

## FACTORS AFFECTING THE LEVEL OF FINANCIAL INDEPENDENCE OF LISTED MANUFACTURING COMPANIES: EVIDENCE FROM VIETNAM

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### ABSTRACT

*This paper reviews and evaluates the internal factors that impact on the financial independence level of listed manufacturing companies in Vietnam. We find that there are five factors which affect the level of financial independence of enterprises: (1) Growth rate, (2) tangible assets ratio, (3) profitability, (4) firm's size and (5) solvency. While the growth rate and the size of the business have minor negative effects on the financial independence level, the solvency has a significant impact and is the most important factor that is positively correlated with the degree of financial independence. This is the reason why the government should set a limit on the number of loans for enterprises to prevent risks of insolvency and help businesses increase their ability to pay, therefore, promote to create a safe and dependent business environment.*

Keywords: Financial autonomy, financial independence, financial security.

### INTRODUCTION

Financial independence of enterprises is an important element to promote a country's financial independence. The economic situation in any country also depends on the level of development of businesses because businesses are taxpayers, who make up the main revenue source of the budget and create food, jobs for workers. The stable development of enterprises is one of the first prerequisites to ensure the strength of the State economic system. Ensuring the financial independence of businesses will ensure conditions for the State to perform its functions, ensure economic development and improve social standards.

The operation of businesses is always accompanied by the emergence of a large number of threats that can cause loss of autonomy and financial security. Therefore, enterprises must always have appropriate solutions to maintain financial independence, protect the financial interests of enterprises, avoid the impact of external and internal threats, and ensure the effectiveness of economic activity business. Financial independence of enterprises is also a necessary basis to help businesses get out of the financial crisis and bankruptcy.

In the context of economic and political instability, the change of micro and macro environmental factors affecting the operation of enterprises, the review and assessment of the financial independence of enterprises becomes necessary. Assessing financial independence both in financial autonomy and financial security will allow businesses to mitigate the threat of financial instability and increase the safety of their existence.

Our paper contributes to the current literature on a number of fronts. Firstly, the paper makes provide a further understanding of the financial independence of businesses in emerging markets. This is achieved by assessing the relationship between factors: (1) Growth rate, (2) tangible assets ratio, (3) profitability, (4) firm's size and (5) solvency with the level of financial independence and updated data set. Moreover, since there is not yet any full study of financial independence in the world, a study investigating factors affects financial independence in the Vietnamese context is clearly important. Secondly, we use a number of independent variables and dependent variables in the Vietnamese context to approach research issue with the use of a comprehensive and updated data set that is very important to allow us to achieve this goal. In the following section, we briefly review the extant literature on the determinants of the level of financial independence. Section 4 introduces the hypothesis development, empirical model, sample research method, data collection, handling and regression analysis. Section 5 deals with the results and discussion. Section 6 outlines the conclusion and recommendation with discussions of limitations and future research to the paper.

### LITERATURE REVIEW

It can be affirmed that: So far, there has not been any complete research on the financial independence of enterprises in the world. Previous studies only mentioned financial independence or financial autonomy but have not yet entered its specific expression (Nguyen, et al., 2017), (Ngo, et al, 1995). Recently, there have been a number of studies mentioning the financial security of enterprises. Zwolak (2017) contributes to the economic literature with their empirical model based on the Cobb-Douglas power function, whilst the model contributes to the theory related to the financial security of enterprises. Another study has shown that if both the financial autonomy level and the financial security level are high, the financial independence level is also high, and vice versa (Nguyen, et al, 2017). Therefore, if a company wants to maintain and develop their activities to be more productive in finance, it has to be independent in finance, which is determined both by the financial autonomy and by the financial security. In contrast, if a firm's financial health depends mostly on external resources that cannot be predicted or controlled, the firm will not be able to continue its activities on the market normally. To further ensure that a firm will be

independent in the decision-making process, be able to promote its existing resources but it does not have to worry about facing bankruptcy because of losing solvency, its managers must take control the financial independence level (Nguyen, et al, 2017).

Although there are numerous companies with high level of financial independence (using equity as the dominant part in the financial structure), most of them do not have enough security in finance because they use short-term liability to acquire long-term assets, which have long repayment periods. Because of this wrong way of investing, these companies will soon lose their solvency and have no money left to pay for the due debts. On the other hand, there are several companies without the high level of financial autonomy (the equity ratio is generally low) yet still be able to run their businesses in the most convenient and productive way. This is because they truly understand their financial autonomy and security.

