
The Effects of Business Risk on Performance of Listed Firms in The Consumer Products Industry Group in The Stock Exchange of Thailand

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Abstract

Business risks are essential to the operation of every business that inevitably faces them. In this study, we want to study the impact of business risks on performance. The business risks studied consisted: liquidity risk, capital structure risk, and insolvency risk. And performance indicators consisted of 3 variables: Return on Assets (ROA), Return on equity (ROE), and Tobin's Q. The scope of this study was to study the consumer products industry group in the Stock Exchange of Thailand from 1997 – 2021. During the past 25 years, there have been many significant crises that have affected the global economy as well. A total of 29 companies were collected and analyzed using descriptive and inferential statistics analysis. The results of this study revealed that business risk affects only two aspects of operational efficiency: capital structure risk and insolvency risk. But in times of crisis, all three aspects of business risk affect business performance. It shows that in addition to business risks being important, crises are also important to business performance.

Keywords: Business risk, Business performance, Liquidity risk, Capital structure risk, Insolvency risk



Introduction

In running a business, every business faces uncertainties that may arise. It may be something that the company anticipates, or it may be something that cannot be predicted in advance. It may be caused by internal or external companies that will have a negative impact on the company, such as capital, reputation, market share, business profits, etc., by uncertainties arising from external and uncontrollable factors. Not only severely affect our company but the entire global economy as a crisis. In the past several decades, many crises have severely affected companies worldwide, including those operating in Thailand, such as the Asian Financial Crisis, Dot-Com Crisis, the Global Financial Crisis, and Covid-19.

As for the uncertainty arising from internal factors which arise from business operations, it is called business risks. There are various types, such as technical, environmental, and financial aspects, etc. In this study, we will look at the most important business risk, which is financial. It includes liquidity risks, capital risks, and insolvency risks. These three areas cover all major parts of the statement of financial position. If the company knows the risks that the company is about to face and can manage the risks the company from the beginning. There are evaluations and improvements within the company. As a result, the company has increased value and competitiveness as well Hudakova et al., (2018). This study will study only the consumer product industry group listed on the Stock Exchange of Thailand because such industries are related to the production of products that are necessary for daily life. It is an industry that we use

all around because consumer goods are basic goods that the general public must use, which is, therefore, the origin of this study.

Objectives and question of the study

The purpose of this study is to study the impact of business risks on the operating performance of consumer products industry group companies listed on the Stock Exchange of Thailand. During times of crises and without crises in order to know the impact and differences of business risks that occur. Therefore, it is the source of questioning in this research.

Research Question 1: What is the impact of business risks on the company's operating performance?

Research Question 2 : What is the difference in the impact of business risks during crises and without crises on the company's operating performance?

Literature review

Risk

Risk or uncertainty has an adverse effect on the reputation or profitability of a company (Ling & Hoang, 2010 and Koçiu et al., 2015). Risk can be viewed from two perspectives. If we consider it negatively, it would be viewed as a threat that has a negative effect on business, like many researchers. But on a positive note, the risk can be viewed as an operating opportunity that generates higher revenues rather than demerits, Jasiene et al., (2012). Risk not only has fluctuating environment or economic conditions but risks arise from within the company as



well in determining the company's strategy or structure, Zhuang et al., (1998). Miller (1992), that the risks that occur within the industry is a company-specific risks. If a company manages or reduces its risk, it can prevent the loss of its reputation and profits.

Business risk

Business risk arises from the uncertainty that a company faces from its internal operations, Ferliana et al., (2018) or the operations or strategy of a company that varies from company to company, Miller (1992). This reflects the volatility of the company's earnings, Gabriel et al., (1980) and the business's cash flow, Amit & Wernerfelt (1990). Suppose a high cash flow volatility (Low) indicates a high (Low) business risk. If a company has a low business risk, it will result in the company being safe from financial problems, Ferliana et al., (2018). Conversely, if a company faces high business risks, it will have a negative effect on the company. If a company can mitigate business risks, it will positively impact its value. It will help reduce the likelihood of bankruptcy the company and the stability of the company. Business risk management is a competitive business strategy that determines which businesses will survive and grow or which ones will die, Amit & Wernerfelt (1990). According to Graetz & Franks (2016), business risks can be divided into five categories: Social, technical, financial, environmental, and political/law. This research will focus on financial business risks, which focus on three risks that cover the company's financial statement, namely Liquidity Risk, Capital Structure Risk, and Bankruptcy Risk Abeyrathna et al., (2016). Every company's financial

decisions affect the overall business. Gabriel et al., (1980).

Liquidity risk: a company's liquidity refers to its ability to convert from assets to assets. Cash quickly and at a minimal cost, Okeke et al., (2021). Risk arises when assets cannot be sold. Order to cover the debt that will occur. It may be caused by improper asset-liability management policies or processes, Alzoubi, T. (2017). If a company faces higher liabilities than assets, this ratio will be increased. This indicates that the company may be facing liquidity risks. Suppose the company is unable to reduce the company's liquidity risk. In that case, it may have a negative effect on the company in the long run, which is measured from 3 ratios as follows:

- Current ratio: this ratio is often used to measure a company's ability to meet its obligations. If this ratio is low, it indicates that the company is unable to meet its short-term debt obligations, which affects corporate profit Purnomo, A. (2018).
- Quick ratio: this ratio will be similar current ratio. The difference is that this ratio does not calculate inventories because it is viewed as the most liquid current asset. Wijaya et al., (2020)
- Cash ratio: this ratio will only consider the cash portion, which is the most marketable securities and can be used to manage the problem of short-term debt most quickly in the event of an emergency Affandi et al., (2019)

Capital structure risk: is the risk arising from the conversion of debt into capital of the company (Farah & Amin,2021; Subačienė & Villis,2010; Koçiu et al.,2015)



- Total Liabilities / Total Assets ratio: this ratio shows the assets of the company Procured from borrowings or from liabilities. The smaller on this ratio, the better the company's valuation.
- Long-term debt /total assets ratio: this ratio shows the proportion of the company's assets acquired from long-term borrowing or long-term debt.
- Long-term debt/equity ratio: this ratio represents the ratio of long-term debt to equity.
- Equity/total assets ratio: this ratio shows the financial independence of the company. The assets of the company will come from the company's own capital.

