



Financial & Non-Financial Determinants on Grover's Financial Difficulty Model

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Abstract: *BPS data showed that IDXNONCYC stocks dominated by the food & beverage companies were the most affected sector by the pandemic. This research aims to investigate the effects of financial & non-financial determinants, namely leverage (DER), liquidity (CR), & company's age on Grover's financial difficulty model of IDXNONCYC companies for the 2020-2022 period affected by pandemic with company's size as a control variable. The research population is all primary consumer goods (IDXNONCYC) companies listed on the official IDX website for the 2020-2022 period, totaling 375 company-year data as objects. A sample of 237 observations were selected using purposive technique. The stages of research analysis are descriptive statistics, classical assumption & multiple regression testing. The data was analyzed through STATA software. This research provides evidence that DER, CR & company's age have a strong effect on financial difficulty. All hypotheses of this research are accepted. This research pioneered the investigation of the effects of financial and non-financial determinants on Grover's financial difficulty model. Theoretically, this research has implications for the development of financial difficulty determinants theory. Practically, this research has implications for investor decision-making in the capital market and companies to prevent bankruptcy.*

Keywords: *Company's age; Grover's financial difficulty model; Leverage; Liquidity; Primary consumer goods*

1. Introduction

Bankruptcy is undesirable for any company nor investor from the accounting point of view. Before entering the bankruptcy state, the company is first at the state of deteriorating financial difficulties (Tyahya et al., 2021). Financial difficulty is a phenomenon where the company experiences a decline in financial performance to the point of being unable to pay its debts (Gunawan et al., 2020). Thus, the company will not experience bankruptcy if it have not experienced financial difficulty at all. Early prevention of financial difficulty symptoms is certainly an important aspect, especially in the midst of the economic crisis due to the COVID-19 pandemic (Aminatuzzuhro et al., 2024). The unexpected existence of the COVID-19 pandemic is a major challenge for the company actors around the world in various types of industries, including the IDX non-cyclical or primary consumer goods sector as evidenced by the phenomena as follows. The result of Badan Pusat Statistik (BPS) data showed that IDXNONCYC stocks dominated by the food & beverage companies were the most affected sector by the COVID pandemic (Nurhaliza, 2021). Moreover, well-known

hypermarkets that fulfill people's primary needs such as Transmart (Jannah, 2023), Giant (Berita Depok, 2021), Hypermart (Maghiszha, 2024a) & Ranch market (Maghiszha, 2024b) has experienced financial difficulty and had to close their outlets.

This phenomenon is related with the statements of Bank Indonesia's Governor that the number of digital-based transactions has increased significantly during the pandemic, as people have spent most of their time at home. The remarkable growth of electronic commerce which has emerged as a key driver of the digital economy in Indonesia is undoubtedly influenced by the COVID-19 pandemic (Hidranto, 2021). Even when the pandemic began to subside in 2022, data showed that household consumption growth at 4,93% had not fully recovered to pre-pandemic levels at 5,04% (Badan Pusat Statistik, 2020). Previous phenomenon showed that food and beverage companies included in IDXNONCYC as main contributor of Indonesia's GDP, according to Indonesian Ministry of Industry with household consumption reached 54,4% of overall GDP, however according to BPS are not automatically immune from financial difficulty phenomena (Figri, 2022; Sutrisno, 2021). Thus, detecting symptoms of the financial difficulty phenomenon on primary consumer goods or non-cyclical company is crucial. The determination of financial difficulty can be measured using financial and non-financial determinants, which is evident from following findings.

First, this research investigates the financial determinant of financial difficulty, namely leverage ratio proxied by DER. The leverage ratio reflects how dependent the company is on debt to finance its operational activities (Budiarto & Putuyana, 2018; Idawati & Wardhana, 2021; Pangesti et al., 2023). Leverage ratio is crucial, having a strong effect on financial difficulty either positively (Amanda & Tasman, 2019; Anisa et al., 2023; Bukhori et al., 2022; Dini et al., 2021; Idawati & Wardhana, 2021; Kebede et al., 2024; Naibaho & Natasya, 2023; Pranita & Kristanti, 2020; Sari & Hartono, 2020) or negatively (Erwan et al., 2023; Fitri & Dillak, 2020; Gunawan et al., 2020; Maximillian & Septina, 2022; Naibaho & Natasya, 2023; Ramadani & Ratmono, 2023; Rizkyana et al., 2021; Sari & Hartono, 2020; Sarina et al., 2020). Previous studies are inconsistent with the findings of (Ayinaddis & Tegegne, 2023; Dini et al., 2021; Dirman, 2020; Finishtya, 2019; Mubarrok et al., 2020; Muzharoatiningsih & Hartono, 2022; Myllariza, 2021; Pranita & Kristanti, 2020; Putri & Kautsar, 2023; Stefanie et al., 2020; Yuriani et al., 2020) that leverage ratio is not effective on financial difficulty.