In attempts to understand more about financial security in regards to financial independence level, a number of empirical studies claim that insecurity in finance is a vague and not an easy quantifiable concept (Kropp & Katchova, 2011), (Rujoub, et al., 1995), (Cheng, et al., 2005), (Dahiya, et al., 2003). Another study also proves that commercial credit loans affect the financial security of a company (Garcia-Teruel & Martinez-Solano, 2007). To evaluate the degree of financial independence in a firm, many studies were developed based on solvency and profitability of a firm (Zwolak, 2017), (Charles, 2002), (Subramanyam & John, 2013), (Martin & Fernando, 2011), (Inta & Irina, 2012). In fact, the equity ratio is normally used with the implication of reflecting the solvency and is considered as financial leverage or a solvency ratio to measure the total investment in assets in accordant with the equity. If the equity ratio of a firm is high, its managers have considered of using a smaller amount of debts than equity to fund the assets demand. In contrast, if a firm uses a low-level equity ratio, the major of the firm's resources for acquiring assets comes from liability. Previous studies stated that the low in equity ratio does not necessarily lead to a worse financial situation because depending on the how productive activities that the firm performs, the firm will still be able to gain profit and then increase the return on equity. In the other case, the firm can lose its solvency, leading to bankruptcy. To explore the determinants of a company's capital structure, Allan took a new approach. He discerned that Board of Directors' decisions of capital structure is strongly depended on the previous ratio. Another finding is that the tax rates are constantly changing each year. The last factor he found is the risk of releasing bonds differs each year at each company (Allan, 1975).

In Vietnam, many researchers are still focusing on analyzing financial autonomy - an aspect that reflects financial independence - when they analyze the financial statements of a firm. Accordingly, they only used the index "Equity Ratio" and was determined by comparing owner's equity to total capital (Ngo, et al., 1995), (Nguyen & Phan, 2006), (Nguyen, 2004), (Nguyen & Nghiem, 2015), (Nguyen, 1992). Recent studies indicate that the financial independence level of a firm is influenced by both the financial autonomy level and the financial security level (Nguyen, et al., 2017), (Le & Nguyen, 2012). These studies also provide indicators reflecting the financial autonomy level, which is measured by "Equity ratio", and financial security level, which is evaluated by "Long-term assets ratio" or "Fix assets ratio". The equity ratio highlights two important financial concepts of a solvent and sustainable business. The first component shows how much of the total company assets are owned outright by the investors. The second component inversely shows how leveraged the company is with debts. The equity ratio measures how much of a firm's assets were financed by investors. The equity ratio is inversely related to financial leverage. Thus, the determinants that impact on the financial leverage will influence the equity ratio so that they will have an impact on the financial independence level of the business.

To calculate the financial security level of the business, "long-term assets ratio" and "fixed assets ratio" are used. "Long-term assets ratio" shows the ability to fund long-term assets by the capital employed, which is calculated by the sum of equity and long-term liability. When long-term assets ratio is greater than or equal to one, the business's capital employed is strong enough to cover long-term assets. In contrast, if the long-term assets ratio is less than 1, financial security does not meet the standard. This is a serious problem that a firm faces when it must use short-term liability to cover long-term assets because this causes the firm to lose the ability of payment for the due debts, and eventually, affect the financial independence level of that firm (Nguyen, et al., 2017). Similarly, the "fixed assets ratio" shows the ability to cover the fixed assets that a firm acquires by the capital employed. If the firm's fixed assets ratio is greater than or equal to 1, it has the ability to fund all the fixed assets by its capital employed. On the opposite, if the fixed assets ratio is less than 1, the firm has used short-term liability to invest in a part of fixed assets and the other long-term assets. This situation can lead to bankruptcy when the short-term debts due and the long-term assets do not make enough profit to pay for the debts.

Being inspired by the idea involving capital structure (Modigliani & Miller, 1958), (Fama & French, 2002), Vo (2017) used a comprehensive data collected from the firms listed on the Ho Chi Minh City stock exchange from 2006 to 2015 to prove the existence of different financial factors affecting the decision determining the firm's capital structure. The research finding showed that: of all the 5 independent variables, only the PROFIT variable had a negative impact on long-term leverage ratio and only the GROWTH variable played a negative role in shaping short-term leverage ratio.