Insolvency risk: it is a measure of the ratio between fixed assets and equity and long-term funding of the company, Koçiu et al., (2015).

- Fixed assets to equity ratio: this ratio represents the proportion of the company's fixed assets that have been acquired from equity.
- Fixed assets to long-term debt and equity ratio: this ratio shows the proportion of the company's fixed assets from long-term debt and equity.

Business performance

The concept of operational efficiency is an essential tool in business to use in managing strategies or business tools to achieve business goals. In general, performance measures can be quantitatively and qualitatively defined as the results of performance during a temporary period or for a specific project. There are various ways to measure the efficiency of a business. For example, quantitatively, it may achieve project objectives, quantitatively it may measure the profit and sales of the company, Yıldız & Karakaş (2012). The most popular and

useful is the ratio analysis from the financial statements of composite companies, such as Return on assets (ROA), Return on equity (ROE). Jewell et al., (2011) can measure different performances. Different for each company. In addition, a company's operating performance sometimes has to be measured at market value to determine a company's valuation. Tobin'Q is used to combine market valuation with a company's book value, Salim & Yadav (2012). By Maury & Pajuste. (2005) said to assess the impact of ownership on company operations.

Crisis

There are many crises, each with detrimental effects on everyone. Crisis can be defined as epidemics, natural disasters, terrorism, and wars where significant events have a negative impact on the economy. The emergence of various crises may occur suddenly and unable to let the company cope or be prepared, Hudakova et al., (2018), which has a total of 4 crises that have affected the global economy during the past 25 years, are as follows:

The Asian financial crisis 1997 – 1998

Radelet et al., (1998) described the Asian Crisis as an event that was serious and unprecedented. by affecting the business of many countries in Asia. This is caused by the accumulation of foreign debt too quickly on foreign financing from the liberalization of the financial markets of Indonesia, Korea, Malaysia, the Philippines, and Thailand, where Thailand will focus on borrowing from banks. And financial institutions where the bank has given credits quickly. This leads to the appreciation of the real



exchange rate, which is more than 25 percent, compared to Korea's appreciation of only 12 percent, affecting product prices, and making it impossible to trade with foreign countries. When such a crisis occurs, the government hastily implements policies to resolve and restore the economy to return to normal as soon as possible.

Dot-com crisis 2000 – 2002

The dot-com boom caused the dot-com crisis. who does business by selling products online or on the internet, which has an enormous profit. Therefore, it is of interest to various investors because they believe that the internet will be a new service channel for sales and opens up opportunities for various businesses. Its boom peaked in 1999 and ended in 2000 when the stock prices of tech-related companies at the peak began to drop to an unprecedented low. Some indices had less than halved their value in the late 2000s and continued to decline until 2002, the price of technology stocks dropped more than 80 percent. Moshenskyi, S. Z. (2018).

The global financial crisis 2007 – 2009

The crisis was caused by the collapse of the US real estate business. Due to the US Federal Reserve's low-interest monetary policy, there is a huge demand for real estate. As a result, the price of real estate continues to increase. This results in the stimulation of large amounts of borrowing for speculative purposes. Banks provide housing loans to people with bad credit Hodson & Quaglia (2009). Credit quality

does not meet standards. The lack of prudence in credit approval results in the bank having a high risk of the debtor defaulting. Inevitably affected the stability of many financial institutions during the year 2008. And eventually, the bankruptcy of financial institutions Bleuel, H. H. (2009).

Covid – 19 2019-present

The crisis was caused by the outbreak of a newly discovered disease in 2019 that originated in China and has spread rapidly since the end of 2019. The crisis has affected the tourism sector as a key component of the global economy. Because some countries with tourism account for more than 50% of the country's GDP, such as the Maldives, for example, as well as Thailand, with tourism accounting for 12% of the country's GDP. Many countries, therefore, hurry to find measures to prevent and restore the economy in order to reopen the country as quickly as possible and with the least loss, Jones & Comfort (2020).

Hypothesis development

Based on the review above on each aspect of business risks and operational efficiency, Therefore, the assumptions about the impact of each business risk on the Company's operating performance are summarized as follows:

- H1 : Liquidity risks affect business performance
- H2: Capital structure risks affect business performance
- H3 : Insolvency risks affect business performance

