THE IMPACT OF THE SOLVENCY TO THE FINANCIAL INDEPENDENCE LEVEL IN LISTED COMPANIES: EVIDENCE FROM VIETNAM

NGUYEN THI NGOC LAN[1], NGUYEN VAN CONG[2]

[1]*National Economics University (NEU)*

[2]*Industrial University of Ho Chi Minh City*

Nguyenthingoclan29071997@gmail.com, anhcongtuan@gmail.com

Abstract. The research focuses on the relationship between solvency and financial independence level of 3261 listed companies in Vietnam. To prove and analyse the influence among 5 independent variables that measure the solvency level, both EVIEW 10.0 and SPSS version 22.0.0.0 were used. The 5 independent variables mentioned above are the general payment ability ratio, long-term payment ability, short-term payment ability, quick ratio, and financial leverage. The two dependent variables including financial autonomy and financial security represent the financial independence level of Vietnamese listed firms. The results show that financial autonomy is influenced by 89.5% of the general payment ability ratio. While general payment ability ratio is a variable that has the greatest positive influence on financial independence, neither quick ratio nor financial leverage has any impact or if there is, very little to other remaining dependent variables. From the collected results, the listed firms need to prioritize using permanent capital to invest their long-term assets instead of using short-term debts with high interest. Doing so could result in losing financial security and put the firms at risk of bankruptcy. The conclusion is that for Vietnamese firms to want to perform effectively, financial independence must be ensured first.
Keywords. Financial autonomy, financial independence, financial security, solvency.

1. INTRODUCTION

For enterprise activities to take place regularly and stably, they must take responsibility that there are sufficient capital resources to afford to acquire operating assets, which are to ensure that they are capable of independence in finance. Financial independence level is considered an important financial indicator to stabilize financial resources in enterprises, helping enterprises avoid the risk of bankruptcy caused by financial insecurity. There have been confusions about "financial independence" with "financial security" or "financial autonomy" because they are all indicators of the financial situation and they compare sustainable funding source with the asset resources of that enterprise. In essence, financial independence level's definition is broader and covers both financial autonomy and financial security. Therefore, in order to accurately assess the level of independence in finance of an enterprise, it is necessary to evaluate both the autonomy and safety aspect in finance of that enterprise [23].

To measure the financial independence level in enterprises, Dhaoui, Iyad [7] calculated the ratio between equity capital and permanent capital. This ratio shows that in long-term capital, how much proportion is the capital of the enterprise. The greater the value of this indicator, the higher the level of financial independence of the enterprise is and vice versa. In terms of financial autonomy of enterprises, analysts use the "Financial autonomy" coefficient. Through this indicator, information users determine the proportion of the owners' equity to the total liabilities of the enterprise [7].

In Vietnam, according to the "Equity ratio" indicator, managers clearly see the level of assets self-financing (or ownership) of owners. The greater the value of this indicator, the higher the level of financial autonomy of the enterprise is. The smaller the value of this indicator is, the lower the level of financial autonomy of the enterprise is, leading to the lower the level of financial independence of the enterprise.

To assess the level of financial security, analysts use the " Long-term assets self-financing ratio", and "Fixed assets self-financing ratio". The long-term assets self-financing ratio is an indicator reflecting the ability of enterprises to cover long-term assets with permanent capital. When the value of this indicator is greater than or equal to 1, the enterprise's sustainable funding sources have sufficient and excess capacity to cover long-term assets. In this case, as the enterprise's sustainable funding sources still have enough and over-capacity to cover long-term assets, the enterprise has fewer difficulties in paying debts, especially short-term debts. Therefore, the financial security will be stabilized for the enterprise to conduct normal activities. On the contrary, when the sustainable funding sources are insufficient to cover long-term assets, the "Long-term assets self-financing ratio" becomes smaller; and the enterprises must use temporary resources to acquire long-term assets. As a result, when short-term debts mature, the enterprise will face difficulties in payment. This will reduce financial security, therefore, affect the level of financial independence of the enterprise.

Similarly, "Fixed assets self-financing ratio" is an indicator reflecting the ability to cover fixed assets that have been invested with regular funding. Since fixed assets are mainly long-term assets, reflecting the entire physical and technical facilities of the enterprise, they are not easily sold or disposal.

Indicator [1.5] is used to determines the level of financial security of enterprises in the case of the indicator “Long-term assets self-financing ratio" with a value smaller 1. When the value of the indicator "Fixed assets self-financing ratio" is greater than or equal to 1, the enterprises’ sustainable funding resources have sufficient and over-capacity to acquire fixed assets. Therefore, when facing difficulties in payment of maturing debts, enterprises can sell other long-term assets (except fixed assets) to pay mature debts while enterprise operations can still be in going-concern. In this case, financial risks may be high, but the enterprise is still able to escape temporary financial difficulties. On the contrary, when the value of the indicator "Fixed assets self-financing ratio” of an enterprise is smaller than 1, it indicates that the enterprise has used up all the temporary funding to invest in a part of the fixed assets and other long-term assets. Certainly, if short-term debt matures, the enterprise will be not capable of repaying debts, financial security will not guarantee enterprise to operate normally. This is the bad situation when the firm face to bankruptcy and going concern.

There are very few researches on financial independence in the world. Researchers often focus on analysing the level of financial independence of a person [9], [14], [18], 20], [23], [28], [29], 31], [32], [22], [19] or research and assessment of a country's financial independence [8], [4], [10], [17], [30], [5], [6]. Accordingly, to a narrow extent, financial independence is understood as the financial "freedom" and "self-determination" of a person. In other words, financial independence of a person shows whether you have the ability to recover from debt, put kids through college, plan for retirement, start your own enterprise, or just seek a financial health outlook [33]. In a broad sense, financial independence is seen as a "non-dependable ability" of both a country's politics and economy into another country. In other words, financial dependence of a nation describes the situation where a country cannot fund its own financial needs and has to loan for money from other developed in form of donations, grants, loans, or other financial help [34]. Not following both directions of the above analysis, this research assesses the level of financial independence of an enterprise based on analysing the relationship between the level of financial independence of the enterprise and the ability to make payment of that enterprise.

Thus, through assessing and predicting the level of financial independence of the enterprise, the managers are more proactive in raising capital, thereby planning enterprise activities and forecasting budget in a suitable and effective manner to avoid financial difficulties. By determining the relationship between the liquidity ratio and financial independence level in listed companies, managers have appropriate plans to stabilize, and ensure not only financial security but also payment ability in the enterprise.

