{it} = v_i + \varepsilon_{it}$, the model's error is separated into two parts: v_i represents unobservable elements that differ between objects but do not change over time; ε_{it} means unobservable factors that differ between things and change over time.

4. RESEARCH RESULTS

4.1. RESEARCH SAMPLE INFORMATION

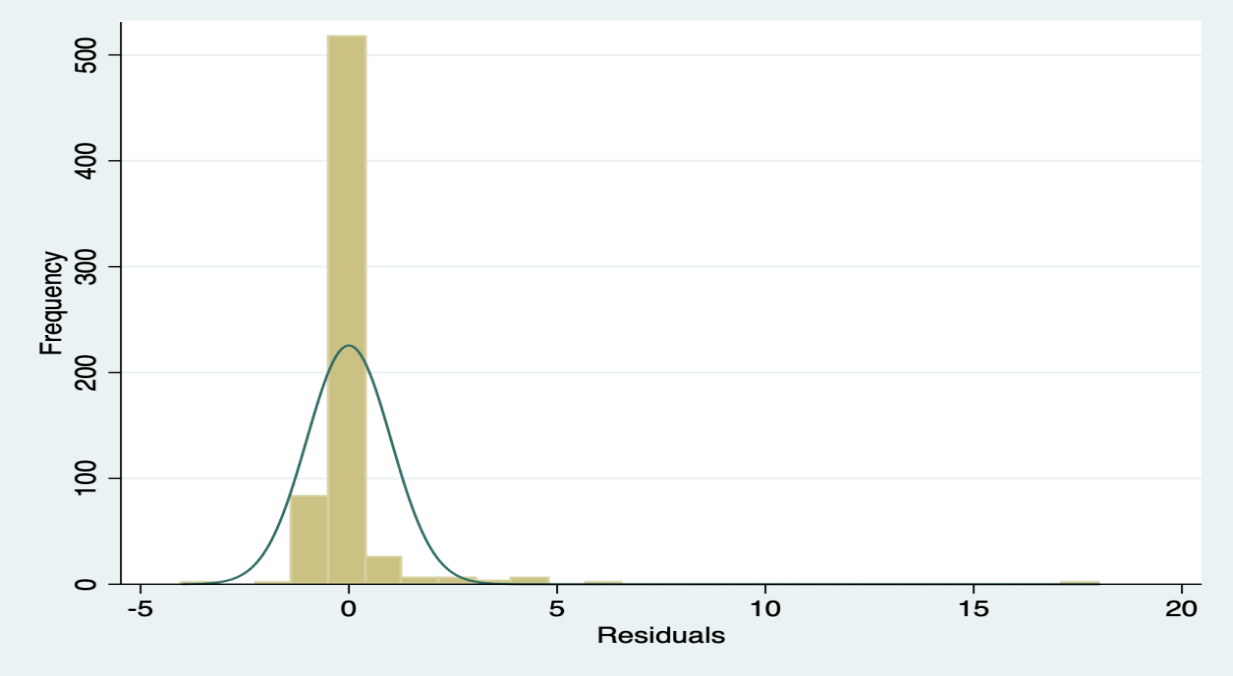
Table 1. Statistical results of variables in the model

Variable	Obs	Mean	Std. Dev.	Min	Max
Ine	649	.6201652	1034681	-3.422.974	1.933.174
Inv	649	.8869689	.1424891	.2414521	1
Size	649	1.151.962	.6640879	9.252.387	131.529
Lev	649	.9087	6.082774	-.0013317	1.337.492
Head	649	4.603.366	378.7344	-76	4.279.153
Rec	649	.0941048	.173451	0	.8716797
CR	649	2.138.842	4187.726	-7.411.495	106460.6
Std	649	.9380899	.1622083	.0117455	1
Age	649	1.237.043	.0581962	1.146.128	1.322.219
GDP	649	5.680.508	1.698795	2.58	7.08
CPI	649	2.791.248	1.055754	.63	4.09

(Source: Statistical research on Stata 14 software)

When a variable's STD Deviation/Mean values are more significant than 1, it is simple to see that the standard deviation is higher than average, the data fluctuates a lot, and the observational statistical data of the high differential sample show this. Standard deviation measures how widely distributed a dataset is around its mean (Fig. 1).

