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Impact of information disclosure on financial risks of listed real estate companies in Vietnam

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Abstract: The study analyzes the impact of disclosure on the financial risks of real estate development companies. The data was collected from the annual reports and financial statements of 35 listed companies on the Ho Chi Minh City Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) from 2019 to 2021. The results show that more information disclosure leads to lower financial risks for companies besides other firm-specific factors. According to the regression results of the financial risk model, variables such as return on sales (ROS), return on total assets (ROA), and inventory turnover (IT) are not significantly statistical for the financial risk dependent variable (FR). The variables of firm size (SIZE), age of the firm (AGE), the degree of financial leverage (DFL) and basic profitability (BEP), are all positively related to risk. The remaining 5 variables of information disclosure (DS), debt-to-total assets (TD), short-term solvency (CR), GDP growth rate (GDPg), and inflation (IR) are negatively related to financial risk. Our results emphasize the importance of disclosure and make several implications for companies.

Keywords: Financial disclosure, financial risk, equity, listed companies, real estate development companies.

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1. Introduction

The relationship between disclosure and financial risk has been studied by much previous research in the field. However, not much research has been done on the impact of firms' disclosure on financial risk.

Real estate is one of the markets that play an essential role in the national economy. Data from Vietstock (2021) shows that information disclosed to investors rated lowest for companies in the real estate development sector. This fact poses serious risks to investors and has negative effects on the financial risk of companies in the real estate sector. Given the importance of the sector to the economy, as well as the benefits to investors, it is well worth examining the effect of information disclosure on the financial risk of companies in the real estate sector and the implications for investors and relevant government authorities in practice.

The objectives of this study are to determine information disclosure and methods to evaluate its level, financial risks and methods of measuring them, and to analyze the impact of information disclosure on the financial risk of listed companies.

2. Literature review

Information disclosure is the process of transmitting information from listed companies to external entities interested in the company's production and business activities, helping them to have an objective perspective of the business situation, thereby strengthening their investment decisions. Disclosure is classified as mandatory disclosure and voluntary disclosure. However, this operation will be disrupted in the stock market if the information asymmetry and agency problems are severe. The uncertainty of investors about the situation of the company could lead to adverse selection, which depends on the level of information asymmetries and the investors' attitudes towards uncertainty. Enterprises often face many risks, so they will disclose more information to increase the confidence of shareholders and raise the ability to deal with risks with managers. Therefore, disclosure has brought a lot of benefits to listed companies by attracting investors' attention, thereby improving goodwill in the company's internal management mechanism, limiting the negative impact dynamics of asymmetric information, and minimizing insider trading and price manipulation. When disclosing information, companies expect to receive economic benefits in return. For companies with comprehensive disclosure, investors are willing to increase their demand for the company's stock or bonds. In this way, firms with comprehensive disclosure can reduce refinancing costs due to increased demand for their stocks and bonds.

According to Cohen (2006), a rich information environment will have the potential to reduce bid-ask spreads and increase market liquidity. Giang (2014) studied the impact of factors of listed company characteristics on the level of information disclosure and its effectiveness. She also argued that the level of information disclosure could minimize the risk of asymmetric information, limiting risks from market transactions such as market price fluctuations of stocks, and liquidity of shares, thereby affecting the cost of equity and the value of the company.

The development of disclosure theories has been accompanied by a multitude of different research methods. Regarding the potential financial impacts of the business, the studies are distinguished into two different groups. The research method of the first group examines the effects of corporate disclosure on the cost of capital of firms, while the study of the second group examines the consequences for corporate securities. Botosan (1997) first used regression analysis to measure the relationship between voluntary disclosure and the cost of equity. Later research by Botosan and Plumlee (2002) re-examined this relationship based on biased data and other analytical methods. They found that the cost of equity decreased at the qualitative level of the annual report, but increased in the level of timely disclosure. They suggested that more timely disclosure could lead to higher stock price volatility, which would increase the cost of equity. However, according to Botosan (2006),

more disclosure reduces the cost of equity. This is supported by many studies. Nevertheless, additional research is needed to explain the abnormal results in the literature. The cost of the capital approach and the financial risk approach are closely related. When information disclosure affects a company's financial risks, those financial risks also affect the cost of capital.