In conclusion, previous researches have proved the correlation between independent variables including the firm's growth rate (Growth), net asset ratio (Tang), profitability (Profitability) and the size of the firm (Size) with the firm's capital structure as the dependent variable. However, all previous researches have not proved if these factors have impacts on the financial independence level of a company. Therefore, research finding the determinants of the financial independence level of the company, including financial autonomy level and the financial security level is needed.

## **THEORETICAL FRAMEWORK**

Being the pioneers in finding the correlation between factors leading to the change of a company's capital structure, Modigliani and Miller stated that: "A higher debt-to-equity ratio leads to a higher required return" (Modigliani & Miller, 1958).

$$\text{Model 1: } R_e = R_u + (R_u - R_d) * \frac{D}{E}$$

Where:

$R_e$  is the required rate of return on equity.

$R_u$  is the company cost of equity capital with no leverage

$R_d$  is the required rate of return on borrowings or cost of debt.

$\frac{D}{E}$  is the debt to equity ratio.

No longer after M & M theory was public, Pecking order theory was issued by Kraus and Litzenberger to restore the theory built up by Modigliani and Miller by ignoring any unrealized conditions including the absence of taxes, bankruptcy costs, agency costs, and an efficient market (Kraus & Litzenberger, 1973). According to the research findings, dead-weight costs of bankruptcy and the tax rate of debts have a strong relationship with the decision of how much debt finance and equity finance to use in that firm.

In conclusion, both types of research indicate that the borrowing cost of debt has an impact on the debt to equity ratio, which can be referred to as the equity ratio.

## HYPOTHESIS DEVELOPMENT AND EMPIRICAL MODE

### Hypothesis development

With a limitation of time and space, the authors only research factors that affect the equity ratio and the long-term assets ratio, which affect the financial autonomy and financial security respectively. Those factors include growth rate, tangible assets ratio, profitability, size of the firm, and solvency. External factors such as debt interest, income tax or gross domestic are produced, however, are not included because they affect not only the equity ratio but also other aspects of a firm that its manager cannot control. So that, changes in these factors are also very hard to manage even knowing beforehand. As a result, the following theories are proposed:

- H1: *Growth rate has a positive effect on the financial independence level.*

To understand the relationship between growth rate and financial independence, conclusions in Berens and Cuny's (Berens & Cuny, 1995) publication in 1995 are investigated. According to Berens and Cuny, growth rate implies a high equity ratio and less financial leverage. Indeed, the growth rate of one firm can be measured by the increases in both its future revenue and profit. As a result, once a firm manages to maintain the profit stably, its equity will eventually grow. Furthermore, this theory is very consistent with papers published (Jung, et al., 1996), (Berger, et al., 1997), (Kim & Sorensen, 1986), (Rajan & Zingales, 1995), (Wald, 1999), and (Booth, et al., 2001).

- H2: *The coefficient of tangible assets has a negative impact on the financial independence level of the Vietnamese listed firms.*

This hypothesis is developed base on many empirical studies suggesting that a high fraction of tangible assets is associated with high leverage (Marsh, 1982), (Long & Malitz, 1985), (Friend & Lang, 1988). Indeed, tangible assets always are the dominant part of total assets, have high value, and can be used as mortgage asset for the debts. As a result, firms often prioritize using liabilities as financial leverage to acquire more asset, expand business size while still be able to save business income tax (tax-shield).

- H3: *Profitability has a positive effect on the financial independence level of the Vietnamese listed firms.*

When profitability increases, the same amount of equity yields more profit. This increase in profit will be used to further increase the equity, which is presented by the retained earnings in the statement of financial position. Therefore, based on equation 1.1, when the profitability of a firm increases, the percentage of assets funded by the equity will increase. In other words, the financial independence level will increase. This hypothesis is consistent with previous theoretical studies (Jensen, 1985), (Chang, 1999), and is similar to other empirical studies documented in the current literature (Friend & Lang, 1988), (Titman & Wessels, 1998), (Wiwattanakantang, 1999).

- H4: *Firm's size has a positive impact on the financial independence level.*

From a financial distress perspective, many authors state that larger firms tend to be more diversified and have a smaller probability to fail, so size can be an inverse proxy for the probability of bankruptcy (Warner, 1977), (Ang, et al., 1982).

- H5: *The solvency has a positive impact on the financial independence level.*

The solvency of a firm is determined by the ability to convert assets to cash and the ability to raise money for paying due debts. Clearly, when the solvency increases, both the level of financial autonomy and that of financial security will increase too.