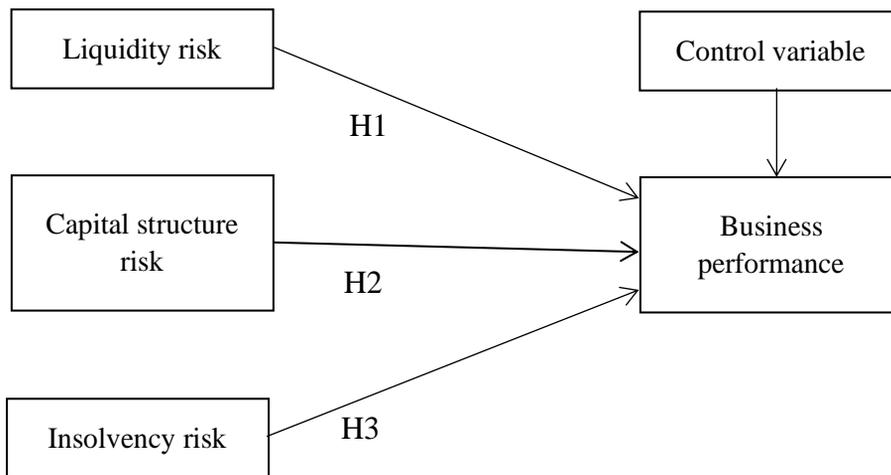


Figure 1 The conceptual framework and hypothesis

Research methodology and data collection

In this study, the researcher wanted to study the impact of business risks on the efficiency of the company's operations. In this section, the researcher describes this research methodology, research tools, data collection, and data analysis in this research will be detailed as follows. In this research, the study was selected as quantitative research using various measurement and analysis methods. To assess business risks and operational efficiency of the company, which uses information from each company's financial statements, including the annual report published on the Stock Exchange of Thailand website. The sample group in this study is the consumer products industrial sector listed on the Stock Exchange of Thailand. In the period from 1997 to 2021, a period of 25 years, a total of 29 companies, for a total of 725 data sets.

Variable

From the literature review of this study, the details of the independent and dependent variables are as follows.

Independent variable

Business risks were measured from 3 aspects, namely liquidity risk, capital structure risk and insolvency risk, which were independent variables in this study. The details are as follows: Koçiu et al., (2015).

- Liquidity risk is measured from the ratio between current assets and current liabilities, consisting of 3 ratios: current ratio, quick ratio, and cash ratio, which has units of measure to times.

- Capital structure risk is measured by the ratio between liabilities and equity, consisting of total liabilities / total assets ratio, equity/total assets ratio, long-term debt /total assets ratio, and long-term debt/equity ratio, which has units of measure to times.



- Insolvency risk is measured from the ratio between fixed assets and equity and long-term funding sources, consisting of Fixed assets to equity ratio and Fixed assets to long-term debt and equity ratio, which has units of measure to times.

Dependent variable

There are three dependent variables used to measure the operational efficiency in this study as follows:

- Return on assets: measures a company's performance in terms of asset profitability. It is calculated from net profit divided by total assets, which has a percent of measurement. Jewell et al., (2011)
- Return on equity: this ratio represents the return on capital generated by the company's equity. It is calculated from net profit divided by equity which has a percent of measurement. Alvi et al., (2015).
- Tobin'Q: evaluate the impact of ownership on company operations. It is calculated from the book value of liabilities and market value of equity divided by the book value of total assets, which has equal units of measurement. Salim & Yadav (2012).

Control Variable

The control variables in this study consisted of 5 factors. The external factors besides business risks that would affect the company's operating performance are as follows: Abebe & Abera (2019).

- Size = Log (total asset)
- Sale growth, measured as current year sales plus previous year sales divided by current year sales, which has a percent of measurement.
- Gross domestic product (GDP) = Yearly gross domestic product

- Interest coverage ratio = profits before interest and tax over the interest expense divided by interest expense, which has the unit of measurement
- Dummy = By specifying the past crises, all four essential events have a dummy variable value of 1 and a dummy variable of 0 during the time when there were no crises.

Data analysis

From the collection of data on the financial statements of each company of the consumer products industry group. The analysis will be processed from the test package, divided into two studies.

Descriptive statistics: it is a test to explain the relationship between pairs of variables which includes maximum, minimum, mean, median and standard deviation. (Kaushik & Mathur 2014).

Inferential statistical: it tests the problem multicollinearity of correlation to predict two or more variables if they are highly correlated. And the test using Panel data for analyzing the base model includes Pool OLS, Fixed effect and Randoms effect in the analysis. In this study, an interaction test was conducted to test the relationship of the variables to the time periods of crises.

Research result and key findings

This section describes the data analysis and findings. The first part describes the sample group that was studied in this study and the next section describes descriptive statistics, Correlation test, Poo OLS, random-effects and fixed-effects which has the following details.



Sample description

The sample in this study is companies in the consumer products industry listed on the Stock Exchange of Thailand (SET) from 1997 to 2021, a total of 25 years, during which time there were many events that affected the global economy. The

important events that are used to measure this time consist of 4 crises, namely the Asian Financial Crisis, Dot-com Crisis, the Global Financial Crisis, and Covid-19. Currently, there are 29 companies totaling 725 sets of data for evaluation studied in this research.

Table 1 Test descriptive statistics

Consumer Goods Industry		Mean	Standard Deviation	Maximum	Minimum
Independent Variable	Current ratio	4.773335	0.561541	216.0566	0.321321
	Quick ratio	2.401762	0.18102	71.37435	0.14906
	Cash ratio	0.802774	0.085788	30.36892	0.000111
	Total liabilities / total assets ratio	0.336303	0.009815	1.921424	0.01152
	Equity/total assets ratio	0.690031	0.01816	9.540379	-0.7159
	Long –term debt /total assets ratio	0.085385	0.005938	1.478868	0
	Long-term debt / equity ratio	0.151685	0.044448	9.026478	-22.9674
	Fixed assets to equity	0.886204	0.053032	13.01448	-17.0152
Dependent Variable	Fixed assets to long term debt and equity ratio	0.606811	0.027361	5.519083	-11.4274
	Return on asset	0.036075	0.004009	0.416948	-0.55109
	Return on Equity	0.040274	0.023866	6.802398	-8.60566
	Tobin' Q	15.37519	0.754551	117	0.06423
Control Variable	Size	8743436	1200349	2.91E+08	156639.3
	Sale growth	0.071688	0.014717	4.919005	-0.99746
	interest coverage ratio	40347.58	25255.51	14567776	-60224.6
	GDP	7872.828	78.46295	10932.1	4810.3