Diamond and Verrecchia (1991) found that particularly large companies could benefit from the positive financial impacts associated with voluntary disclosure. The study by Healy et al. (1999) shows that an increase in disclosure ratings is accompanied by an increase in the stock returns of companies as well as the liquidity of the stock. Leuz and Verrecchia (2000) also reported having found evidence that higher corporate reporting leads to lower bid-ask spreads and higher liquidity of corporate securities as previously accessed. On the other hand, Plumlee et al. (2010) found that higher-quality environmental disclosures are positively associated with expectations of future cash flows.

Financial risk is a concept associated with uncertainty in fluctuations in interest rates, stock prices, exchange rates, and commodity prices (Li, 2003). Financial risk relates to all factors reflected in the corporate financial situation in general, or refers to the possibility of defaulting on financial liabilities when due, in particular. Therefore, disclosure is important for investors to assess the expected risk and profitability of investors when making decisions. Better information will reduce levels of uncertainty and allocate capital more efficiently to support economic growth (Lambert et al. 2007).

3. Research methodology

3.1. Research model

In this study, the financial risk of real estate companies is estimated from companies' stock prices and the VNIndex using the Capital Asset Pricing Model (Damodaran, 2004) and regression analysis.

The model used is:

$$R_j = a + b * R_m$$

In which: R_m: the daily market return; R_j: the daily return of security; β: beta coefficient of security.

According to Eichhorn (2004) and Napp (2011), financial risks can be affected by objective factors that depend on changes in financial markets, such as economic growth, interest rates, market rates, and inflation. Nevertheless, financial risks can also be caused by subjective factors, which come from the financial situation of the enterprise. Researching the factors affecting financial risk, Bathory (1987) built a risk measurement model including groups of financial indicators that are exemplary and can be well applied to the Vietnamese stock market. Bhunia and Mukhuti (2012) stated that solvency is negatively correlated with financial risk. Bhunia and Mukhuti (2012) showed that profitability has a positive effect on financial risk. Gang and Liu (2012), Bhutia and Mukhuti (2012) did not demonstrate any relationship between financial risk and operating performance. Debt structure reflects the structure of corporate debt, which Gang and Liu (2012) and Bhutia and Mukhuti (2012) both agreed does not correlate with financial risk. Hang et al. (2020) demonstrated that firm size positively impacts financial risk. According to Yunus (2012), the GDP growth rate impacts financial risk, while Ceylan (2021) proved that the GDP growth rate does not correlate with financial risk. Folger et al. (1985) stated that inflation is negatively correlated with financial risk. Karim (1996) and Albitar (2015) believed that the level of information disclosure has an impact on the information asymmetry between the company and investors, which changes the stock value in the capital markets, thereby leading to a change in the cost of equity. Glosten and Milgrom (1985) concluded that information asymmetry between internal investors and external investors affects investment decisions, investors' willingness to sell-buy prices, and change value stocks in the capital market. This proves that the disclosure of information directly affects the problem of asymmetric information between the investment parties, changes the cost of capital and affects the financial risk of the company. Therefore, inheriting Bathory's

financial risk measurement model, a model with 12 financial indicators is built as follows:

Research model:

FR = α_0 + α_1*DS + α_2*TD + α_3*DFL + α_4*CR + α_5*ROS + α_6*ROA + α_7*BEP + α_8*IT + α_9*SIZE + α_{10}*AGE + α_{11}*$GDPg_t$ + α_{12}*IR_t + ε

In which: FR: Financial risk, DS: Disclosure Index, TD: Total Debt/Total Assets, DFL: EBIT/(EBIT – Interest), CR: Current Assets/Current Liabilities, ROS: Operating Profit/Net Sales, ROA: Net Income/Total Assets, BEP: EBIT/Total Assets, IT: COGS/Average Inventory, SIZE: Operational Scale, AGE: Operating Time, GDPgt: Growth rate of Vietnam's gross domestic product at time t, IRt: Vietnam's inflation at time t.

