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Improve Payment Capacity For Brokerage Companies On The Stock Market

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Summary: Research factors affecting brokerage companies' payment capacity operating on the Vietnamese stock market. The study sample was 78 brokerage firms, corresponding to 236 observations between 2010 and 2021. Using qualitative research (synthetic methods; Interpretive and inductive methods) and quantitative research methods (linear regression methods), the author identified four factors affecting the settlement capacity of the brokerage company, including (1) the Securities company model; (2) the ability to pay quickly; (3) Debt ratio; (4) Working capital turnover period. Based on the research, the author offers some discussions and assessments on the crucial role of improving corporate financial capacity and financial solution recommendations aimed at improving payment capacity for brokerage companies.

Keywords: Payment capacity, brokerage company, investment bank, liquidity.

I. Introduction

An essential principle for brokerage firms operating on the stock market is always to ensure their solvency since insolvency is the underlying reason for business failure. In recent years, the number of brokerage firms has not been guaranteed, and the number of brokerage companies tends to decrease in number, from 105 companies in 2009, to now; according to statistics from the Vietnam Stock Exchange, the number of active brokerage firms is 78. The primary cause is the company itself; due to the industry's still-limited capacity for management, many brokerage firms operate inefficiently, suffer years of sustained losses, lose their ability to pay their debts, and eventually leave the market.

2. Literature review

According to Samuels (2017), payment capacity is essential for brokerage firm operations because it is a gauge of stability. Similarly, in wang et al. (2017)'s study, "Empirical research on financial capability evaluation of A-share listed companies in the securities industry based on principal component analysis," the research team used relevant financial data indicators of the group A stock markets of Shanghai and Shenzhen in 2009 to determine the financial capability of the companies. The results show that the total financial capacity of the listed company in the securities industry A must focus on one factor: the brokerage company's payment capacity. According to Zhe et al. (2017), "Research on the Performance Evaluation System of Listed Companies In Financial Securities Industry", a study of the performance evaluation system of listed companies in the financial securities industry, the indicator factor reflecting the payment capacity significantly affects the financial capacity of the brokerage firm. According to Shirata (1998), "Financial Ratios as Predictors of Bankruptcy in Japan: An Empirical Research" explains the behavior of businesses facing financial hardship in Japan as follows: When a company's cumulative profits (irrespective of industry and size) decrease (Retained earnings on total assets decrease), the company renews the payment date to increase the

company's cash flow (larger payables), Interest rates and discount costs increase, the company tries to raise capital, increase liabilities or worth.

The world has many theoretical and experimental studies on internal and external factors affecting the payment capacity of enterprises. Some studies include Isshaq and Bokpin (2009), using a dynamic panel model in which the delayed dependent variable is selected as the explanatory variable. The data was collected through companies' financial statements in Gana from 1991-2007. Leverage results are not believed to affect the liquidity of companies significantly. However, the variables are company size, return on assets, and net working capital that affects a company's liquidity capacity - according to Chen and Mahajan (2010), Studying the influence of macroeconomic variables on corporate liquidity, data in 45 countries between 1994 and 2005. As a result of macroeconomic variables, GDP economic growth, inflation, short-term interest rates, and government deficits affect the company's liquidity. Gill and Mathur (2011), conducted a sample study with 164 companies in Canada listed on the Toronto Stock Exchange over three years (from 2008-2010). The findings demonstrate that the enterprise's liquidity capacity is influenced by the size, net working capital, short-term debt, investment ratio, and industry. According to Ferreira and Vilela (2004), the study of factors affecting the cash holding ratio of enterprises in EMU countries. The results of cash holdings are positively affected by investment opportunities and cash flows and, at the same time, are negatively affected by liquidity, leverage, and size of assets. Bank debt and cash holdings are negatively related to each other. According to Bruinshoofd and Kool (2004), which studied the liquidity capacity of the company in the Netherlands, the period 1977-1997, the results showed that working capital, investment, and return on assets had a positive effect on the company's liquidity, while the company size, assets, revenue, total debt, short-term debt, average income, and interest rates have a negative effect on liquidity.

Thus, studies on the payment capacity of enterprises have shown that different factors influence payment capacity, and there are differences between various industries, times, and spaces. The methodology used in empirical studies is mainly correlation analysis and multivariate linear regression analysis with the data collected, combined with appropriate tests.