From the descriptive statistics test, it was found that liquidity risk, consisting of current ratio, had mean, maximum and Std. Deviation are equal to 4.7733, 216.0566 and 0.5615, respectively, which was higher than quick ratio and cash ratio. Capital structure risk found that Equity to asset has mean, maximum and Std. Deviation are equal to 0.6900, 9.5403 and 0.0181 respectively, which is higher than other rates in this business risks. And

business risks in the last part is insolvency risk, it was found that fixed asset to equity ratio has Mean, Maximum and Std. Deviation were equal to 0.8862, 13.0148 and 0.0530 respectively, which is higher than Fixed asset to long term debt and equity ratio. As for the dependent variables, mean, maximum and Std. Deviation of Return on asset were 0.0360, 0.4169 and 0.0040, respectively. For Return on Equity, mean, maximum and



Std. Deviation were 0.0402, 6.8023 and 0.0238, respectively. And the last dependent variable, Tobin'Q had mean,

maximum and Std. Deviation of 15.3751, 117 and 0.7545, respectively.

Table 2 Correlation among independent variable

Current ratio	Quick ratio	Cash ratio	Total liabilities / total assets ratio	Equity /total assets ratio	Long-term debt /total assets ratio	Long-term debt / equity ratio	Fixed assets to equity	Fixed assets to long term debt and equity ratio	Size	Sale growth	interest coverage ratio	GDP	
1.0000	0.5381	0.4291	-0.1642	0.1820	-0.0294	-0.0182	-0.0564	-0.0423	-0.0492	-0.0630	0.0020	0.1602	
	1.0000	0.6577	-0.2042	0.2856	-0.0256	-0.0264	-0.0551	-0.0328	-0.0507	-0.0756	0.0221	0.1634	
		1.0000	-0.1624	0.3095	0.0017	-0.0271	-0.0519	-0.0433	-0.0290	-0.0756	-0.0047	0.1028	
			1.0000	0.0168	0.7018	0.0878	0.2923	0.1629	0.1953	0.1304	-0.0420	-0.2340	
				1.0000	0.1210	-0.0159	-0.0414	0.0381	-0.0550	-0.0614	0.0333	0.1837	
					1.0000	0.0171	0.0830	0.1230	0.3047	0.1184	-0.0236	-0.0424	
						1.0000	0.6675	0.0969	0.1981	0.0230	-0.0063	-0.0031	
							1.0000	0.5882	0.2384	-0.0220	-0.0086	-0.0663	
								1.0000	0.1246	-0.0144	-0.0199	0.0014	
									1.0000	0.0077	-0.0005	0.0852	
										1.0000	-0.0141	-0.1706	
											1.0000	0.0083	
												1.0000	
													1.0000

Table 3 Variance inflation factors

Variance Inflation Factors	
Current ratio	1.407
Quick ratio	2.414
Cash ratio	2.089
Total liabilities / total assets ratio	3.614
Equity/total assets ratio	1.237
Long –term debt /total assets ratio	3.037
Long-term debt / equity ratio	2.815
Fixed assets to equity	3.985
Fixed assets to long term debt and equity ratio	1.381
Size	1.265
Sale growth	1.088
interest coverage ratio	1.008
GDP	1.346
Dummy	1.170

From the correlation test of 14 independent variables in this study, it was found that none of the variables had a correlation which was greater than ±0.8 or

was a multicollinearity problem. All 14 variables in this study must be eliminated as before.



Multiple linear regression

Table 4 Pool OLS of return on assets

Dependent variable: Return on asset				
	coefficient	Std. error	t-ratio	p-value
Const	0.1758	0.3321	0.5295	0.5966
Current ratio	-0.0014	0.0006	-2.043	0.0415**
Quick ratio	-0.0016	0.0014	-1.182	0.2375
Cash ratio	0.0048	0.0032	1.498	0.1347
Total liabilities / total assets ratio	-0.0545	0.3417	-0.1597	0.8732
Equity/total assets ratio	-0.0211	0.3319	-0.0635	0.9493
long –term debt /total assets ratio	-0.0929	0.0696	-1.335	0.1824
long-term debt / equity ratio	0.0408	0.0143	2.837	0.0047***
Fixed assets to equity	-0.0524	0.0172	-3.039	0.0025***
Fixed assets to long term debt and equity ratio	0.0454	0.0076	5.951	4.59e-09***
Size	1.0311e-09	1.4065e-010	7.331	7.57e-013***
Sale growth	0.0398	0.0100	3.967	8.17e-05***
interest coverage ratio	1.2618e-09	5.3732e-09	0.2348	0.8144
GDP	-1.0835e-05	2.0473e-06	-5.293	1.70e-07***
Dummy	0.0315	0.3322	0.0950	0.9243
Dummy_ Current ratio	0.0009	0.0007	1.306	0.1920
Dummy_ Quick ratio	-0.0081	0.0031	-2.606	0.0094***
Dummy_ Cash ratio	0.0040	0.0053	0.7526	0.4520
Dummy_ Total liabilities / total assets ratio	-0.0971	0.3437	-0.2827	0.7775
Dummy_ Equity/total assets ratio	0.0110	0.3320	0.0332	0.9735
Dummy_ long –term debt /total assets ratio	0.0530	0.0822	0.6445	0.5195
Dummy_ long-term debt / equity ratio	-0.0382	0.0184	-2.072	0.0387**
Dummy_ Fixed assets to equity	0.0403	0.0180	2.232	0.0260**
Dummy_ Fixed assets to long term debt and equity ratio	-0.0671	0.0145	-4.606	5.03e-06***