2. LITERATURE REVIEW

2.1. About financial independence

As mentioned in Chapter 1, in the world, there are few research papers that go directly into analyzing and evaluating financial independence level of any listed companies. In fact, most of the papers were usually about the financial independence of a person, or a nation.

An individual's financial position of dependence or independence can impact a person's state of psychological well-being and his/her level of functioning in society. Being financially independent can provide a sense of security and empower an individual to increase their quality of life. However, being financially dependent on others can create a hardship of fear and uncertainty about how to feed one's family or pay the rent. Several published studies [18], [23], [28], [29], [31], [32] have been performed for specific topics related to financial dependency. Indeed, in term of individual financial independence, financial independence ratio is considered as an indicator to evaluate the ability to be autonomous and independent in making decisions in individual investment. That is a famous theory of Zingales's [35] who figured out the definition and determinants that impact on the equity dependence (net amount of equity issues/capital expenditures) and financial dependence (capital expenditures − cash flows from operations)/capital expenditures).

There are also several topics focusing on the financial independence of a nation. From those research papers, it can be said that the independence-performance relationships are affected by country-level differences. Judge, Gaur, and Muller [13] indicated that the effect of governance mechanisms varies in different legal system environments. Aggarwal et, al., [2] also find that board independence is positively related to firm value only in countries with poor investor protections. In fact, all of those studies stem from the famous doctrine “Dependency theory” of Khapoya [15] and “Classical dependency theory” of Adil [1]. Specifically, these theories indicate that under developing countries are political and economic dependence in developed countries and are “limited duplications” with the error version comparing with developed countries. Because of the dependence in finance, it leads to dependence in economics, politics, and finally the loss of independent right to involve any decision-making processes.

For enterprises, the level of financial independence is seen as the ability to maintain long-term capital sufficient to cover regular operations taking place in these enterprises [24]. In fact, many researchers in the world have involved in the new topic of keeping the financial independence of enterprises. Their researches results show that the independence of company’s BOD (Board of Directors) plays an important role in shaping the financial performance in IPO firms [3]. Agreeing with that idea, Piletskaya. T [27] in Foreign Economic Activity of Aviation Industry Companies stated that the more independent in finance of the BOD, the more efficient performance of the firm that they work for is. In Vietnam, Nguyen & Le [25] has pointed out that a company is considered as an independent firm in finance only if it controls well both its financial autonomy level and the financial security level to ensure that it is not going bankrupt. In conclusion, the financial independence of a company is a state when the company stays capable of satisfying requirements of operational activity with its own or borrowed funds under conditions of the influence of the external environment.

In conclusion, judging financial independence in many aspects is very important because it decides the financial autonomy and security of a person, a company or a nation. Losing financial independence is the loss of independent rights in giving decisions and the loss of national security. With the company, reaching the goal in financial independence helps the managers easily distribute and arrange the financial sources, reaching both the short-term and long-term profit goals.

2.2. About solvency

Solvency is defined as the ability of an institution to meet its short, middle and long-term financial obligations. It is the ability of a business to meet its obligations in the event of cessation of activity or liquidation. A firm is considered as a solvent if the existing assets exceed or equal total liabilities.

However, if the total assets are lower than current liabilities, the firm faces an insolvency risk and cannot pay its debts [12]. Solvency is usually measured by different ratios. There are three main ratios used to measure solvency - the general payment ability ratio, the net worth ratio, and the leverage ratio. The General payment ability ratio is determined by dividing the total assets by the total liabilities or the ratio of assets/liabilities, therefore, it reflects the level of assets per dollar of debt. The net worth ratio, which is the ratio of total equity to total asset, uses the owner's equity in the business to indicate future solvency owned and the leverage ratio compares debts to equity [16].

Solvency impacts a company's ability to obtain loans, financing and investment capital. This is because solvency indicates a company's current and long-term financial health and stability as determined by the ratio of assets to liabilities. In other words, the degree of solvency in a business is measured by the relationship between the assets, liabilities and equity of a business at a given point in time. A company may be able to cover current or upcoming liabilities by quickly liquidating assets with little business interruption. However, fluctuations over time in the value of assets while the value of liabilities remains unchanged affect asset-to-liability ratios. The accounting equation, which is "assets = liabilities + equity", means that businesses usually have positive equity. When this equity becomes negative, the business is said to be insolvent. By subtracting liabilities from the assets, the amount of equity in a business is calculated. The larger the number is for the equity amount, the better of the business is. However, everything is relative. Larger businesses need more equity to remain viable than does a smaller business. Bankruptcy is just around the corner for an insolvent business if it does not generate enough cash flow income to meet its debt requirements in a timely manner [26].

2.3. About the relationship between financial independence and solvency

Individually, individual wealth can be referred to as the part of the balance sheet that is considered equity which equals assets minus liabilities. The individual wealth is influenced significantly by their financial independence [28]. According to Powles, financially independent level of a person is not related to his income each month, or his owning assets. He pointed out that the key role is the ability to arrange income and pay for the needs. In other words, financially independent people must earn more than what they spend in the same amount of time. There are many more researchers such as Vento, John [33], who also writes about this topic. Similarly, the number of total debts must be paid (general liquidity ratio) of a person is directly proportional to the level of that person's income.

On the national scale, the level of financial independence in a country represents ownership and self-determination in all areas, especially in the financial and political sectors. The "Determinants of financial independence in Kenya", Walder [34] shows that there are 3 factors that influence the financial independence level of Kenya. Those are corruption, financial planning, and balance payment. A model of such research can be demonstrated as below:

$$Y = a + b_1X_1 + b_2X_2 + b3X_3$$

Where y = financial independence

X1 = financial planning

X2 = balance of payment

X3 = corruption

The results of the research show that financial planning has a very high positive correlation with financial independence while balance payment has smaller impacts on the financial independence level. If a country has a deficit in its budget, it has to bridge the gap by borrowing from internal or external lenders and soliciting for grants and donations from other countries as well as financial institutions. This raises the debt levels and contributes to high dependency levels. The fact that the government spends most of its revenue to finance recurrent expenditure also leads to a shortfall on the funds available to cater for development projects. This, in turn, forces the government to depend on borrowing, donations and grants

to finance its development agenda. Based on this result, the author believes that in order to increase the financial independence level, the government of Kenya needs to estimate financial budget reasonably to ensure the solvency facing critical debts, and to avoid financial independence leading to national financial insecurity. Moreover, debt structure is also a big factor that impacts directly to the independent variables - financial planning. Therefore, the change in debt structure leads to the fluctuation of the financial independence level in a nation.