3. Research Methodology

(1) Quantitative research objectives**.** The author performs a regression of the model of factors affecting the payment capacity of the brokerage company in the period 201 0-2021. The results serve as a basis for accurately assessing the effects, helping the brokerage company to have solutions to improve payment capacity.

(2) Research data. The data used by the Ph.D. student is secondary data, taken from the page (Vietstock. vn), the annual report of brokerage firms, and the General Statistics Office (Gso.gov.vn). The data set includes the financial statements of 78 brokerage firms for the period 201 0-2021, 236 observations, the author will exclude newly formed or consolidated brokerage firms that make financial data not comparable and brokerage firms not publishing enough information needed in the study. 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), sample estimation in multiple linear regression analysis is calculated using the formula n= 50 + 8q (q is the number of independent variables in the model). The variables are represented as Panel Data with two details: the time dimension from 2010 to 20 21, the measurement is 78 brokers.

(3) Research methods. The author uses STATA 14 software to analyze regression model selection, test and estimate the array data regression model fixed-influence regression (Fixed-Effects Model, Covariance model, Within Estimate, Individual Dummy Variable Model, Least Squares Dummy Variable Model-Fem), random influence regression (Radom-Effects Model, Random Intercept, Partial Pooling Model-Rem), experimental Hausman test, to select the appropriate model from among three models. The chosen model continues to be tested for defects, and remediation is carried out for flaws in the model.

Applying descriptive statistical techniques and linear regression, the model studies the influence of factors affecting the sustainable growth of a brokerage firm based on the application of linear regression techniques on array data in the form of:

$Y_{it} = \beta_1 X_{it1} + \beta_2 X_{it2} + \ldots + \mu_{it}$

$Y_{it} = \beta_1 X_{it1} + \beta_2 X_{it2} + ... + v_i + \varepsilon_{it}$ with i =1,2,...,n and t = 1,2,..,t (*)

Inside:

Y_{it}: the value of Y for object i at time t

X_{it1}: the value of X1 for object i at time t

X_{it2}: the value of X2 for object i at time t

$\mu_{it} = v_i + \varepsilon_{it}$, 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 objects and change over time.

Carrying out the inheritance of research results, selecting dependent variables is payment capacity, and corresponding independent variables are statistical as follows:

Table 1. Information of research variables

No.	Names and variable symbols	Calculation formula
The dependent variable is CR (Short-Term Assets/Liabilities)		
Independent variables include		
1	The size of the brokerage company (LnTTS)	Ln (Total Assets)
2	Working Capital Turnover Period (DWC)	360/Working Capital Turnover
3	Debt Ratio (DR)	Total Liabilities/Total Assets
4	Quick Solvency Ratio (CIM)	(Cash + cash equivalents)/Short-term debt)
5	Available Capital Ratio (CAPS)	Available Capital/Total Value of Risk
6	The broker IPO (Dummy1)	Fake variable receives a value equal to 1 if IPO, equivalent to 0 if not IPO
7	Foreign Ownership (Dummy2)	The false variable receives a value equal to 1 if the foreign ownership rate is 51% or more and 0 if the foreign ownership rate is less than 51%.
8	Economic growth rate (GDP)	Actual GPD annual growth rate
9	Inflation (Inf)	Annual inflation rate

(Source: author synthesized based on the theoretical overview)

Research hypotheses of the model:

- Hypothesis H_1: The size of the brokerage firm has a similar effect on solvency

- Hypothesis H_2: The debt ratio of the brokerage company has the opposite effect on the solvency

- Hypothesis H_3: The broker's working capital turnover period harms its ability to pay.
- Hypothesis H_4: The instantaneous payment capacity of the brokerage company has the same effect on the payment capacity
- Hypothesis H_5: The ratio of available capital of a brokerage firm has the same effect on solvency
- Hypothesis H_6: The IPO activity has the opposite effect on solvency
- Hypothesis H_7: The foreign ownership ratio of a brokerage firm has a similar effect on solvency
- Hypothesis H_8: Economic growth has a similar effect on solvency
- Hypothesis H_9: Annual inflation has a similar effect on solvency

Result.