*R-squared: 0.3329**P-value: 1.25e-38**Adjusted R-squared: 0.3069*

**Table 5** Fixed effects of return on assets

Fixed effects estimator _Dependent variable: Return on asset				
	coefficient	Std. error	t-ratio	p-value
Const	0.0798	0.3135	0.2546	0.7991
Current ratio	-0.0003	0.0006	-0.5329	0.5943
Quick ratio	-0.0008	0.0013	-0.6395	0.5227
Cash ratio	0.0003	0.0031	0.1122	0.9107
Total liabilities / total assets ratio	0.0419	0.3258	0.1287	0.8976
Equity/total assets ratio	0.0953	0.3121	0.3055	0.7601
long –term debt /total assets ratio	-0.1022	0.0694	-1.471	0.1418
long-term debt / equity ratio	0.0425	0.0156	2.724	0.0067***
Fixed assets to equity	-0.0548	0.0188	-2.901	0.0039***
Fixed assets to long term debt and equity ratio	0.0461	0.0075	6.080	2.22e-09***
Size	6.8818e-010	2.1575e-010	3.190	0.0015***
Sale growth	0.0379	0.0095	3.986	7.60e-05***
interest coverage ratio	-1.0326e-09	5.1023e-09	-0.2024	0.8397
GDP	-1.2176e-05	1.9862e-06	-6.131	1.65e-09***
Dummy	0.1240	0.3125	0.3968	0.6917
Dummy_ Current ratio	0.0002	0.0007	0.3387	0.7350
Dummy_ Quick ratio	-0.0050	0.0029	-1.711	0.0877*
Dummy_ Cash ratio	0.0028	0.0049	0.5657	0.5718
Dummy_ Total liabilities / total assets ratio	-0.1892	0.3243	-0.5834	0.5598
Dummy_ Equity/total assets ratio	-0.0862	0.3123	-0.2760	0.7826
Dummy_ long –term debt /total assets ratio	0.0741	0.0787	0.9424	0.3464
Dummy_ long-term debt / equity ratio	-0.0440	0.0187	-2.351	0.0191**
Dummy_ Fixed assets to equity	0.0445	0.0194	2.291	0.0223**
Dummy_ Fixed assets to long term debt and equity ratio	-0.0795	0.0144	-5.513	5.37e-08***

F (27, 563) = 5.1990, *P*-value: 4.2955e-015

Table 6 Random effects of return on assets

Random effects estimator_Dependent variable: Return on asset				
	coefficient	Std. error	t-ratio	p-value
Const	0.1111	0.3198	0.3475	0.7283
Current ratio	-0.0008	0.0006	-1.300	0.1941
Quick ratio	-0.0014	0.0013	-1.039	0.2993
Cash ratio	0.0028	0.0031	0.8972	0.3700
Total liabilities / total assets ratio	0.0112	0.3303	0.0339	0.9729
Equity/total assets ratio	0.0505	0.3191	0.1582	0.8743
long –term debt /total assets ratio	-0.1030	0.0689	-1.496	0.1353
long-term debt / equity ratio	0.0413	0.0148	2.779	0.0056***
Fixed assets to equity	-0.0533	0.0179	-2.978	0.0030***
Fixed assets to long term debt and equity ratio	0.0462	0.0075	6.145	1.48e-09***
Size	9.4812e-010	1.6698e-010	5.678	2.14e-08***
Sale growth	0.0385	0.0096	3.979	7.78e-05***
interest coverage ratio	5.4953e-011	5.2051e-09	0.0105	0.9916
GDP	-1.1481e-05	1.9883e-06	-5.774	1.25e-08***
Dummy	0.0939	0.3195	0.2941	0.7687
Dummy_ Current ratio	0.0006	0.0007	0.8608	0.3897
Dummy_ Quick ratio	-0.0068	0.0030	-2.275	0.0232**
Dummy_ Cash ratio	0.0035	0.0051	0.6985	0.4851
Dummy_ Total liabilities / total assets ratio	-0.1594	0.3308	-0.4819	0.6300
Dummy_ Equity/total assets ratio	-0.0527	0.3192	-0.1652	0.8688
Dummy_ long –term debt /total assets ratio	0.0689	0.0796	0.8655	0.3871
Dummy_ long-term debt / equity ratio	-0.0402	0.0184	-2.179	0.0297**
Dummy_ Fixed assets to equity	0.0418	0.0186	2.248	0.0249**
Dummy_ Fixed assets to long term debt and equity ratio	-0.0733	0.0143	-5.114	4.28e-07***

Hausman test statistic:

$$H = 71.1089 \text{ with } P\text{-value} = \text{prob}(\text{chi-square}(23) > 71.1089) = 81893e-007$$

In the regression equation test of all three tests, consisting of Pool OLS, Fixed effects, and Random effects. It was found that the P-value of Hausman test statistic for Random effects < 0.05 or was equal to 8.18936e-007. Therefore, we turned to consider fixed effects with P-value < 0.05 or were equal to 4.29556e-015. Therefore, Fixed effects estimator was chosen. In showing the results of the test of the impact of business risks on operational efficiency measured from return on assets, it was found that liquidity risk was not statistically significant on return on assets.

But it was found that capital structure risk measured from long-term debt to equity was statistically significant at 0.0067***. And insolvency risk measured from fixed assets to equity and fixed assets to long-term debt and equity ratio was statistically significant at 0.0039** * and 2.22e-09***, respectively. In the interaction effect test, it was found that the dummy was associated with business risks in all three aspects. Liquidity risk evaluated from quick ratio was statistically significant at 0.0877*. Capital structure risk measured from long-term debt to



equity was statistically significant at 0.0191**. And the last business risks were and Insolvency risk measured from fixed assets to equity and fixed assets to long-

term debt and equity ratio were statistically significant at 0.0223* and 5.37e-08***, respectively.