In research called "The Effect of Financial Independence on the Performances of Life Companies: An Empirical Study" published by Ho-li Yang [11], it is shown that there are 13 factors that have impacts on the financial independence of life assurance companies in Taiwan. These factors are categorized into 4 groups (F1, F2, F3, F4). F1 is the norm to measure the proportion between permanent capital and assets using in the enterprise. Specifically, F1 includes liability to assets rate, owner equity to total assets rate, and current assets rate which influence positively to the financial independence level. With a confidence level of 95%, it can be said that the changes in these factors entail a major change at around 40% in the financial independence level of life assurance firms in Taiwan. As a result, the financial autonomy in these firms has a strong impact the financial independence level. One of the other factors measuring liquid assets rate in Taiwan firms indicates the same result of the positive correlation between liquid assets rate and financial independence, which is affected 17.036% the changes in F3 variables.

Managers should strive to reduce or manage the effects that liquidity and solvency risk will have on the institution's profitability in order to maintain an acceptable productivity level. This will require effective planning that allows managers to be proactive and anticipate change, rather than be reactive to unanticipated change [21]. Thus, it can be concluded that solvency has a great correlation, both theoretically and empirically, to the ability to be independent and autonomous in finance. Evaluating solvency criteria can tell managers the financial situation of a company, therefore, help them to balance working capital and permanent capital in the company.

3. HYPOTHESIS AND RESEARCH METHOD

3.1. Hypothesis and Empirical model

3.1.1. Hypothesises

Solvency measures the ability to meet due debts at any time. An enterprise with high solvency is an enterprise with sufficient financial capacity (money, cash equivalents, assets, etc.) to ensure the payment of debts of other individuals and organizations in the course of business operations. In contrast, when the business' financial capacity is insufficient to cover debts, meaning the solvency is too low, the company will be unable to pay due debts; therefore, it will soon fall into bankruptcy. This is the reason why the solvency has a close relationship with the financial capacity of the enterprise while the financial capacity partly reflects the level of financial independence of that enterprise. From these inferences, we can see the relationship between the solvency variable - independence variable and the financial independence - dependence variable. Specifically, this relationship is established through the research hypotheses as follows:

- H1: General payment ability ratio has a positive impact on the financial independence level of the Vietnamese listed firms.

General payment ability ratio (GPAR) of a firm equals the ratio between the total assets and total liabilities of that firm. [1.2] can be expressed as follows:

$$GPAR \quad \frac{Equity + Total\ Liabilities}{Total\ Liabilities} \quad = \quad 1 + Financial\ Autonomy$$

Based on the above equation, General payment ability ratio and financial autonomy have a positive correlation. This is an important basis to prove that when general payment ability increases, financial independence level also increases.

- H2: Long-term payment ability has a positive impact on the financial independence level of the Vietnamese listed firms.

As mentioned in Chapter 2, the process of choosing a sample size that includes 108 assurance firms in Ho-li Yang [11] shows the relationship between debt structure and the level of financial independence, which is calculated in equation [1.1]. Based on this research, it is concluded that the bigger the ratio between the ratio of long-term debt and total assets, the larger the ability to self-control in financial decisions of enterprises, and vice versa. As a result, long-term payment ability also has a positive impact on the financial independence level of the Vietnamese listed firms.

- H3: Short-term payment ability has a negative impact on the financial independence level of the Vietnamese listed firms.

There are not many hypotheses that are created based on the relationship between short-term payment ability and financial independence level. However, according to a combination of qualitative and quantitative research of Khidmat & Rehman [16], the solvency, which is measured by the combination of short-term payment ability and current ratio, negatively affects the financial performance of the firms listed at NSE. This leads to the situation that short-term payment ability has a negative impact on the financial independence level of the Vietnamese listed firms.

- H3: Quick ratio has a negative impact on the financial independence level of the Vietnamese listed firms.

According to a combination of qualitative and quantitative research of Khidmat & Rehman [16], the solvency, which is measured by the combination of short-term payment ability and current ratio, negatively affects the financial performance of the firms listed at NSE. This leads to the situation that the quick ratio has a negative impact on the financial independence level of the Vietnamese listed firms.

- H5: Leverage ratio (LR) has a negative impact on the financial independence level of the Vietnamese listed firms.

While a company can be solvent and not profitable, it cannot be independent in finance without solvency. This means that, although solvency is a prerequisite for financial independence, increased financial autonomy and financial security improves solvency and eventually financial performance. Findings by Jackson [12] show that the leverage ratio has a negative and highly significant impact on financial independence.

3.1.2. Empirical Model

To consider and justify the effects of 4 different independent variables on the financial independence level, earlier research usually followed the method of quantitative research into the correlation and regression model with the assistance from software. Therefore, in this research, the authors followed the method of quantitative research into regression models with independent variables : general payment ratio, long – term payment ratio, short – term payment ratio, and quick ratio with the assistance of IBM - SPSS 22 version 22.0.0.0, and EVIEW 10.0.

Table 1: List of variables included in the models

Variable	Meaning of Variable	Calculated Variable
Dependent Variable		
FI	Financial independence level	$\frac{Equity}{Permanent\ capital}$
ER: Equity ratio	Financial autonomy level	$\frac{Equity}{Total\ assets}$

LAR: Long-term asset self-financing ratios	Financial security level	$\frac{Equity + Long-term\ debt}{Long-term\ assets}$
FAR: Fixed assets self-financing ratio	Financial security level	$\frac{Equity + Long-term\ debt}{Fixed\ assets}$
Independent Variable		
GPAR	General payment ability ratio	$\frac{Total\ assets}{Total\ liabilities}$
LPA	Long-term payment ability	$\frac{Long-term\ assets}{Long-term\ liabilities}$
SPA	Short-term payment ability	$\frac{Short-term\ assets}{Short-term\ liabilities}$
QR	Quick ratio	$\frac{Short-term\ assets - Inventory}{Short-term\ liabilities}$
LR	Leverage ratio	$\frac{Liabilities}{Equity}$

Source: Compiled by the authors based on research results

To test the hypothesis stated in 3.1.1, the authors developed these following main regression models by the following regression models:

Model 1: FA = C (1) + C (2) GPAR+ C (3) LPA + C (4) SPA + C (5) LR

Model 2: FS = C (1) + C (2) GPAR + C (3) LPA + C (4) SPA + C (5) LR

In which:

FA is an independent variable that measures the financial autonomy level, which is the arithmetic mean of FI and ER.