3.2. Data collection and processing

3.2.1. Data collection

For this research paper, the data are mainly secondary data collected from the audited annual financial statements of 35 Real Estate Development Companies listed on HOSE and HNX stock exchanges from 2019 to 2021 through trusted websites (FiinGroup and Vietstock).

Regarding the construction of the Information Disclosure Index (DS), a table of criteria for scoring the level of information disclosure of the Annual Report is developed based on Circular 155/2015/TT-BTC and Circular 96/2020/TT-BTC combined with the set of criteria of Standard and Poor (2003), and Botosan (1997). Table 1 contains the details of the Disclosure Index.

The score is calculated as follows:

For indicators with a maximum score of 1, if the annual report contains information about that indicator, 1 point will be awarded.

For indicators with a maximum score of 2, if the annual report contains information of all the factors in the indicator, 2 points are given. For example, "Effective financial indicators" has 2 factors, ROA and ROE. If the annual report has information on either ROA or ROE, it will give 1 point, if it refers to both, it will give 2 points.

Similar to 2 indicators with a maximum score of 4, each indicator has 1 point. The number of points added will be the same as the number of factors, which the annual report contains.

Besides, there are a number of indicators with a maximum score of 2 but only 1 factor. If the annual report only mentions that issue, it will give 1 point, if there is more explanation or discussion, it will give 2 points.

Table 1: Disclosure index scoring criteria

Quota	**Maximum CBTT score**
I. Company introduction, general information	
1. General information	
2. The process of formation and development	1
3. Professions and areas	1
a. Professions	1
b. Area	
4. Information about the governance model, business organization, and management apparatus	1
a. Governance model	1
b. Structure of the management apparatus	1
c. Subsidiaries, affiliates	
5. Development orientation	1
a. The main objectives of the company	2
b. Medium and long-term development strategy	2
c. Sustainable development goals and main programs related to the short and medium term of the company	

6. Risk exposure company? Response solutions?	
II. Operation situation during the year	
1. Production and business activities	
a. Results of production and business activities during the year. (Discussion: State major changes and fluctuations in business strategy, revenue, profit, cost, market, product, supply, number of orders but not delivered, and projects developed)	2
b. Implementation situation compared to the plan. Compare the results achieved during the year compared to the planned targets and adjacent year targets. (Discussion: Specific analysis of the reasons for not meeting/meeting/exceeding targets compared to the plan and compared to the adjacent year)	2
c. Market share	2
2. Organization and personnel	
a. List of executive boards	1
b. The number of officers, employees, or personnel structure	1
c. Average salary per employee or salary and bonus policy	1
3. Investment situation, implementation of projects	
4. Financial situation	
a. Financial situation	1
(Example: Total value of assets, net receipts, profit after tax, rate of profit paid dividends)	
b. Key financial indicators (e.g. quick solvency, capital structure, operating capacity, profitability)	1
c. Effective financial indicators (Example: ROA, ROE)	4
5. Shareholder structure, change of owner's investment capital	4
6. Environmental Impact Report	2
III. Expected information	
1. Forecast market share	2
2. Cash flow forecast	2
3. Profit forecast	2
4. Sales forecast	2
IV. Report and evaluation of the Board of Directors	
1. Evaluation of production and business results (Overview analysis of the company's activities compared to the plan and results of production and business activities in the past)	2
2. Financial situation (Asset situation, liabilities situation)	2
3. Improvements in organizational structure, policies, and management	1
4. Future plans and solutions	2
5. Assessment report related to the company's environmental and social responsibilities	2
V. Evaluation of the Administrative Council on the company's operations	
1. Evaluation of the Administrative Council on the operational aspects of the company	1
2. Evaluation of the Administrative Council on the activities of the Board of Directors	1
3. Plans and orientations of the Administrative Council	1
VI. Financial statements	
1. Audit opinion	2
2. Financial statements	2
VII. Total score	61

Source: The authors.