Table 7 Pool OLS of return on equity

Dependent variable: Return on equity				
	coefficient	Std. error	t-ratio	p-value
Const	-0.0394	1.7043	-0.0231	0.9815
Current ratio	-0.0007	0.0035	-0.2231	0.8235
Quick ratio	-0.0029	0.0072	-0.4142	0.6789
Cash ratio	0.0117	0.0164	0.7148	0.4750
Total liabilities / total assets ratio	0.3323	1.7539	0.1895	0.8498
Equity/total assets ratio	0.0076	1.7036	0.0044	0.9964
long –term debt /total assets ratio	-0.8930	0.3572	-2.500	0.0127**
long-term debt / equity ratio	-0.2740	0.0738	-3.711	0.0002***
Fixed assets to equity	0.4025	0.0885	4.547	6.59e-06***
Fixed assets to long term debt and equity ratio	-0.3333	0.0391	-8.509	1.45e-016***
Size	2.6763e-09	7.2183e-010	3.708	0.0002***
Sale growth	-0.0070	0.0515	-0.1358	0.8921
interest coverage ratio	1.0992e-09	2.7575e-08	0.0398	0.9682
GDP	-3.5340e-06	1.0507e-05	-0.3363	0.7367
Dummy	0.5198	1.7053	0.3048	0.7606
Dummy_ Current ratio	-0.0004	0.0039	-0.1271	0.8989
Dummy_ Quick ratio	-0.0181	0.0160	-1.133	0.2576
Dummy_ Cash ratio	0.0082	0.0274	0.3003	0.7640
Dummy_ Total liabilities / total assets ratio	-0.1695	1.7639	-0.0960	0.9235
Dummy_ Equity/total assets ratio	-0.0907	1.7039	-0.0532	0.9576
Dummy_ long –term debt /total assets ratio	0.6745	0.4221	1.598	0.1106
Dummy_ long-term debt / equity ratio	0.3820	0.0946	4.037	6.12e-05***
Dummy_ Fixed assets to equity	-0.8177	0.0927	-8.814	1.35e-017***
Dummy_ Fixed assets to long term debt and equity ratio	0.2521	0.0748	3.368	0.0008***

R-squared: 0.5041

P-value: 9.10e-75

Adjusted R-squared: 0.4848

**Table 8** Fixed effects of return on equity

Fixed effects estimator _Dependent variable: Return on equity				
	coefficient	Std. error	t-ratio	p-value
Const	-0.3282	1.7578	-0.1868	0.8519
Current ratio	0.0014	0.0037	0.3827	0.7021
Quick ratio	-0.0017	0.0075	-0.2288	0.8191
Cash ratio	0.0023	0.0175	0.1317	0.8953
Total liabilities / total assets ratio	0.7120	1.8268	0.3898	0.6968
Equity/total assets ratio	0.3536	1.7496	0.2021	0.8399
long –term debt /total assets ratio	-0.9921	0.3895	-2.547	0.0111**
long-term debt / equity ratio	-0.2229	0.0875	-2.547	0.0111**
Fixed assets to equity	0.3401	0.1058	3.213	0.0014***
Fixed assets to long term debt and equity ratio	-0.3206	0.0425	-7.540	1.89e-013***
Size	1.1434e-09	1.2093e-09	0.9455	0.3448
Sale growth	-0.0114	0.0533	-0.2147	0.8301
interest coverage ratio	-1.3252e-09	2.8600e-08	-0.0463	0.9631
GDP	-5.1408e-06	1.1133e-05	-0.4617	0.6444
Dummy	0.7922	1.7521	0.4521	0.6513
Dummy_ Current ratio	-0.0020	0.0039	-0.5060	0.6131
Dummy_ Quick ratio	-0.0094	0.0165	-0.5695	0.5692
Dummy_ Cash ratio	0.0040	0.0278	0.1439	0.8856
Dummy_ Total liabilities / total assets ratio	-0.4044	1.8181	-0.2224	0.8241
Dummy_ Equity/total assets ratio	-0.3978	1.7508	-0.2272	0.8203
Dummy_ long –term debt /total assets ratio	0.5935	0.4411	1.345	0.1790
Dummy_ long-term debt / equity ratio	0.3221	0.1049	3.068	0.0023***
Dummy_ Fixed assets to equity	-0.7568	0.1088	-6.951	1.01e-011***
Dummy_ Fixed assets to long term debt and equity ratio	0.1853	0.0808	2.292	0.0223**

F (27, 563) = 0.9855, P-value: 0.4869

Table 9 Random effects of return on equity

Random effects estimator_Dependent variable: Return on equity				
	coefficient	Std. error	t-ratio	p-value
Const	-0.0394	1.7043	-0.0231	0.9815
Current ratio	-0.0007	0.0035	-0.2231	0.8235
Quick ratio	-0.0029	0.0072	-0.4142	0.6789
Cash ratio	0.0117	0.0164	0.7148	0.4750
Total liabilities / total assets ratio	0.3323	1.7539	0.1895	0.8498
Equity/total assets ratio	0.0076	1.7036	0.0044	0.9964
long –term debt /total assets ratio	-0.8930	0.3572	-2.500	0.0127**
long-term debt / equity ratio	-0.2740	0.0738	-3.711	0.0002***
Fixed assets to equity	0.4025	0.0885	4.547	6.59e-06***
Fixed assets to long term debt and equity ratio	-0.3333	0.0391	-8.509	1.45e-016***
Size	2.6763e-09	7.2183e-010	3.708	0.0002***
Sale growth	-0.0070	0.0515	-0.1358	0.8921
interest coverage ratio	1.0992e-09	2.7575e-08	0.0398	0.9682
GDP	-3.5340e-06	1.0507e-05	-0.3363	0.7367
Dummy	0.5198	1.7053	0.3048	0.7606
Dummy_ Current ratio	-0.0004	0.0039	-0.1271	0.8989
Dummy_ Quick ratio	-0.0181	0.0160	-1.133	0.2576
Dummy_ Cash ratio	0.0082	0.0274	0.3003	0.7640
Dummy_ Total liabilities / total assets ratio	-0.1695	1.7639	-0.0960	0.9235
Dummy_ Equity/total assets ratio	-0.0907	1.7039	-0.0532	0.9576
Dummy_ long –term debt /total assets ratio	0.6745	0.4221	1.598	0.1106
Dummy_ long-term debt / equity ratio	0.3820	0.0946	4.037	6.12e-05***
Dummy_ Fixed assets to equity	-0.8177	0.0927	-8.814	1.35e-017***
Dummy_ Fixed assets to long term debt and equity ratio	0.2521	0.0748	3.368	0.0008