**Empirical model**

To consider and justify the effects of 5 different independent variables on the financial independence level, earlier researches usually followed the method of quantitative research into the correlation and regression model with the assistance from software. Therefore, in this research, the authors will follow the method of quantitative research into regression models with financial independence level as the independent variable: Growth opportunity, Tangible Assets Ratio, Profitability, Firm's Size, and Solvency as independent variables, with the assistance of IBM - SPSS 22 version 22.0.0.0.

Table 1: List of variables included in the models

Variable	Meaning of Variable	Calculated Variable
<b>Dependent Variable</b>		
ER: Equity ratio	Financial autonomy level	$\frac{\text{Equity}}{\text{Total assets}}$
LAR: Long-term asset ratios	Financial security level	$\frac{\text{Equity} + \text{Long term debt}}{\text{Long term assets}}$
<b>Independent Variable</b>		
X1: GROWTH	Revenue growth rate (RGR)	$\frac{\text{Revenue } (t) - \text{Revenue } (t - 1)}{\text{Revenue } (t - 1)}$
	Profit growth rate (PGR)	$\frac{\text{EAT } (t) - \text{EAT } (t - 1)}{\text{EAT } (t - 1)}$
X2: TA	The ratio of net plant, property and inventory to total assets as a measure for firm tangibility	$\frac{\text{Total tangible assets}}{\text{Total assets}}$
X3: PROFITABILITY	Return on Assets (ROA)	$\frac{\text{EAT}}{\text{Total assets}}$
	Return on Equity (ROE)	$\frac{\text{EAT}}{\text{Total equity}}$
	Return on Sales (ROS)	$\frac{\text{EAT}}{\text{Total sales}}$
	Return on Capital Employed (ROCE)	$\frac{\text{EBIT}}{\text{Total Capital Employed}}$
X4: SIZE	The natural logarithm of total assets at year end.	$\text{Ln } (\text{Total assets})$
X5: SOLVENCY	General payment ability (GPA)	$\frac{\text{Total assets}}{\text{Total liabilities}}$
	Long-term payment ability (LPA)	$\frac{\text{Long term assets}}{\text{Long term liabilities}}$
	Short-term payment ability (SPA)	$\frac{\text{Short term assets}}{\text{Short term liabilities}}$

Source: Compiled by the authors based on research results

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

- Model 1: ER = C (1) + C (2) GROWTH + C (3) TA + C (4) PROFITABILITY + C (5) SIZE + C (6) SOLVENCY.
- Model 2: LAR = C (1) + C (2) GROWTH + C (3) TA + C (4) PROFITABILITY + C (5) SIZE + C (6) SOLVENCY.

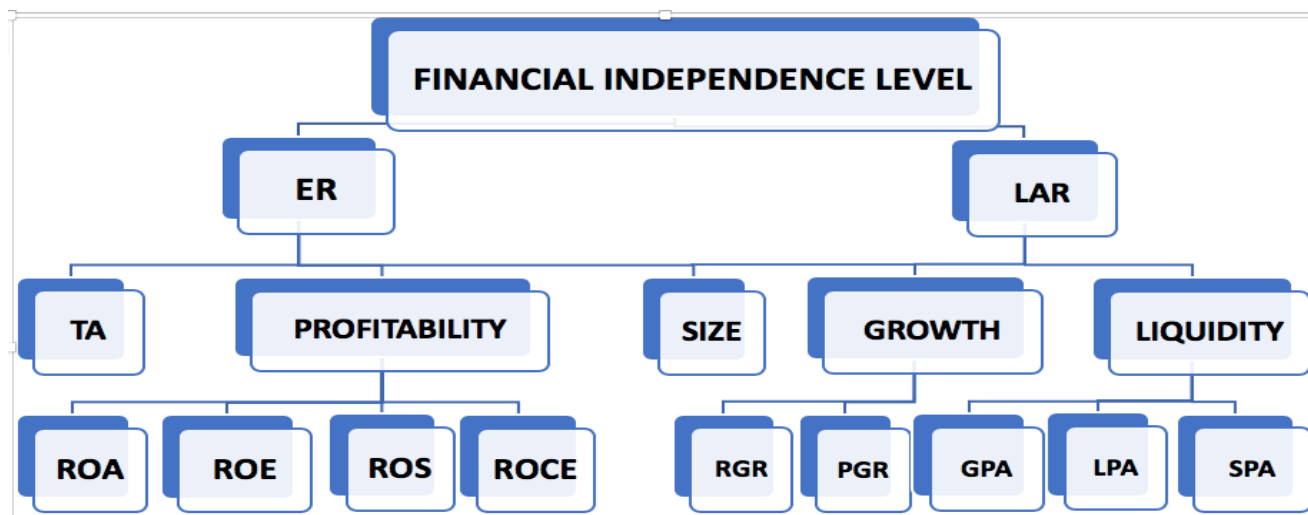


Figure 1: The empirical model

Source: Compiled by the authors based on research results

Thus, to evaluate the financial independence level, it is necessary to evaluate both the financial autonomy and financial security, which are presented in ER and LAR respectively.