FS is a dependent variable that measures the financial security level, which is the arithmetic mean of LAR and FAR.

Based on Aggarwal's idea (2008) of analyzing financial independence level of countries over the world by organizing them into 2 groups – developed and developing countries, the author sorted the listed firms in Vietnam into 2 groups:

- Group 1: 2428 firms that ensure financial independence. These firms have either LAR or FAR greater than or equal to 1.
- Group 2: 833 firms that don't meet the standard of financial independence level. This group of firms cannot ensure financial independence to become well because they lose financial security when FAR is smaller than 1.

3.2. Research method

3.2.1. Data collection and handling

Table 2: Random sampling process

Step	Process	Results
Step 1	Get a full list of listed companies according to HaSic until the research day 27/12/2018 at http://finance.vietstock.vn//doanh-nghiep-a-z/#	Got a list of 2407 listed companies with full name, stock code, and stock exchange.
Step 2	Search for a company with a corresponding stock code to find its Financial Reports in	Of the 2047 enterprises, only 1583 enterprises have full financial

	four most recent years from 2014 to 2017, then reconcile with data on CafeF.	statements and audited from 2014 to 2017. Using data obtained from 1583 enterprises over 4 years, we obtained a total of 6332 observations.
Step 3	Test the collected data by comparing the value of total assets and total equity of the companies and eliminate samples with uneven values.	Eliminate 1497 samples 4835 samples left.
Step 4	Calculate ER, LAR, FAR indicators according to formula table 3.1, and eliminate peculiar data sample if ER, LAR is negative, or EQ is over 1. Calculate the solvency and compare it to 1. If the solvency ratio is over 1, the sample will be eliminated.	Eliminate 825 samples that don't meet the condition of ER, LAR. Eliminate 426 samples that don't meet the condition of the solvency. 3584 observations left.
Step 5	Eliminate all the unexpected value for the observation of the entire settings and dependencies (The unexpected value is too large or too small give a doubt on the trust).	3261 observations left, including two groups: Group 1: 2428 listed firms with the FAR higher than 1. Group 2: 833 listed firms with the FAR lower 1

Source: Compiled by the authors based on research results

3.2.2. Analysis and application of econometric models

To increase the reliability of the models, the author uses both SPSS Version 22.0.0.0 and EVIEW 10.0. By using both software packages to perform descriptive statistics and estimate the data of the models through correlation, the results of the research become more reliable; and it is easier to find the model with the highest reliability. Moreover, 3 models will be applied to 2 groups of firms: one that meets the standard of financial security level and one that cannot. This shows that the impacts of the independent variables on the dependent variables in the two groups of firms are different. The research methods are described as follow:

The authors have applied the following methods to analyse data:

- *Descriptive statistics analysis:*

This method is applied in the research to describe basic quantitative characteristics of data, particularly including the following steps:

Step 1: Using EVIEW 10.0 to calculate mean, median, maximum, minimum, standard deviation, skewness and kurtosis values. These values will provide fundamental conclusions about samples and basic comparisons between observations.

Step 2: Using EVIEW 10.0 to calculate correlative values between independent variables to ensure the meaning of subsequent correlation and regression analysis.

Descriptive statistics related to data collection, summarization, presentation, calculation and description of different characteristics to reflect subjects of the study in a general way. However, the limitation of descriptive statistics is that it only proposes notes and judgments for past events related to the data but does not provide either approximation and statistics for subsequent data or forecast about correlations between figures.

- Correlation and regression analysis:

In order to overcome the limitations of descriptive statistics analysis method, the authors use correlation and regression analysis method to measure linear correlations between variables in regression models.

The process of correlation and regression analysis for each model comprises the following steps:

Step 1: Using EVIEW 10.0 to measure the correlation between the independent variables and the dependence variables by the following steps:

Table 3: Process validation of the rationality and reliability of regression models using EVIEW 10.0

Step	Requirement	Purpose
Wald Test	With a confidence level of 95%, P-value must be under 0.05.	To test the true value of the parameter based on the sample estimate.
White Test	With a confidence level of 95%, P-value must be larger than 0.05	To establish whether the variance of the errors in a regression model is constant
Ramsey Test	With a confidence level of 95%, P-value must be larger than 0.05	To test whether non-linear combinations of the fitted values help explain the response variable.
Jacque - Bera Test	With a confidence level of 95%, P-value must be larger than 0.05	To determine whether sample data have the skewness and kurtosis matching a normal distribution. Determine whether the variance of the error follows the normal distribution rules.

Source: Compiled by the authors based on research results

Step 2: Using SPSS version 22.0.0.0 to test the quality of the measurement by following steps:

Table 4: Process validation of the rationality and reliability of regression models using SPSS version 22.0.0.0

Step	Requirement	Purpose
Calculate Cronbach's Alpha ratio	The measurement is good if: Cronbach's Alpha ratio is more than 0.6. Corrected Item-Total Correlation ratio is more than 0,3.	To test the quality of the measurement.
Calculate Exploratory Factor Analysis (EFA)	The loading factor must be more than 3.	To separate all the variables into the exclusive element to support the following steps.
Calculate Kaiser-Mayer-Olkin ratio (KMO)	It must in the range of (0.5, 1).	Determine whether the model is valid or not.
Finding the empirical models by using SPSS 22	Test the results from the empirical models.	Verify the reliability of the model. Test the phenomenon of multi-collinear. Verify partial correlation phenomena between independent variables. Determine whether the variance of the error follows the normal distribution rules.

Source: Compiled by the authors based on research results

4. EMPIRICAL RESULTS

4.1. Using EVIEW 10.0 to analysis

4.1.1. Group 1

Table 5. FA1 model

Dependent Variable: FA1

Method: Least Squares

Date: 01/26/19 Time: 01:52

Sample: 1 2428

Included observations: 2428

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.649068	0.004422	146.7715	0.0000
GPAR1	0.017212	0.000849	20.26908	0.0000
LPA1	1.21E-05	2.74E-06	4.409992	0.0000
SPA1	-0.003915	0.001189	-3.293815	0.0010
QR1	0.001346	0.003221	0.000087	0.0012
LR1	-0.008858	0.000609	-14.53259	0.0000
R-squared	0.264442	Mean dependent var		0.686042
Adjusted R-squared	0.263227	S.D. dependent var		0.190672
S.E. of regression	0.163664	Akaike info criterion		-0.779943
Sum squared resid	64.90238	Schwarz criterion		-0.768010
Log likelihood	951.8511	F-statistic		217.7741
Durbin-Watson stat	1.794310	Prob(F-statistic)		0.000000

Source: Compiled by the authors based on research results

In Table 5, with a confidence level of 95%, FA1 model has statistical significance Prob(F-statistic) of 0.00000, smaller than 0.05. Moreover, because R^2 is 0.264442, the change of independent variables is equal to 26.44% the change of financial autonomy.