Hausman test statistic:

$$H = 26.7536 \text{ with } P\text{-value} = \text{prob}(\text{chi-square}(23)) > 26.7536 = 0.2665$$

In testing the regression equations of all three tests, consisting of Pool OLS, Fixed effects and Random effects. It was found that the P-value of the Hausman test statistic in the part of Random effects > 0.05 or was equal to 0.2665. Therefore, the test was chosen by randoms effects estimator method. To show the impact of business risks on operational efficiency measured from return on equity. It was found that Liquidity risk had no effect on return on equity. But capital structure risk that, measured from long-term debt to assets and long-term debt to equity, were found that the statistical significance

was 0.0127** and 0.0002***, respectively. As for insolvency risk, it was found that fixed assets to equity and fixed assets to long-term debt and equity ratio was statistically significant equal to 6.59e-016*** and 1.45e-016***, respectively. In the interaction effect test, it was found that the dummy was associated with two aspects of business risks, namely Capital structure risk, but the only measured, long-term debt to equity, was statistically significant 6.12e-05**. And insolvency risk was equally significant for both variables at 1.35e-017*** and 0.0008***, respectively.

**Table 10** Pool OLS of Tobin'Q

Dependent variable: Tobin Q				
	coefficient	Std. error	t-ratio	p-value
Const	99.4774	69.5400	1.431	0.1531
Current ratio	-0.1622	0.1454	-1.116	0.2650
Quick ratio	0.3108	0.2953	1.053	0.2929
Cash ratio	-1.0519	0.6719	-1.565	0.1180
Total liabilities / total assets ratio	-108.104	71.5617	-1.511	0.1314
Equity/total assets ratio	-78.8454	69.5101	-1.134	0.2571
long –term debt /total assets ratio	17.8196	14.5760	1.223	0.2220
long-term debt / equity ratio	4.8955	3.0127	1.625	0.1047
Fixed assets to equity	-6.0684	3.6120	-1.680	0.0935*
Fixed assets to long term debt and equity ratio	1.2755	1.5983	0.7980	0.4252
Size	4.4643e-08	2.9451e-08	1.516	0.1301
Sale growth	1.6329	2.1048	0.7758	0.4382
interest coverage ratio	2.0924e-06	1.1251e-06	1.860	0.0634*
GDP	0.0013	0.0004	3.042	0.0025***
Dummy	-98.0142	69.5807	-1.409	0.1595
Dummy_ Current ratio	0.1144	0.1597	0.7166	0.4739
Dummy_ Quick ratio	-0.1395	0.6534	-0.2136	0.8309
Dummy_ Cash ratio	0.6137	1.1215	0.5472	0.5844
Dummy_ Total liabilities / total assets ratio	113.849	71.9716	1.582	0.1142
Dummy_ Equity/total assets ratio	78.3174	69.5211	1.127	0.2604
Dummy_ long –term debt /total assets ratio	-34.3056	17.2237	-1.992	0.0469**
Dummy_ long-term debt / equity ratio	-6.5663	3.8611	-1.701	0.0895*
Dummy_ Fixed assets to equity	5.2308	3.7853	1.382	0.1675
Dummy_ Fixed assets to long term debt and equity ratio	-1.6228	3.0539	-0.5314	0.5954

*R-squared : 0.1742**P-value: 3.37e-014**Adjusted R-squared: 0.1420*

**Table 11** Fixed effects of Tobin'Q

Fixed effects estimator _Dependent variable: Tobin Q				
	coefficient	Std. error	t-ratio	p-value
Const	-41.1795	50.8306	-0.8101	0.4182
Current ratio	-0.1098	0.1084	-1.013	0.3117
Quick ratio	0.4518	0.2190	2.063	0.0396**
Cash ratio	-0.5667	0.5071	-1.118	0.2642
Total liabilities / total assets ratio	39.6266	52.8247	0.7502	0.4535
Equity/total assets ratio	50.2341	50.5937	0.9929	0.3212
long –term debt /total assets ratio	17.2043	11.2636	1.527	0.1272
long-term debt / equity ratio	4.0941	2.5304	1.618	0.1062
Fixed assets to equity	-5.0579	3.0615	-1.652	0.0991*
Fixed assets to long term debt and equity ratio	0.9841	1.2296	0.8004	0.4238
Size	3.0722e-08	3.4971e-08	0.8785	0.3800
Sale growth	0.3949	1.5430	0.2560	0.7981
interest coverage ratio	9.9991e-07	8.2704e-07	1.209	0.2272
GDP	0.0018	0.0003	5.644	2.63e-08***
Dummy	35.0007	50.6649	0.6908	0.4900
Dummy_ Current ratio	0.0964	0.1153	0.8361	0.4034
Dummy_ Quick ratio	-0.2369	0.4791	-0.4944	0.6212
Dummy_ Cash ratio	0.6853	0.8066	0.8496	0.3959
Dummy_ Total liabilities / total assets ratio	-12.6309	52.5757	-0.2402	0.8102
Dummy_ Equity/total assets ratio	-53.2112	50.6272	-1.051	0.2937
Dummy_ long –term debt /total assets ratio	-40.0174	12.7570	-3.137	0.0018***
Dummy_ long-term debt / equity ratio	-4.3113	3.0357	-1.420	0.1561
Dummy_ Fixed assets to equity	4.6426	3.1483	1.475	0.1409
Dummy_ Fixed assets to long term debt and equity ratio	-5.0176	2.3380	-2.146	0.0323**