Figure 1. Sample data dispersion



(Source: Statistical author on STATA 14 software)

4.2. REGRESSION MODEL VALIDATION

* Multicollinearity testing. The study used the variance inflation factor (VIF) to test multicollinearity. If the VIF coefficient does not exceed 10, then the studied model has a multicollinearity sign.

Table 2. Multicollinearity test results in the model

Variable	Bright	1/VIF
Age	2.29	0.437039
GDP	1.62	0.618068
Rec	1.55	0.646250
Size	1.30	0.769557
Head	1.26	0.794228
Lev	1.25	0.798316
Inv	1.11	0.902967
Std	1.10	0.907922
CPI	1.07	0.936826
CR	1.02	0.978356
Mean VIF	1.36	

(Source: Statistical author on STATA 14 software)

The variables included in the model (*) are related to rotation which has interrelated characteristics, so when running regression, the author conducts regression separately to avoid multicollinearity. However, to consider the remaining independent variables that are multicollinearity with each other, the author performs a multicollinearity test with independent variables when included in the model simultaneously. Observation of Table 2 shows that the VIF of the variables in the model all has values less than 10. This suggests that the study regression model does not have multicollinearity phenomena, independent variables that do not affect the interpretation results of the model.

* Selection of estimation model

The minor squared regression approach, Pooled Ordinary Least Square (Pool-OLS), Fixed-Effects Model (FEM), and Radom-Effects Model (REM) may be used to do table data regression.

The study used the Hausman test to choose between regression (FEM) and (REM) models for the sample's tabular data.

The Hausman test has the following hypotheses:

H_0: There is no correlation between the explanatory variables and the random component (i.e., the REM model is consistent)

Q_1: There is a correlation between the explanatory variables and the random element (i.e. the FEM model is suitable).

Hausman test results (Table 3), the study received a result of 0. 1976 was more significant than 0.05 (5%). Thus, with a significance level of 5% grounded in rejecting the H_0 hypothesis, the appropriate method chosen is random influence (REM). Therefore, the study will use the model (REM) to regress the factors affecting the performance of Vietnamese securities brokerage companies in the period 2010 – 2019:

Table 3. Hausman Test results for the model

	Coefficients (b) FEM	(B) REM	(b−B) Difference	sqrt(diag(V_b−V_B)) S.E.
Inv	−.3807183	−.1111286	−.2695898	.2863869
Size	−.725763	−.2872067	−.4385563	.1759835
Lev	−.0213042	−.0084078	−.0128964	.0059676
Cap	.0001016	−.0000802	.0001818	.0001319
Rec	.9704381	.7539245	.2165136	.1495262
CR	−.0000105	−9.30e−06	−1.16e−06	3.15e−06
Std	.2053117	.0516792	.1536325	.2146943
Age	4.062406	2.70218	1.360225	.5558621
GDP	.0306372	.040589	−.0099518	.0031188
CPI	.0461333	.0417396	.0043937	.0036488

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b−B)'[(V_b−V_B)^(−1)](b−B)
= 12.29
Prob>chi2 = 0.1976
(V_b−V_B is not positive definite)

(Source: Statistical research on STATA 14 software)

* Check the suitability of the model.

Checking the variance, the result table 3 of the REM model (xttest0 command) shows that prob=1.0000>0.05, the REM model has a variable variance.

Table 4. Test results of variable variance in REM

Breusch and Pagan Lagrangian multiplier test for random effects

Ine[MCK01,t] = Xb + u[MCK01] + e[MCK01,t]

Estimated results:

	Var	sd = sqrt(Var)
Ine	1.070565	1.034681
e	1.003305	1.001651
u	0	0

Test: Var(u) = 0

chibar2(01) = 0.00
Prob > chibar2 = 1.0000

(Source: Statistical research on STATA 14 software)

Self-correlation test (xtserial command). Table 5 shows that the REM model has prob=0. 4985>0.05, so the REM model does not correlate.

Table 5. Self-correlated test results in REM

```
. xtserial Ine Inv Size Lev Cap Rec CR Std Age GDP CPI

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      81) =      0.462
           Prob > F =      0.4985
```

(Source: Statistical research on STATA 14 software)

Next, the study conducted multicollinearity testing between variables in the model and variance testing (collin command). The results of the multicollinearity test shown in Table 6 show that the independent variables have VIF<10 values, demonstrating no multicollinearity.