As a result, Model 1 can be written as:

$$\boldsymbol{FA1 = 0.649068+0.017212^{*}\ GPAR1 + 1.21^{*}\ 10^{-5}\ LPA1 - 0.003915^{*}\ SPA1 +0.001346\ QR1 - 0.008858^{*}\ LR1 + u}$$

- P-value (White test) = 0, with the confidence level of 95% it can be said that the variance of the errors in a regression of FA1 model is inconstant.
- P-value (Ramsey test) = 0, with the confidence level of 95%, it can be said that the FA1 model doesn't have the correct functional form.
- P-value (Jacque – Bera) = 0, with the confidence level of 95%, it can be said that FA1 model has u normally undistributed.

Table 6. FS1 model

Dependent Variable: FS1

Method: Least Squares

Date: 01/26/19 Time: 01:51

Sample: 1 2428

Included observations: 2428

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.164159	4.895020	1.054982	0.2915
GPAR1	-0.394911	0.939962	-0.420135	0.6744
LPA1	-0.000409	0.003038	-0.134632	0.8929
SPA1	1.027105	1.315777	0.780608	0.4351
QR1	0.133546	1.224682	-2.234687	0.2234
LR1	-0.121487	0.674649	-0.180074	0.8571
R-squared	0.000282	Mean dependent var		6.100474
Adjusted R-squared	-0.001368	S.D. dependent var		181.0350
S.E. of regression	181.1588	Akaike info criterion		13.23868
Sum squared resid	79519237	Schwarz criterion		13.25062
Log likelihood	-16066.76	F-statistic		0.171085
Durbin-Watson stat	0.951968	Prob(F-statistic)		0.953224

Source: Compiled by the authors based on research results

Because the Prob (F-statistic) = 0.953224, with a confidence level of 95% it can be said that FS1 Model does not have statistical significance.

4.1.2. Group 2

Table 7. FA2 Model

Dependent Variable: FA2

Method: Least Squares

Date: 01/26/19 Time: 01:46

Sample: 1 833

Included observations: 833

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.011432	0.338149	-0.033808	0.9730
GPAR2	0.319577	0.121184	2.637118	0.0085
LPA2	3.32E-05	0.000188	0.176484	0.8600

SPA2	-0.235125	0.421767	-0.557475	0.5774
QR2	0.034662	0.034682	0.113679	0.0632
LR2	0.000286	0.000612	0.466620	0.6409
R-squared	0.008594	Mean dependent var		0.362623
Adjusted R-squared	0.003804	S.D. dependent var		3.145637
S.E. of regression	3.139648	Akaike info criterion		5.132083
Sum squared resid	8161.917	Schwarz criterion		5.160444
Log likelihood	-2132.512	F-statistic		1.794324
Durbin-Watson stat	2.097087	Prob(F-statistic)		0.127921

Source: Compiled by the authors based on research results

Because the P-value (Wald)=0.127921, with a confidence level of 95% it can be said that FA2 Model does not have statistical significance.

Table 8. FS2 model

Dependent Variable: FS2

Method: Least Squares

Date: 01/26/19 Time: 01:45

Sample: 1 833

Included observations: 833

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.692681	0.148269	-4.671782	0.0000
GPAR2	0.331352	0.053136	6.235932	0.0000
LPA2	-3.57E-05	8.25E-05	-0.432949	0.6652
SPA2	1.121003	0.184934	6.061650	0.0000
QR2	-0.553642	0.236979	3.113642	0.2346
LR2	-0.002621	0.000268	-9.764994	0.0000
R-squared	0.783916	Mean dependent var		0.574181
Adjusted R-squared	0.779974	S.D. dependent var		1.520232
S.E. of regression	1.376650	Akaike info criterion		3.483168
Sum squared resid	1569.198	Schwarz criterion		3.511530
Log likelihood	-1445.739	F-statistic		46.65039
Durbin-Watson stat	0.472606	Prob(F-statistic)		0.000000

Source: Compiled by the authors based on research results

In Table 8, with a confidence level of 95%, FS2 model has statistical significance Prob(F-statistic) of 0.00000, smaller than 0.05. Moreover, because R^2 is 0.783916, the change of independent variables is equal 78.39% the change of financial security of Group 2.

As a result, FS2 can be written as:

FS2 = -0.692981+0.331352* GPAR2 +1.121003* SPA1 – 0.002621* LR1 + u

- P-value (Wald test) of LPA2 and QR2 > 0.05, with the confidence level of 95%, it can be said that LPA2 and QR2 have no correlation with the FS2.
- P-value (White test) = 0467821, with the confidence level of 95% it can be said that the variance of the errors in a regression of FS2 model is constant.
- P-value (Ramsey test) = 0.598124, with the confidence level of 95%, it can be said that the FA1 model has the correct functional form.
- P-value (Jacque – Bera) = 0.312461, with the confidence level of 95%, it can be said that FA1 model has u normally distributed

4.2. Using SPSS version 22.0.0.0 to analysis

4.2.1. Group 1

Table 9. KMO and Bartlett's Test of FA1 Model

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.704
Bartlett's Test of Sphericity	Approx. Chi-Square	12137.205
	df	10
	Sig.	.000

Source: Compiled by the authors based on research results

Table 9 shows that the KMO value equals 0.704, greater than 0.5. Therefore, EFA is accepted.

Furthermore, because of the Sig. value (Barlett's Test) equals 0.000, smaller than 0.050, the FA1 are suitable.

Table 10. Total Variance Explained of FA1 Model

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
GPAR1	3.009	60.179	60.179	3.009	60.179	60.179	2.612	52.245	52.245
LPA1	1.084	21.677	81.856	1.084	21.677	81.856	1.481	29.611	81.856
SPA1	.621	12.424	94.279						
QR1	.274	5.480	99.759						
LR1	.012	.241	100.000						

Source: Compiled by the authors based on research results

Table 10 shows that the Eigenvalue value is 1.084, greater than 1 but less than 2, therefore, the FA1 Model does not miss another variable.