With each model, five independent variables that are considered to affect the level of financial independence are GROWTH, TA, PROFITABILITY, SIZE, and SOLVENCY. However, to identify and estimate each independent value, various determinants must be used. For GROWTH, to identify growth rate of the firm, the authors use two different determinants to measure. Those are the revenue growth rate and profit growth rate. Similarly, to measure TA, the authors calculate the tangible assets ratio. Then, with profitability, there are four different determinants to evaluate a firm's profitability. Those are: ROA, ROE, ROS, and ROCE. When accessing the solvency of a firm, it is necessary to thoroughly consider 3 parts of solvency, including general payment ability, long-term payment solvency, and short-term payment ability.

**Sample**

Data collection and handling:

Table 2: Random sampling process

Step	Process	Results
Step 1	Get a full list of listed manufacturing companies according to HaSic until the research day 20/7/2018 at <a href="http://finance.vietstock.vn//doanh-nghiep-a-z/#">http://finance.vietstock.vn//doanh-nghiep-a-z/#</a>	Got a list of 723 listed manufacturing 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 four most recent years from 2014 to 2017, then reconcile with data on CafeF.	Of the 723 enterprises, only 402 enterprises have full financial statements and audited from 2014 to 2017. Using data obtained from 402 enterprises over 4 years, we obtained a total of 1608 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 119 samples 1489 samples left
Step 4	Calculate ER, LAR indicators according to formula table 3.1, and eliminate peculiar data sample if ER, LAR is negative, or EQ is over 1. Calculate ROA, ROE, ROS, ROCE and eliminate peculiar data samples if ROA is greater than ROE or ROCE Calculate the Solvency and compare it to 1. If the GPA ratio is over 1, the sample will be eliminated.	Eliminate 134 samples that don't meet the condition of ER, LAR. Eliminate 246 samples that don't meet the condition of the profitability. Eliminate 197 samples that don't meet the condition of the Solvency. 912 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)	492 observations left

Source: Compiled by the authors based on research results

## RESULTS AND DISCUSSION

### Descriptive Analysis

The following table is created using data yielded from the analysis of 432 samples from firms that meet the research requirements.

Table 3: Statistics describe the variables in the models

	ER	LAR	RGR	PGR	TA	ROA	ROE	ROS	ROCE	SIZE	GPA	LPA	SPA
Mean	0.45	1.66	-0.06	-0.19	0.41	0.06	0.13	0.03	0.12	13.42	2.10	1.52	1.44
Median	0.45	1.31	0.01	-0.15	0.38	0.05	0.13	0.04	0.12	13.13	1.84	2.68	1.27
Maximum	0.83	19.91	1.00	1.00	0.97	0.44	0.89	0.96	0.93	18.21	5.98	19	2.96
Minimum	0.04	0.27	-1	-1	0.01	-0.16	-0.5	-12.12	-0.44	10.64	1.05	0.11	0.21
Std. Dev.	0.18	1.37	0.41	0.51	0.20	0.07	0.14	0.59	0.13	1.51	0.89	1.12	0.58
Skewness	-0.02	7.01	-0.69	-0.02	0.59	1.20	-0.4	-19.98	0.69	0.88	1.41	1.41	0.90
Kurtosis	2.19	80.50	3.42	2.20	3.03	8.19	8.46	410.01	8.02	3.56	4.80	4.12	3.22
Obs.	432	432	432	432	432	432	432	432	432	432	432	432	432

Obs: Observations

Source: Compiled by the authors based on research results

Based on the dependent variables in Table 3, on average, 45% of the firms' fund comes from equity while the mean equity ratio is 0.45 (ER = 0.45.) However, this ER value varies significantly between each firm. While some firms have ER value as high as 0.83, others only manage to exceed an ER value of 0.04. As also shown in Table 3, the firms' tangible assets ratio are considerably high with a mean of 1.66. Lastly, similar to ER, the LAR values between the firms also varies greatly when the highest value reaches 19.91, 70 times larger than the lowest value. Analysis of the independent value GROWTH shows that the relative growth rate (RGR) and the progressive growth rate (PGR) are both negative in the given period. This is indeed a warning signal to the whole Vietnamese manufacturing industry. Among the investigated firms, the growth rate of income and profit also differ considerably when the standard deviation of the RGR value is 0.51; and that of the PGR is 0.2.