Table 6. Multicollinearity inspection results in FEM

Variable	Bright	Bright	Tolerance	Squared
Ine	1.05	1.02	0.9530	0.0470
Inv	1.11	1.05	0.9028	0.0972
Size	1.34	1.16	0.7490	0.2510
Lev	1.26	1.12	0.7967	0.2033
Head	1.26	1.12	0.7937	0.2063
Rec	1.56	1.25	0.6393	0.3607
CR	1.02	1.01	0.9769	0.0231
Std	1.10	1.05	0.9079	0.0921
Age	2.31	1.52	0.4325	0.5675
GDP	1.62	1.27	0.6163	0.3837
CPI	1.07	1.03	0.9352	0.0648
Mean VIF	1.34			

(Source: Statistical research on STATA 14 software)

To overcome the variable error variance defect, the study uses the Feasible Generalized Least Squares (FGLS) model to obtain a solid and efficient estimate. The study used the esttab command to compare models with each other (Table 7). Command: esttab OLS FEM REM GLS, r2 star(* 0.1 ** 0.05 *** 0.01) brackets no-gap compress

Table 7. Results of scaling back factors affecting the performance of Vietnamese securities brokerage companies

Variable	OLS	Five	REM	GLS
Inv	-0.111	-0.381	-0.111	-0.364
	[-0.38]	[-0.93]	[-0.38]	[-1.13]
Size	-0.287***	-0.726***	-0.287***	-0.375***
	[-4.18]	[-3.84]	[-4.18]	[-5.43]
Lev	-0.00841	-0.0213**	-0.00841	-0.0105
	[-1.14]	[-2.25]	[-1.14]	[-1.49]

Head	-0.0000802	0.000102	-0.0000802	-0.0000829
	[-0.68]	[0.57]	[-0.68]	[-0.66]
Rec	0.754***	0.970***	0.754***	0.963***
	[2.63]	[3.00]	[2.63]	[3.38]
CR	-0.00000930	-0.0000105	-0.00000930	-0.0000199**
	[-0.96]	[-1.03]	[-0.96]	[-2.27]
Std	0.0517	0.205	0.0517	0.0390
	[0.20]	[0.61]	[0.20]	[0.13]
Age	2.702***	4.062***	2.702***	2.993***
	[2.60]	[3.45]	[2.60]	[3.84]
GDP	0.0406	0.0306	0.0406	0.0399
	[1.36]	[1.02]	[1.36]	[1.43]
CPI	0.0417	0.0461	0.0417	0.0550*
	[1.07]	[1.17]	[1.07]	[1.67]
_cons	0.265	3.681	0.265	1.206
	[0.17]	[1.64]	[0.17]	[0.76]
N	649	649	649	649
R-sq	0,665			
t statistics in brackets				
* p<0.1, ** p<0.05, *** p<0.01				

(Source: Regression Study on STATA 14 Software)

5. DISCUSSION AND CONCLUSION

Model regression results (Table 7):

INE = 1.206 -0.375*Size -0.0000199 Cr + 2.993Age + 0.0550* CPI + μ

Table 7 shows that the performance of securities brokerage companies has improved significantly compared to the previous period ($\beta_0 = 1.206>0$). The deterministic factor (R^2) is the coefficient that assesses the suitability of the regression model. The value of the coefficient (R2) indicates what percentage of variation in the dependent variable can be explained by the regression model. The regression result, consisting of 4 independent variables that explain 66.5% of the variability of the Inf dependency variable, include Enterprise Size (Size); Short-term solvency (Cr); Age of business (Age), and inflation (CPI). Specifically, the impact results are as follows:

In addition, the model shows a less significant relationship between variables: Debt-to-equity ratio (Lev); Fixed asset investment rate (Inv); Available capital ratio (Cap); Gross domestic product (GDP); Short-term debt ratio (Std); Ratio of accounts receivable (Rec).

Conclusion: Based on the research results, the author offers several recommendations for financial solutions aimed at improving the operational efficiency of securities brokerage companies on the Vietnamese stock market. Solutions include raising capital with equity capital channels that can be used, such as: increasing the owner's contributed capital, issuing shares (preferred shares) or increasing the size of retained profits (retaining 100% of profits or applying dividend surplus policies). With debt capital that can be used is to issue bonds (convertible bonds for about 2-3 years is reasonable), and expand credit channels from commercial banks (including short-term credits). In particular, newly established or small-time businesses need to

reevaluate core software technology, eliminate inefficient activities, and link technology transfer with reputable brokerage organizations worldwide to improve operational efficiency.

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