The cumulative variance is 81.856%, greater than 50%. This indicates that the FA1 model base on EFA is accurate. So that, with 5 components of independent variables, they illustrate 81.856% the changes in the dependent variables.

Table 11. Rotated Component Matrix of FA1 Model

	Component	
	1	2
SPA1	.894	
LR1	-.781	-.552
GPAR1	.779	.560
QR1	.771	
LPA1		.905

Source: Compiled by the authors based on research results

Because the LR1 is loaded onto 2 different components: Component 1, Component 2, it violates the difference in the rotated matrix and needs to be removed from the FA1 model.

Table 12. Correlations of FA1 Model

		FA1	FS1	GPAR1	LPA1	SPA1	QR1
FA1	Pearson Correlation	1	.253**	.878**	.651**	.581**	.330**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	2428	2428	2428	2428	2428	2428
FS1	Pearson Correlation	.253**	1	.096**	.213**	.435**	.270**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	2428	2428	2428	2428	2428	2428
GPAR1	Pearson Correlation	.878**	.096**	1	.374**	.703**	.392**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	2428	2428	2428	2428	2428	2428
LPA1	Pearson Correlation	.651**	.213**	.374**	1	.067**	.027
	Sig. (2-tailed)	.000	.000	.000		.001	.191
	N	2428	2428	2428	2428	2428	2428
SPA1	Pearson Correlation	.581**	.435**	.703**	.067**	1	.544**
	Sig. (2-tailed)	.000	.000	.000	.001		.000
	N	2428	2428	2428	2428	2428	2428
QR1	Pearson Correlation	.330**	.270**	.392**	.027	.544**	1
	Sig. (2-tailed)	.000	.000	.000	.191	.000	
	N	2428	2428	2428	2428	2428	2428

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled by the authors based on research results

In Table 12, the p-value (labelled as Sig. in SPSS) all the independent variables as well as the two dependent variables FA1 and FS1 are all less than 0.05. Therefore, there is a positive correlation existed between the independent variables and the dependent ones.

Table 13. Model Summary[b] FA1 Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.946[a]	.895	.895	.458	1.918

a. Predictors: (Constant), QR1, LPA1, GPAR1, SPA1

b. Dependent Variable: FA1

Source: Compiled by the authors based on research results

Table 13 illustrates that the adjusted R square value is 0.895. This means that the changes in FA1 are 89.5% related to the changes in the independent variables, including GPAR1, LPA1, SPA1, and QR1.

Furthermore, the Durbin - Watson value in Table 13 is 1.918, greater than 1.5 and less than 2.5. This means that there is no autocorrelation in the sample.

Table 14. ANOVA[a] of FA1 Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4347.901	4	1086.975	5183.541	.000[b]
	Residual	508.097	2423	.210		
	Total	4855.998	2427			

a. Dependent Variable: FA1

b. Predictors: (Constant), QR1, LPA1, GPAR1, SPA1

Source: Compiled by the authors based on research results

Table 14 shows that the p-value for the F-test is 0.000, less than 0.05. Therefore, it can be said that the FA1 model is reliable.

Table 15. Coefficients[a] of FA1 Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.466	.031		-15.257	.000		
	GPAR1	.675	.010	.675	64.812	.000	.398	1.512
	LPA1	.393	.007	.393	52.991	.000	.784	1.275
	SPA1	.071	.011	.071	6.754	.000	.391	1.559
	QR1	.016	.008	.016	2.068	.039	.703	1.422

a. Dependent Variable: FA1

Source: Compiled by the authors based on research results

In Table 15, because the P-values (t-test) of the independent variables in the FA1 model are all less than 0.05, all these variables are statistically significant.

Table 15 also shows that because the variance inflation factor (VIF) of the independent variables are less than 2, there is no multicollinearity in the model.

Thus, FA1 Model can be written as:

FA1 = 0.031+0.675* GPAR1 + 0.393 LPA1 +0.071* SPA1 +0.016* QR1

Table 16. Model Summary[b] of FS1 Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.639[a]	.409	.408	1.088	.695

a. Predictors: (Constant), QR1, LPA1, GPAR1, SPA1

b. Dependent Variable: FS1

Source: Compiled by the authors based on research results

Because the Durbin - Watson value in Table 16 is 0.695, smaller than 1.5. This means that there is autocorrelation in the sample.

Table 17. ANOVA[a] of FS1 Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1985.231	4	496.308	418.896	.000[b]
	Residual	2870.767	2423	1.185		
	Total	4855.998	2427			

a. Dependent Variable: FS1

b. Predictors: (Constant), QR1, LPA1, GPAR1, SPA1

Source: Compiled by the authors based on research results

Table 17 shows that the P-value for the F-test is 0.000, less than 0.05. Therefore, it can be said that FS1 model is reliable.

Table 18. Coefficients[a] of FS1 Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1.072	.073		14.754	.000		
GPAR1	-.680	.025	-.680	-27.458	.000	.398	1.512
LPA1	.408	.018	.408	23.141	.000	.784	1.275
SPA1	.851	.025	.851	34.075	.000	.391	.559
QR1	.063	.019	.063	3.373	.001	.703	1.422

a. Dependent Variable: FS1

Source: Compiled by the authors based on research results

In Table 18, because the P-values (t-test) of the independent variables in the FA1 model are all less than 0.05, all these variables are statistically significant.

Table 15 also shows that because the variance inflation factor (VIF) of the independent variables are less than 2, there is no multicollinearity in the model.

Thus, FS1 Model can be written as:

FS1 = 0.073-0.68* GPAR1 + 0.408 LPA1 +0.851* SPA1 +0.063* QR1

4.2.2. Group 2

Table 19. KMO and Bartlett's Test of FA2 Model

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.557
Bartlett's Test of Sphericity	Approx. Chi-Square	642.144
	df	10
	Sig.	.000

Source: Compiled by the authors based on research results

Table 19 shows that the KMO value equals 0.557, greater than 0.5. Therefore, EFA is accepted.

Furthermore, because of the Sig. value (Barlett's Test) equals 0.000, smaller than 0.050, the FA2 are suitable.