3.2.2. Data processing

After entering the data, Microsoft Excel software is used to calculate some financial indicators that the Financial Statement did not present based on the mentioned theory and synthesized and designed the complete table of figures. Stata 13.0 software is used to perform regression and the necessary tests include descriptive statistical analysis, Pearson correlation coefficient analysis, Pooled OLS regression model, multilinearity testing, variance change, and correlation.

3.2.3. Sample description statistics

Through the descriptive statistical analysis, the average stock beta of companies is 0.6; as low as -1.1, as high as 1.8, and the standard deviation is 0.5. The average disclosure index (DS) is 40; as low as 0, and as high as 55, with a standard deviation score of 9.6 (Table 2).

Table 2: Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
FR	105	0.6068644	0.506299	-1.126816	1.775096
DS	105	39.9619	9.366593	0	55
TD	105	0.5824056	0.1660369	0.1209378	0.8410519
DFL	105	1.513252	4.600044	-15.65931	39.72626
CR	105	1.0801739	0.8578424	0.5889447	5.338123
ROS	105	0.1314086	0.7359373	-6.829127	1.685556
ROA	105	0.0431954	0.0500878	-0.220802	0.2378932
BEP	105	0.0454608	0.0630703	-0.2654469	0.2472198
IT	105	12.63683	0.7217101	11.5965	14.62583
SIZE	105	21.74286	10.4477	3	49
AGE	105	2.202225	4.535263	-0.1113968	26.7314
GDPg	105	0.0567	0.0196113	0.0291	0.0708
IR	105	0.0193333	0.003448	0.0148	0.0231

Source: The authors.

4. Empirical results and discussion

4.1. Empirical result

4.1.1. Correlation analysis

The correlations between pairs of variables reveal the relationship between independent variables and dependent variables. In the model, other than DS, TD, IT, GDPg, Size, IT, and IR that negatively correlated with Beta, the remaining independent variables all show a positively correlated.

4.1.2. The results of regression analysis by the method of least squares (Pooled OLS)

After considering the correlation coefficient between the variables in the model, it was found that it is unlikely that the phenomenon of autocorrelation will occur. Therefore, the Pooled OLS method of least squares was used to estimate the impact of the independent variable and the control variable on the financial risk of the real estate company.

The coefficient of determination of R-square of the whole model is 0.3252, showing that 12 independent variables in the model explain 32.52% of the change in Beta, and the remaining 67.48% are due to random factors. Nature and other factors are not included in the impact model. The value of the coefficient of determination of R-square of the model is relatively low (less than 50%), showing that the explanatory level of 12 independent variables in the model for the dependent variable Beta is low. Regression results show that the variables: level of information disclosure (DS), Debt to total assets (TD), Current ratio (CR), Size of the business (SIZE), Age of enterprises (AGE), GDP Growth Rate (GDPg), and Inflation (IR) have a significant impact on the financial risk with regression coefficients to reach the significance level of 1%, 5%, and 10%. The

coefficient of the DS variable is -0.0095, which has a negative effect on the dependent variable FR. This is similar to variables TD, CR, ROS, IT, GDPg, and IR. Besides, variables DFL, ROA, BEP, SIZE, and AGE all have the same effect on FR.

4.1.3. Multicollinearity test

After performing the OLS estimation, the VIF magnification factor is used to check whether the model has multicollinearity or not. If the VIF coefficient is greater than 5, the model shows signs of high multicollinearity; if the VIF coefficient is greater than 10, the model definitely has a multicollinearity defect. The independent variables in the model all have a VIF coefficient < 3.2 and an average VIF coefficient of 1.96. This only shows that the model does not have multicollinearity between the variables, causing inaccurate estimation, so the above variables continue to be used to perform the regression**.**

4.1.4. Model selection

To choose a more suitable model between the 2 Pooled OLS models and the FEM model, we F test with 2 hypotheses:

H0: The Pooled OLS model is the right model.

H1: The FEM model is the right model.

With the result Prob > F = 0.0008 < 0.01. Therefore, with 99% confidence, rejecting hypothesis H0 accepts hypothesis H1, so the FEM fixed-effects model is more suitable.

After choosing the FEM model, the Hausman test is used to choose the most suitable model between the two FEM and REM models with 2 hypotheses:

H0: The REM model is the right model.