The author performs sample statistics through Stata 14 software, and the results are as follows:

Table 2. Research sample information

```
. summarize CR LnTTS DWC DR CIM CAPS DUMMY1 DUMMY2 GDP Inf
```

Variable	Obs	Mean	Std. Dev.	Min	Max
CR	236	31.67845	97.65389	1.162489	1007.533
LnTTS	236	11.91929	.6034331	10.52431	13.43207
DWC	235	-687.2801	65836.63	-929888.6	151107.5
DR	236	.309984	.2733082	.0013649	1.319532
CIM	236	6.314086	19.58407	.001199	222.8019
CAPS	236	5.003104	4.232072	1.50161	42.79153
DUMMY1	236	.3686441	.4834625	0	1
DUMMY2	236	.1991525	.4002118	0	1
GDP	236	.0676195	.0030802	.0621	.0708
Inf	236	.0175771	.0026696	.0141	.0205

(Source: author synthesized based on STATA14 software)

It is easy to see that most variables with STD Deviation / Mean values have values less than 1, standard deviations are higher than average, data fluctuates sharply, and observational statistical data of the sample differ significantly.

Multi-line testing. The author uses the variance inflation factor (VIF). If the VIF coefficient exceeds 10, there are signs of multi-linearity in the study model.

Table 3. Multi-linear test results in the model [(i)]

```
. vif
```

Variable	VIF	1/VIF
LnTTS	2.01	0.497567
DR	1.77	0.565964
DUMMY1	1.43	0.699911
DUMMY2	1.29	0.778058
CAPS	1.24	0.807962
CIM	1.16	0.859774
GDP	1.13	0.884600
Inf	1.08	0.922276
DWC	1.02	0.979767
Mean VIF	1.35	

(Source: author statistics on STATA 14 software)

The variables introduced into the model are related to rotation, which has interrelated characteristics, so when running regression, the author conducts regression separately to avoid multi-linearity. However, to consider the remaining multi-linear independent variables,

the Ph.D. student works a multi-linear test with independent variables when included in the model simultaneously. Qua (Table 3) shows that the coefficient (VIF) of the variables in the model all have values less than 10. This indicates that the study regression model does not have multi-linear phenomena; independent variables do not affect the interpretation results of the model.

Selection of estimation models. The least squares regression technique (Pool-OLS), fixed-influence regression method (FEM), and stochastic influence regression method may all be utilized to do tabular data regression.

NCS 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).

As a result of the Hausman test (Table 4), the author receives a p-value of 0.0115, less than 0.05 (5%). Thus, with a significance of 5%, there is no basis to refute the H_0 hypothesis; the suitable method chosen is fixed influence (FEM). Therefore, the study will use the model (FEM) to regression to find out the factors affecting the size of own capital and the capital level of the brokerage company in the period 201 0-2021:

Table 4. Hausman Test results for the model

	Coefficients (b) FEM	(B) REM	(b−B) Difference	sqrt(diag(V_b−V_B)) S.E.
LnTTS	71.93981	19.36956	52.57025	20.46721
DWC	−.0006363	−.0006848	.0000485	.
DR	−52.85313	−57.40892	4.555791	16.76659
CIM	3.003276	3.041607	−.038331	.0773839
CAPS	−2.889748	−2.331386	−.5583614	.8191105
GDP	−895.0078	592.4916	−1487.499	389.0128
Inf	−2205.531	−1740.033	−465.4983	.

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(6) = (b−B)'[(V_b−V_B)^(−1)](b−B)
= 13.28
Prob>chi2 = 0.0388
(V_b−V_B is not positive definite)

(Source: Ph.D. student in statistics on STATA 14 software)

Check the suitability of the model and remove redundant variables.

The author removes CAPS variables, GDP; Inf exits the model due to a p-value greater than 0.05 and reassesses the model to check if the new model has visual similarity, checks for variable error variance, xttest3 command.

Table 5 Test results of variable variance in FEM

```
. xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (49)  =     2.2e+05
Prob>chi2 =      0.0000
```

(Source: Ph.D. student in statistics on STATA 14 software)
Self-correlation test, xtserial command.

Table 6. Self-correlation test results in FEM (

```
. xtserial CR LnTTS DWC DR CIM

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      46) =      3.078
           Prob > F =      0.0860
```

(Source: Ph.D. student in statistics on STATA 14 software)
Multi-line inspection, collin command.