Table 20. Correlation of FA2 Model

		FA2	FS2	GPAR2	LPA2	SPA2	QR2
FA2	Pearson Correlation	1	.195**	.732**	.672**	.242**	.196**
	Sig. (2-tailed)		0	0	0	0	0
	N	833	833	833	833	833	833
FS2	Pearson Correlation	.195	1	.522**	-.190*	.549**	.284**
	Sig. (2-tailed)	0		0	0	0	0
	N	833	833	833	833	833	833
GPAR2	Pearson Correlation	.733	.522**	1	.319**	.166**	.146**
	Sig. (2-tailed)	0	0		0	0	0
	N	833	833	833	833	833	833
LPA2	Pearson Correlation	.672	-.190*	.319**	1	.145**	.118**
	Sig. (2-tailed)	0	0	0		0	0.001
	N	833	833	833	833	833	833
SPA2	Pearson Correlation	.242	.549**	.166**	.145**	1	.498**
	Sig. (2-tailed)	0	0	0	0		0
	N	833	833	833	833	833	833
QR2	Pearson Correlation	.196	.284**	.146**	.118**	.498**	1
	Sig. (2-tailed)	0	0	0	0.001	0	
	N	833	833	833	833	833	833

Source: Compiled by the authors based on research results

Table 20 shows that the Eigenvalue value is 1.5, greater than 1 but less than 2. This result shows that the models don't miss another variable.

The cumulative variance is 65.865%, greater than 50%. This indicates that the model base on EFA is accurate. So that, with 5 components of independent variables, they illustrate 85.865% the changes in the dependent variables.

Table 21. Rotated Component Matrix[a] of FA2 Model

	Component	
	1	2
FL2	-.798	
GPAR2	.795	
LPA2	.656	
SPA2		.870
QR2		.828

Source: Compiled by the authors based on research results

Because the LR2 is -0.798< 0, it violates the difference in the rotated matrix and needs to be removed from the model.

Table 22. Correlations of FA2 Model

		FA2	FS2	GPAR2	LPA2	SPA2	QR2
FA2	Pearson Correlation	1	.195**	.732**	.672**	.242**	.196**
	Sig. (2-tailed)		0	0	0	0	0
	N	833	833	833	833	833	833
FS2	Pearson Correlation	.195**	1	.522**	-.190**	.549**	.284**
	Sig. (2-tailed)	0		0	0	0	0
	N	833	833	833	833	833	833
GPAR2	Pearson Correlation	.732**	.522**	1	.319**	.166**	.146**
	Sig. (2-tailed)	0	0		0	0	0
	N	833	833	833	833	833	833
LPA2	Pearson Correlation	.672**	-.190**	.319**	1	.145**	.118**
	Sig. (2-tailed)	0	0	0		0	0.001
	N	833	833	833	833	833	833
SPA2	Pearson Correlation	.242**	.549**	.166**	.145**	1	.498**
	Sig. (2-tailed)	0	0	0	0		0
	N	833	833	833	833	833	833
QR2	Pearson Correlation	.196**	.284**	.146**	.118**	.498**	1
	Sig. (2-tailed)	0	0	0	0.001	0	
	N	833	833	833	833	833	833

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Compiled by the authors based on research results

Because Sig (Pearson) of variables GPAR2, LPA2, SPA2, QR2 with FA2 dependent variables all are less than 0.05. Thus, there is a linear relationship between these independent variables and the FA2 variable. Furthermore, the independent variables have relatively weak correlations with each other, thus, there will be no multicollinearity phenomenon occurring.

Table 23. Model Summary[b] of FA2 Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.869[a]	.756	.755	.701	1.718

a. Predictors: (Constant), QR2, LPA2, GPAR2, SPA2

b. Dependent Variable: FA2

Source: Compiled by the authors based on research results

Table 23 illustrates that the adjusted R square value is 0.756. This means that the changes in FA2 are 75.6% related to the changes in the independent variables, including GPAR2, LPA2, SPA2, and QR2.

Furthermore, the Durbin - Watson value in Table 13 is 1.718, greater than 1.5 and less than 2.5. This means that there is no autocorrelation in the sample.

Table 24. ANOVA[a] of FA2 Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1259.026	4	314.756	640.387	.000[b]
	Residual	406.970	828	.492		
	Total	1665.995	832			

a. Dependent Variable: FA2

b. Predictors: (Constant), QR2, LPA2, GPAR2, SPA2

Source: Compiled by the authors based on research results

Table 24 shows that the p-value for the F-test is 0.000, less than 0.05. Therefore, it can be said that FA2 model is reliable.

Table 25. Coefficients[a] of FA2 Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-.402	.083		-4.852	.000		
GPAR2	.564	.018	.564	30.827	.000	.880	1.136
LPA2	.479	.018	.479	26.306	.000	.889	1.125
SPA2	.068	.020	.068	3.384	.001	.739	1.353
QR2	.023	.020	.023	1.155	.248	.747	1.339

a. Dependent Variable: FA2

Source: Compiled by the authors based on research results

In Table 25, because the P-values (t-test) of QR 2 = 0.248>0.05, while other independent variables are <0.05, QR2 should be eliminated out from FA2 Model.

Table 24 also shows that because the variance inflation factor (VIF) of the independent variables are less than 2, there is no multicollinearity in the model.

Thus, FA2 Model can be written as:

FA2 = 0.083+0.564 GPAR2 + 0.479 LPA2 + 0.068 SPA2.

Table 26. Model Summary[b] of FS2 Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.820[a]	.672	.671	.812	1.956

a. Predictors: (Constant), QR2, LPA2, GPAR2, SPA2

b. Dependent Variable: FS2

Source: Compiled by the authors based on research results

Table 26 illustrates that the adjusted R square value is 0.659. This means that the changes in FA1 are 65.9% related to the changes in the independent variables, including GPAR1, LPA1, SPA1, and QR1.

Furthermore, the Durbin - Watson value in Table 26 is 1.956, greater than 1.5 and less than 2.5. This means that there is no autocorrelation in the sample.

Table 27. ANOVA[a] of FS2 Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1120.086	4	280.022	424.719	.000[b]
	Residual	545.909	828	.659		
	Total	1665.995	832			

a. Dependent Variable: FS2

b. Predictors: (Constant), QR2, LPA2, GPAR2, SPA2

Source: Compiled by the authors based on research results

Table 26 shows that the P-value for the F-test is 0.000, less than 0.05. Therefore, it can be said that FS2 model is reliable.

Table 28. Coefficients[a] of FS2 Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1.068	.096		11.127	.000		
GPAR2	.579	.021	.579	27.325	.000	.880	1.136
LPA2	-.450	.021	-.450	-21.317	.000	.889	1.125
SPA2	.522	.023	.522	22.574	.000	.739	1.353
QR2	-.008	.023	-.008	-.358	.720	.747	1.339

a. Dependent Variable: FS2

Source: Compiled by the authors based on research results

In Table 28, because the P-values (t-test) of QR 2 = 0.72>0.05, while other independent variables are <0.05, QR2 should be eliminated out from FS2 Model.