H1: The FEM model is the right model.

With the result Prob > F = 0.0245 < 0.05. Therefore, with 95% confidence, rejecting the H0 hypothesis and accepting the H1 hypothesis, the FEM fixed-effects model is more suitable. Thus, with 2 tests to choose the appropriate model, the F test and the Hausman test, the fixed effects model FEM is the most suitable model.

4.1.5. Fixed effects regression model (FEM)

From the regression results by the FEM method, some conclusions were made as follows:

Firstly, the disclosure index variable (DS) is statistically significant and has a significance level of 5%. DS has a negative effect on Beta with a coefficient of -0.014062 for an increase in the DS variable by 1 unit causing a Beta decrease of 0.014062 units.

Second, all three variables of the profitability ratio, including ROS, ROA, and BEP, have no statistical significance on the Beta coefficient.

Table 3: Regression results by FEM method

Variable	**Beta**
	Coef
DS	-0.014062**
TD	2.48396*
DFL	-0.0048442
CR	0.0812142
ROS	0.0119317
ROA	-0.9531947
BEP	0.9449897
SIZE	-2.193734**
AGE	-0.0477705
IT	-0.086202*
GDPg	-9.078059**
IR	0
Cons	29.04485
R-Squared	0.3332

Source: The authors.

Third, about the two macro variables including GDP growth rate (GDPg) and inflation (IR) - the variable GDP growth rate has a negative effect on Beta with a coefficient of -9.0781 which is statistically significant at the 5% level of significance. As for the inflation variable, the phenomenon of omission occurs due to the phenomenon of collinearity in the data.

Fourth, related to the factors of assets and liabilities, the variable debt to total assets (TD) has a positive effect on the Beta coefficient with a significance level of 10%. Meanwhile, the variable short-term ratio (CR) does not seem to have an impact on the Beta coefficient.

Fifth, the variable level of influence of financial leverage (DFL) has no effect on the Beta coefficient, while the variable inventory turnover (IT) has a negative effect on the Beta coefficient with a coefficient of -0.0862, and is significant statistically at 10%.

Finally, the enterprise age variable (AGE) has no statistical significance in the model, while the firm size variable (SIZE) has a positive effect on the Beta coefficient at a 5% significance level.

4.1.6. Check for defects

After performing regression by the FEM method, the model needs to be further checked for errors to increase reliability - specifically, testing the phenomenon of variable variance and autocorrelation. The results show that the model does not have autocorrelation but has a variable variance. Realizing that the model has the phenomenon of variable variance, to overcome this the FGLS model correction method is the method used.

4.1.7. Feasible generalized least squares (FGLS)

Table 4: Regression results by FGLS method

Variable	Beta
	Coef
DS	-0.0110279***
TD	-1.135444***
DFL	0.008908**
CR	-0.1001664*
ROS	-0.0862796
ROA	0.2345086
BEP	1.386922*
SIZE	0.3349381***
AGE	0.0109016***
IT	0.0010178
GDPg	-12.23511***
IR	-49.06334***
Cons	-1.146749

Source: The authors.

Due to the ability to overcome the defects in the model, the FGLS model is the most suitable model for this study.

4.2. Discussion of the results of the regression analysis

Based on compiling data from 35 real estate enterprises in the period 2019-2021, results from the regression model show 9 factors affecting financial risk as follows:

First, the disclosure index (DS) has a negative impact on financial risk. The disclosure index is based on the annual report of the enterprise. The report helps readers have an overview of the company's history, production and business activities in the year and ongoing and implemented projects. There is also a revenue structure and important financial indicators that help readers easily know where the business achieves profits, and key business areas. Especially, in the report there is more information about possible risks to the business and how to fix them. Therefore, the higher the information disclosure index, the higher the ability of the business to identify and contain the risk, which helps to limit financial risks. This is consistent with the researcher's expectations and is supported by Giang (2014), and Lambert (2007).