Table 7. Multi-linear inspection results in FEM

```
. collin CR LnTTS DWC DR CIM
(obs=235)

  Collinearity Diagnostics

                       SQRT                    R-
  Variable      VIF     VIF    Tolerance    Squared
----------------------------------------------------
        CR      3.02    1.74     0.3311      0.6689
    LnTTS       1.63    1.28     0.6147      0.3853
       DWC      1.75    1.32     0.5714      0.4286
        DR      1.73    1.32     0.5767      0.4233
       CIM      2.23    1.49     0.4482      0.5518
----------------------------------------------------
  Mean VIF      2.07
```

(Source: Ph.D. student in statistics on STATA 14 software)

Vif<10 coefficient, so the new model does not have multi-linearity.

To overcome the variable error variance defect, the author uses the Feasible Generalized Least Squares (FGLS) model to obtain a solid and efficient estimate. At the same time to compare the models with each other, the author uses the command

Table 8. Results of model regression of factors affecting the payment **capacity of the brokerage company**

```
. esttab OLS FEM REM GLS, r2 star(* 0.1 ** 0.05 *** 0.01) brackets nogap compress
```

	(1) CR	(2) CR	(3) CR	(4) CR
LnTTS	13.87	44.57**	13.87	3.649*
	[1.59]	[2.46]	[1.59]	[1.92]
DWC	-0.000702***	-0.000642***	-0.000702***	-0.000228***
	[-13.20]	[-12.20]	[-13.20]	[-4.36]
DR	-49.43***	-39.96*	-49.43***	-24.58***
	[-2.66]	[-1.67]	[-2.66]	[-5.76]
CIM	3.014***	2.944***	3.014***	2.709***
	[15.41]	[14.22]	[15.41]	[14.36]
_cons	-138.0	-506.4**	-138.0	-28.07
	[-1.36]	[-2.38]	[-1.36]	[-1.29]
N	235	235	235	235
R-sq		0.668		

t statistics in brackets
* p<0.1, ** p<0.05, *** p<0.01

(Source: Ph.D. student in statistics on STATA 14 software)

The model has the form:

CR = -1.29 + 3. 649*LnTTS – 0.000228*DWC – 24.58*DR +2.709*CIM

The Calf coefficient is smaller than zero, indicating that the solvency of brokerage companies is not satisfactory. The determinant coefficient (R^2) is the coefficient that evaluates the regression model's suitability; the coefficient (R2) value indicates how much the regression model can explain variation in the dependent variable. Based on the regression results in (Table 8), the findings include four independent variables that account for 66.8% of the interpretation of the recovery variable (CR) of the brokerage firm: the size of the brokerage company (LnTTS); the working capital turnover period (DWC); the debt ratio (DR); and the rapid payment capacity ratio (CIM). Specifically, the results affect the following:

- **Size of the brokerage company (**LnTTS): LnTTS negatively influences the brokerage company's payment capacity with a significant level of not 10%. The results coincide with Isshaq and Bokpin (2009), Gill and Mathur (2011), Ferreira and Vilela (2004), and Bruinshoofd and Kool (2004).

- **Working Capital Turnover Period (**DWC**).** Having the opposite effect that the brokerage company's solvency, with a relatively high significance of 1%, the smaller the working capital turnover period, the faster the working capital turnover rate and the better the brokerage company's solvency due to cash flow, research by Gill and Mathur (2011); Bruinshoofd and Kool (2004); Ferreira and Vilela (2004).

- **Debt ratio** (DR). The flow of loans and margin credit from brokerage companies to investors, which corresponds to the brokerage company with a high margin loan balance, strongly affects the liquidity capacity (CR) of the brokerage company, hurting the payment capacity of the brokerage company, according to the significance level of 1%.

- **Quick Payment Capacity Ratio** (CIM). Has a significant impact on the brokerage firm's liquidity capabilities. Although not all debts need to be paid at the time of analysis, the fast payout

ratio for brokerage firms contributes to the improvement. It positively affects the payment capacity of the business.

4. Results

Based on the research results, the author makes several recommendations for financial solutions to improve the liquidity capacity of brokerage companies. 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). Additionally, brokerage firms raise debt capital (increase internal resources and decrease external forces), balance margin credit policies, trade credit, adjust business strategies, and maintain proper growth, all of which aid brokerage firms in improving their ability to pay their creditors, develop sustainably, and satisfy investors, as well as the quality, effectiveness, and safety of the stock market. Long-standing environmental organizations advise reorganizing the system to increase operational effectiveness so that firms may meet their objectives for sustainable growth.

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