PROFITABILITY values also indicate that on average, the profitability of the firms is relatively low with 6% for ROA, 13% for ROE, 3% for ROS, and 12% for ROCE. As a result, it is certainly to say that among different firms, the profitability is very different. When the profitability of firms with high company efficiency always fluctuate between 40% and 90%, the ROA, ROE, ROS, and ROCE values of firms with low efficiency are negative.

Unlike profitability, the paying capacities of the investigated firms have very good value. The general payment ability (GPA), long-term payment ability (LPA), and short-term payment ability (SPA) are 2.1, 1.52, and 1.44 respectively.

Table 4: Correlation among variables in the models

	ER	LAR	GRO.	TA	PRO.	SIZE	LIQ
<b>ER</b>	Pearson Correlation						
		1	.490**	-.016	.088	.201**	-.050
	Sig. (2-tailed)		.000	.725	.050	.000	.270
N	492	492	492	492	492	492	492
<b>LAR</b>	Pearson Correlation	.490**	1	.049	-.671**	.221**	-.083
	Sig. (2-tailed)	.000		.275	.000	.000	.065
	N	492	492	492	492	492	492
<b>GRO WTH</b>	Pearson Correlation	-.016	.049	1	-.017	-.038	.032
	Sig. (2-tailed)	.725	.275		.706	.402	.481
	N	492	492	492	492	492	492
<b>TA</b>	Pearson Correlation	.088	-.671**	-.017	1	-.117**	.077
	Sig. (2-tailed)	.050	.000	.706		.010	.086
	N	492	492	492	492	492	492
<b>PROFI</b>	Pearson Correlation	.201**	.221**	-.038	-.117**	1	.305**

<b>TABIL ITY</b>	Sig. (2-tailed)	.000	.000	.402	.010		.990	.000
	N	492	492	492	492	492	492	492
<b>SIZE</b>	Pearson Correlation	-.050	-.083	.032	.077	.001	1	-.086
	Sig. (2-tailed)	.270	.065	.481	.086	.990		.057
	N	492	492	492	492	492	492	492
<b>SOLV ENCY</b>	Pearson Correlation	.877**	.611**	-.002	-.127**	.305**	-.086	1
	Sig. (2-tailed)	.000	.000	.958	.005	.000	.057	
	N	492	492	492	492	492	492	492

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

GRO.: GROWTH; PRO.: PROFITABILITY; LIQ.: SOLVENCY

Source: Compiled by the authors based on research results

In Table 4, the p-value (labelled as Sig. in SPSS) of the dependent variables - TA, PROFITABILITY, and SOLVENCY as well as the two dependent variables - ER and LAR are all less than 0.05. Therefore, there is a positive correlation existed between the independent variables and the dependent ones. In contrast, because the p-value the independent variables - SIZE and GROWTH are both greater than 0.05, there is no correlation between these two variables and dependent variables that show the financial independence level in the given models.

More specifically, the correlations between SOLVENCY and other dependent variables are always high (87.7% with ER, and 61.1% with LAR). The remaining dependent variables, which are PROFITABILITY and TA, have weak correlations with dependent variables.

### Regression analysis

- ER model:

Table 5: Coefficients<sup>a</sup> ER model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	-.993	.117		-8.457	.000		
TA	.200	.020	.198	10.006	.000	.977	1.023
PROFITABILITY	-.060	.022	-.056	-2.725	.007	.901	1.110
SOLVENCY	1.139	.026	.920	44.547	.000	.899	1.113

Source: Compiled by the authors based on research results

In Table 5, because the p-values (t-test) of the independent variables in the ER model are all less than 0.05, all these variables are statistically significant. Table 5 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, model 1 can be written as:

$$ER = 0.117 + 0.02 * TA - 0.056 * PROFITABILITY + 0.92 * SOLVENCY$$

- LAR model:

Table 6: Coefficients<sup>a</sup> LAR model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.798	.138		20.325	.000		
TA	-.598	.023	-.605	-25.493	.000	.977	1.023
PROFITABILITY	-.014	.026	-.013	-.542	.588	.901	1.110
SOLVENCY	.653	.030	.538	21.755	.000	.899	1.113