Table 24 also shows that because the variance inflation factor (VIF) of the independent variables are less than 2, there is no multicollinearity in the model.

Thus, FA2 Model can be written as:

FS2 = 0.096+0.579 GPAR2 -0.45 LPA2 + 0.522 SPA2.

5. THE CONCLUSION AND RECOMMENDATION

5.1. The conclusion

Table 29. Research results

Eview	FA1 = 0.649068+0.017212* GPAR1 + 1.21* 10^{-5} LPA1 – 0.003915* SPA1 – 0.008858* LR1 + u
	FS1 no meaning
	FA2 no meaning
	FS2 = -0.692981+0.331352* GPAR1 – 3.57 * 10^{-5} LPA1+1.121003* SPA1 – 0.002621* LR1 + u
SPSS	FA1 = 0.031+0.675* GPAR1 + 0.393 LPA1 +0.071* SPA1 +0.016* QR1
	FS1 = 0.073-0.68* GPAR1 + 0.408 LPA1 +0.851* SPA1 +0.063* QR1
	FA1 = 0.083+0.564 GPAR2 + 0.479 LPA2 + 0.068 SPA2.
	FS2 = 0.096+0.579 GPAR2 -0.45 LPA2 + 0.522 SPA2.

Source: Compiled by the authors based on research results

From the research results presented in Chapter 4, there are some differences between the empirical models using 2 different methods EVIEW 10.0 and SPSS 22.0.0.0. Specifically, while both FS1 model and FA2 model are not reliable using the EVIEW method, all of them are reliable using the SPSS method. Additionally, the leverage ratio has no correlation with any dependent variables according to SPSS, it has a small negative impact on the financial autonomy of Group 1, and financial security of Group 2.

The estimated research's results are in the below table:

Table 30. The relationship between solvency and financial independence

EVIEW 10.0					
	Group 1		Group 2		Conclusion
	FA1	FS1	FA2	FS2	
GPAR	+	0	0	+	H1 is right
LPA	+	0	0	-	H2 is wrong
SPA	-	0	0	+	H3 is wrong
QR	-	0	0	-	H4 is right
FR	-	0	0	-	H5 is right
R^2	26.44%	0.028%	8.594%	78.39%	

SPSS 22.0.0.0					
	Group 1		Group 2		Conclusion
	FA1	FS1	FA2	FS2	
GPAR	+	+	+	+	H1 is right
LPA	+	+	+	-	H2 is right
SPA	+	+	+	+	H3 is wrong
QR	+	0	0	0	H4 is wrong
FR	0	0	0	0	H5 is wrong
R^2	89.5%	40.8%	75.5%	67.1%	
+: positive					
-: negative					
0: no correlation					

Source: Compiled by the authors based on research results

According to EVIEW, with the confidence level of 95%, the changes in solvency determine 78.39% the changes in financial security level in Group 2, 26.44% that in financial autonomy in Group 1.

According to SPSS, the solvency has strong impacts, which is 89.5%, 75.5%, and 67.1% on financial autonomy in Group 1, financial autonomy in Group 2, and financial security in Group 2 respectively.

5.2. Recommendation

5.2.1. To Government

The Government plays an important role in building and shaping the capital structure orientation of enterprises. The preferential interest rates for long-term loans is one of the optimal solutions for both banks and businesses to get an appropriate capital plan. Only if there is favourable access to connect to long-term capital sources, businesses will be in good condition to ensure their ability of payment, therefore, they will stabilize solvency, and improve their level of financial independence.

When numerous businesses are losing their financial independence, it is necessary to encourage them to issue new equity shares rather than obtaining liabilities to acquire assets. In fact, stock issuing is one of the best ways to raise capital, because it decreases the risk of insolvency for enterprises, and reduces the dependence in finance from creditors. The Government, therefore, need to take in to account a new law that requires listed firms in Vietnam to set a cap of proportion between liability and equity or credit limit to ensure that they have enough financial security to be independent in finance.

5.2.2. To listed enterprises in Vietnam

Undoubtedly, few Vietnamese businesses are interested in securing financial independence in their businesses. The reason is that they do not have enough permanent capitals to acquire assets, so they are forced to use more short-term loans to maintain their operationu activities. From the results of the study, the General payment ability ratio is the indicator which has a great impact and a favorable direction to financial independence in listed companies in Vietnam. As a result, if the listed firms in Vietnam wants to build strong financial systems to guarantee both financial autonomy and financial security, it is imperative that they should pay attention to the proportion of total assets and total liabilities. The higher the proportion of assets and liabilities, the easier it is for the enterprises to control and manage the financial situation, avoiding due debts without payment capability, thereby ensuring the ability to operate effectively.

5.3. Limitation and future research

5.3.1. Limitation

Although this research has used a wide range of samples, which represent almost 60% number of listed firms in Vietnam, it does not cover all. Sampling risks may occur because there is a possibility that the items selected in a sample are not truly representative of the population being tested. Thus, this research certainly cannot give an absolute exact result, but can predict and estimate the relationship between independent variables and dependent variables.

The research results indicate the strong correlation between solvency, which is presented by general payment ability ratio, long-term payment ability, short-term payment ability, quick ratio, and financial leverage and financial independence through giving 4 regression models. Because these models still contain some flaws, including inconstant errors, or incorrect functional forms. This leads to a situation of giving inappropriate research results.

Because of using two different correlation regression methods, the conclusions for each method are also different, even opposite. This will create a strong confliction make the research results lacking understandable ideas.

5.3.2. Future research

In the future, researchers should continue to expand their research direction by not only focusing on assessing the impact of solvency on the level of financial independence, but also evaluating the correlation of endogenous, and exogenous variables or financial and non-financial variables to the dependent variable. In other words, it is clear to say that there are numerous determinants that impact directly and indirectly to the financial autonomy and financial security of a firm. Thus, more indicators rather than solvency should be added to the regression models.

Increasing sample size opens the opportunity of increasing the reliability of the research results, and, therefore, maximizing the proportion of having the optimal models. This will be a better choice if another researcher can classify the listed firms in Vietnam into separated groups of same industry, or same size to have a clearer view of the comparison between them. Finally, to minimize the confliction of the time value of cash flow when collecting samples from wide arrange of years, other researchers should eliminate and consider the inflation.

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Received on February 1st, 2019

Accepted on March 25th, 2019