Second, the debt-to-total asset ratio (TD) variable has a negative effect on FR. With an average value of 0.58, the company has nearly twice as many assets as liabilities and can pay off debts by selling its assets if necessary. Businesses often use debt to make up for a shortfall in capital. Enterprises also use financial leverage as a revenue shield because the interest payable is considered a reasonable expense and is deducted from the taxable income of the business. That will help pay less corporate taxes while increasing profits. This result runs counter to the research of Napp (2011). This result supports the trade-offs theory of the capital structure of a firm.

Third, the effect of financial leverage (DFL) has a positive effect on financial risk. Financial leverage focuses on the debt ratio. When financial leverage is high, even a small change in earnings before interest and taxes can result in a larger change in financial returns. According to the principle of high-risk high return, with the company using high financial leverage, the higher the profit, but the risk also increases accordingly. This result is different from the result of Duc (2018).

Fourth, the short-term payment-current ratio (CR) variable has a negative impact on FR. This ratio is used to reflect the ability to convert assets into money to serve the payment of debts to the business. With an average value of 1.8, short-term assets are larger than short-term liabilities and businesses are willing to convert assets quickly to pay those debts.

Therefore, it will reduce the financial risk of the business. This result is contrary to the study of Bhunia and Mukhuti (2012), Simantinee and Phanikumar (2015).

Fifth, the variable basic profitability (BEP) has a positive effect on FR. This is a coefficient that shows how much pre-tax profit and interest will be generated for every 100 VND asset invested in enterprises. According to the principle of "High-risk high return", the higher the return, the higher the financial risk. This result is contrary to the study of Duc (2018).

Sixth, the size of the business (SIZE) affects FR. Running a larger business, the more complicated and problematic it is, requiring the owner to have extensive knowledge and experience and know how to manage human resources. Therefore, the larger the size of the business, the greater the level of risk will increase. This result is supported by Hang (2020).

Seventh, the enterprise age variable (AGE) impacts the same way on FR. Economic trends and customer tastes are changing very quickly, so businesses need to be sensitive, and quickly adapt to economic circumstances and the market needs to be able to survive sustainably for a long time. If old businesses do not change to adapt and follow the old path, it is difficult to survive and develop. This result is different from the impact of Long (2020).

Eighth, the GDP growth variable has a negative effect on FR. GDP growth helps businesses attract larger investors, and the increase in residents' income leads to an increase in expenditure and market demand, thereby reducing the financial risks of enterprises. This result is contrary to the study of Gulcemal (2021).

Finally, the inflation variable (IR) has a negative effect on FR. In the period 2018-2020, the inflation rate is only from 1.48 to 2.31%. This is low, controllable inflation. This contributes significantly to stabilizing the macro-economy, lowering interest rates, improving liquidity, stabilizing exchange rates, and increasing foreign exchange reserves while promoting businesses to boost production and business and reduce input costs and improve competitiveness, thereby creating an ideal environment for businesses to develop and helping to reduce financial risks. This result is supported by Ceylan (2021), and Yunus (2012).

5. Conclusion and Recommendations

5.1. Conclusion

This paper clarifies the relationship between disclosure and the financial risks of real estate development businesses. The results show that the more companies disclose, the lower their financial risks. In addition, the results also show that the ratio of debt to total assets and the current ratio has a negative impact on financial risk, whereas the size of the business and the age of the business have the same impact on financial risk. Besides, there are variables such as the level of influence of financial leverage, the rate of return of revenue, the rate of return of assets and the basic profitability and inventory turnover, that are not statistically significant. The research results give implications for real estate development company managers to choose the right solutions for their companies to limit risks and to develop in the context of the real estate industry.

5.2. Recommendations

The model results show that to prevent and limit financial risks for real estate companies listed on the Vietnamese stock market, some recommendations are:

Firstly, the disclosure index (DS) has the opposite effect on financial risk. To minimize financial risk, companies must disclose more information about the company, outstanding issues, financial health indicators, and investments during the year in the annual report.

Secondly, companies need to pay attention to the current ratio (CR). The higher this indicator is, the lower the financial risk, so the company needs to try to increase the liquid assets and short-term investments to pay off short-term liabilities due, but also to not let this indicator be too high which will lead to excess working capital - too much compared to the needs of companies.

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