$F(27, 563) = 22.6234, P\text{-value: } 1.4443e-072$

Table 12 Random effects of Tobin'Q

Random effects estimator_Dependent variable: Tobin Q				
	coefficient	Std. error	t-ratio	p-value
Const	-26.7906	51.7528	-0.5177	0.6049
Current ratio	-0.1126	0.1102	-1.021	0.3076
Quick ratio	0.4245	0.2225	1.907	0.0570*
Cash ratio	-0.5963	0.5148	-1.158	0.2472
Total liabilities / total assets ratio	22.9486	53.6696	0.4276	0.6691
Equity/total assets ratio	37.0044	51.5181	0.7183	0.4729
long –term debt /total assets ratio	17.8593	11.3946	1.567	0.1176
long-term debt / equity ratio	3.9010	2.5393	1.536	0.1250
Fixed assets to equity	-4.8400	3.0700	-1.577	0.1154
Fixed assets to long term debt and equity ratio	0.9263	1.2440	0.7447	0.4568
Size	3.3049e-08	3.3349e-08	0.9910	0.3221
Sale growth	0.5834	1.5686	0.3719	0.7101
interest coverage ratio	1.1128e-06	8.4213e-07	1.321	0.1868
GDP	0.0017	0.0003	5.373	1.12e-07***
Dummy	21.3291	51.5862	0.4135	0.6794
Dummy_ Current ratio	0.0990	0.1175	0.8422	0.4000
Dummy_ Quick ratio	-0.2778	0.4869	-0.5706	0.5685
Dummy_ Cash ratio	0.7578	0.8216	0.9223	0.3568
Dummy_ Total liabilities / total assets ratio	0.4632	53.5028	0.0086	0.9931
Dummy_ Equity/total assets ratio	-39.7179	51.5482	-0.7705	0.4413
Dummy_ long –term debt /total assets ratio	-38.6426	12.9505	-2.984	0.0030***
Dummy_ long-term debt / equity ratio	-4.3383	3.0684	-1.414	0.1579
Dummy_ Fixed assets to equity	4.4273	3.1641	1.399	0.1623
Dummy_ Fixed assets to long term debt and equity ratio	-4.4017	2.3642	-1.862	0.0631*

Hausman test statistic:

$$H = 52.1083 \text{ with } P\text{-value} = \text{prob}(\text{chi-square}(23) > 52.1083) = 0.0004$$

The regression equation test of all three tests consisted of Pool OLS, Fixed effects and Random effects. It was found that the P-value of the Hausman test statistic in the part of Random effects < 0.05 or was equal to 0.00048. Therefore, we turned to consider the part of Fixed effects with P-value < 0.05 or were equal to 1.44431e-072. Fixed effect estimator was therefore selected. To show the impact of business risks on operational efficiency measured by Tobin'Q, Liquidity risk measured by quick ratio was found to be statistically

significant at 0.0396**. And insolvency risk measured from fixed assets to equity was statistically significant at 0.0991*. In the interaction effect test, it was found that the dummy was related to two aspects of business risks, namely capital structure risk, that only measured from long-term debt to equity was statistically significant 0.0018***. And insolvency risk measured from fixed assets to long-term debt and equity ratio is statistically significant at 0.0323**.



Hypothesis Testing

In this study, a total of three assumptions were formulated related to testing the impact of business risks on operational efficiency. Dividing business risks into three aspects, which are H1 is about liquidity risk, H2 is about capital structure risk, and H3 is about insolvency risk. All three assumptions were accepted by the research results.

Conclusion and discussion

This study aimed to study the impact of business risks on the operational efficiency of consumer products industry group companies listed on the Stock Exchange of Thailand. In this research, we will talk about three aspects of business risks, consisting of the first is Liquidity risk which is measured by current ratio, quick ratio and cash ratio. The second business risks are capital structure risk which is measured by total liabilities to total assets ratio, equity to total assets ratio, long-term debt to total assets ratio and long-term debt to equity ratio. And the last business risk is insolvency risk, which is measured from fixed assets to equity ratio and fixed assets to long-term debt and equity ratio. A company's operating efficiency is assessed from three ratios that are used globally: return on assets, return on equity, and Tobin'Q. In this test, there are five control variables: size, sale growth, interest coverage ratio, GDP, and dummy.

The results of this study revealed that the impact of business risks on a company's profitability differed between times of crisis and non-crisis. The results of this

study found that during the absence of problems, business risks affect the profitability of companies in only two aspects, namely capital structure risk and insolvency risk. Liquidity risk does not affect the performance of operational of the company. This is different during times of crisis. It was found that all three aspects of business risks affect the efficiency of the company's operations. It shows that in addition to business risks affecting operational efficiency, on the other hand, the crisis is more or less related to the company.

From this study, it can be used as a guideline for the management of the executives regarding policy and strategy formulation in the company's operations in line with risk management and risk prevention. To reduce the negative impact that will affect the company during a crisis and without a crisis.

Limitations and future research

The limitation of this study is that only business risks are studied, but many other business risks may have different impacts on a company's operating performance. In this study, only the consumer products industry group was studied. Which business operations are different in every industry, and it may be affected differently. In the future, this research may study other industries. To know the effects that are the same or different from the industry in this study. To be able to adapt to the industry of those who are interested and able to solve problems on the spot and in a timely manner. To reduce the negative impact that may occur if the management does not have the policy to prevent various risks in advance.



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