Source: Compiled by the authors based on research results

In Table 6, because the p-values (t-test) of the two independent variables – TA and SOLVENCY in LAR model are all less than 0.05, they are statistically significant. Unlike TA and SOLVENCY, PROFITABILITY has a p-value (t-test) of 0.588, greater than 0.05. As a result, PROFITABILITY is not statistically significant in the LAR model. Moreover, since VIF of these independent variables is all less than 2, multicollinearity does not exist in this model. Hence, the LAR model can be written as:  
 $LAR = -0.605 * TA - 0.013 * PROFITABILITY + 0.538 * SOLVENCY$

**Test of the regression models**

- ER model:

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.902 <sup>a</sup>	.813	.812	.59913	1.621

a. Predictors: (Constant), SOLVENCY, TA, PROFITABILITY

b. Dependent Variable: ER

Source: Compiled by the authors based on research results

Table 7 illustrates that the adjusted R square value is 0.812. This means that the changes in ER are 81.2% related to the changes in the independent variables, including SOLVENCY, TA, and PROFITABILITY. Furthermore, the Durbin - Watson value in Table 7 is 1.62, greater than 1.5 and less than 2.5. This means that there is no autocorrelation in the sample.

**Table 8: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	762.074	3	254.025	707.686	.000 <sup>b</sup>
Residual	175.168	488	.359		
Total	937.242	491			

a. Dependent Variable: ER

b. Predictors: (Constant), SOLVENCY, TA, PROFITABILITY

Source: Compiled by the authors based on research results

Table 8 shows that the p-value for the F-test is 0.000, less than 0.05. Therefore, it can be said that ER model is reliable.



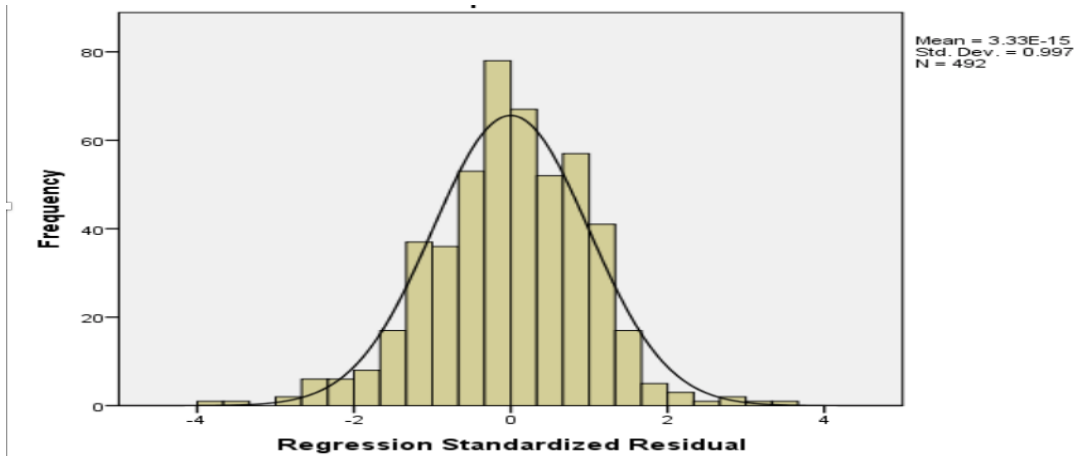


Figure 2: Histogram for regression standardized residual of the ER model  
Source: Compiled by the authors based on research results

Figure 2 shows that the regression standardized residual has a mean value of  $3.33 \times 10^{-15}$  with a standard deviation of 0.997, approximately closes to 1. Therefore, it can be assumed that the regression standardized residual is normally distributed.

- LAR model:

Table 9: Model Summary<sup>b</sup>

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.855 <sup>a</sup>	.732	.730	.70288	1.539

a. Predictors: (Constant), SOLVENCY, TA, PROFITABILITY

b. Dependent Variable: LAR

Source: Compiled by the authors based on research results

The adjusted R squared value in Table 9 is 0.73, meaning that the changes in ER are 73% related to the changes in the independent variables, including SOLVENCY, TA, and PROFITABILITY. Furthermore, the Durbin - Watson value is 1.539, greater than 1.5 and less than 2.5. This means that there is no autocorrelation in the sample.

Table 10: ANOVA<sup>a</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	657.226	3	219.075	443.440	.000 <sup>b</sup>
Residual	241.089	488	.494		
Total	898.315	491			

a. Dependent Variable: LAR

b. Predictors: (Constant), SOLVENCY, TA, PROFITABILITY

Source: Compiled by the authors based on research results

The p-value for the F-test in Table 10 equals 0.000, less than 0.05. Thus, with the confidence level of 95%, it can be said that the LAR model is sensible.

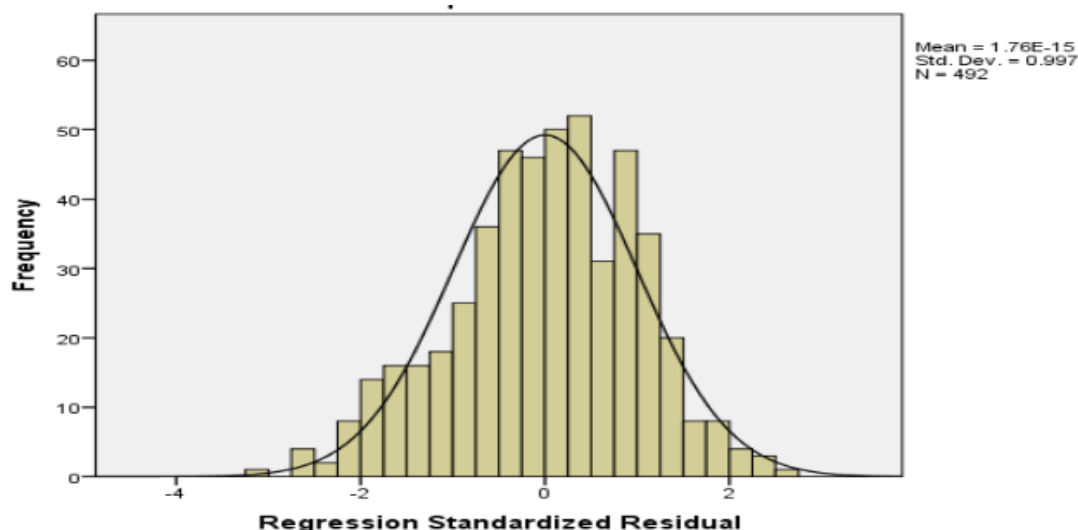


Figure 3: Histogram for regression standardized residual of the LAR model

Source: Compiled by the authors based on research results

The mean value of the regression standardized residual in Figure 3 is  $1.76 \times 10^{-15}$  with a standard deviation of 0.997, equals approximately 1. Therefore, it can be assumed that the regression standardized residual is normally distributed.

## THE RECOMMENDATION AND CONCLUSION

### Recommendation

From the research results presented in section 4, we propose the following recommendations:

#### - To the Government:

In order to improve the level of financial autonomy and financial security of listed manufacturing enterprises in Viet Nam, the Government and line agencies should set a limit on the number of loans to enterprises. This rule can prevent the risk of insolvency, help businesses can increase the ability to pay, and increase financial independence.

#### - To the manufacturing companies:

Listed manufacturing companies in Vietnam should adjust their capital structure, both equity structure and asset structure, in order not only to ensure good solvency, but also prevent bankruptcy. The firms need to consider the term of capital to invest in suitable assets to make sure that the financial security of the firm is strong enough. By increasing the solvency, the tangible assets ratio, the firm, thereby, will increase the level of financial independence.

### Conclusion

There are three determinants that significant impact on the financial independence level in listed manufacturing companies in Vietnam: the tangible assets ratio (TA), the profitability (including ROA, ROE and ROCE), and the solvency (general payment ability - GPA, long-term payment ability - LPA, and short-term payment ability - SPA)). Growth rate (including the growth rate of revenue, growth rate of profit), and size of the enterprises are negatively correlated but not significant to the level of financial independence of the listed manufacturing companies in Vietnam.

Specifically, the factor that has the most significant influence in shaping financial independence level is solvency. For the financial autonomy level, while the profitability has a negative impact on it, the tangible assets ratio and the solvency of the firm impact positively on it. For the financial security level, on the other hand, has a negative relationship with both the tangible assets ratio and profitability, but is influenced positively by the solvency factor.

The article is limited in the scope of research in listed manufacturing enterprises in Vietnam in the current period, has not conducted research in other enterprises. Moreover, the research data is also limited to the financial factors collected, calculated through financial statements, has not studied other factors affecting the level of financial independence of enterprises such as: management qualifications and experience; macroeconomic policy; ... In the future, to clarify the factors that affect the autonomy and financial security of businesses, we will expand the scope of surveys and data collection.

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