Second, this research investigates another financial determinant of financial difficulty, namely liquidity ratio proxied by CR. The more the company has a high liquidity ratio, the less it will experience financial difficulties because its current assets are sufficient to cover the company's current debts timely (Idawati & Wardhana, 2021). Liquidity ratio is crucial, having a strong effect on financial difficulty either negatively (Anisa et al., 2023; Bukhori et al., 2022; Kebede et al., 2024; Naibaho & Natasya, 2023; Ramadani & Ratmono, 2023) or positively (Ayinaddis & Tegegne, 2023; Maximillian & Septina, 2022; Rochendi & Nuryaman, 2022; Sarina et al., 2020; Stefanie et al., 2020; Yuriani et al., 2020). Inconsistencies were found in (Amanda & Tasman, 2019; Dini et al., 2021; Dirman, 2020; Idawati & Wardhana, 2021; Mubarrok et al., 2020; Muzharoatiningsih & Hartono, 2022;

Myllariza, 2021; Pranita & Kristanti, 2020; Putri & Kautsar, 2023; Rizkyana et al., 2021) with their findings that liquidity ratio is not effective on financial difficulty.

Third, considering another aspect, this research also investigates the non-financial determinant of financial difficulty, which is the company's age. Most of researchers from the previous studies did not consider to furtherly investigate the effect of the company's age on financial difficulty, though it potentially has a strong effect which is evident from the following findings. Each young & mature company has a different financial difficulty problem, while the financial difficulty of young company is due to internal shortcomings, the mature companies are more distressed due to fierce competition accompanied by the economic slowdown (Kücher et al., 2020). The company's age is crucial, having a strong effect on financial difficulty, either negatively (Galant et al., 2023; Isayas, 2021) or positively (Rahmadi et al., 2023; Wang & Guedes, 2024). Inconsistency was found in (Sarker & Hossain, 2023), proving that the company's age is not effective on financial difficulty.

Highlighting these inconsistent phenomena and previous research findings became the motivation behind this research to furtherly investigate the determinants of financial difficulty. From the studies mentioned previously, most of researchers did not investigate the non-financial determinant of financial difficulty, especially company's age as their main variable. The focus of many studies is on companies that are already in the final states of financial difficulty or even bankruptcy, rather than on detecting symptoms of financial difficulty before the bankruptcy itself occurs (Bukhori et al., 2022). The majority of researchers also applied the most popular financial difficulty measurement, namely the Altman model (Anisa et al., 2023; Awward & Razia, 2021; Dirman, 2020; Erwan et al., 2023; Finishtya, 2019; Galant et al., 2023; Kebede et al., 2024; Maximillian & Septina, 2022; Sarker & Hossain, 2023). Therefore, this research seeks to close the existing gap by investigating the financial difficulty state before bankruptcy, applying a measurement model that differs from previous studies, namely Grover, as the strongest financial difficulty predictor compared to Altman & Springate (Aviantara, 2023), even the strongest of any other model variations (Arini, 2021; Hertina et al., 2020; Prasertianingtias & Kusumowati, 2019; Utari, 2021). The novelty of this research lies in using different measurements as an improvement effort based on the advice of previous researchers (Idawati & Wardhana, 2021; Rizkyana et al., 2021; Septiani et al., 2021). Therefore, this research aims to investigate the effects of financial & non-financial determinants, namely leverage (DER), liquidity (CR) & company's age on Grover's financial difficulty model of IDXNONCYC companies for the 2020-2022 period affected by pandemic with company's size as a control variable. The urgency of this research is crucial because it gives an early signal of bankruptcy for IDXNONCYC companies that contributes greatly to the Indonesian economy, but still are not spared from the financial difficulty phenomenon. The contribution of this research theoretically has implications for the development of the financial difficulty theory that could predict financial difficulty conditions at the state before the company goes bankrupt. Thus, this research will practically help stakeholders to take early corrective actions so that

the companies can continue to operate without experiencing further symptoms of financial difficulty.

2. Literature Review & Hypotheses development

2.1. Signal Theory

Spence as the originator of signal theory in 1973 made a statement that company considers valuable employees as a good signal for the company because they have more potential of resulting good performances in the future. Signal theory provides an actual picture related to financial statements & company's continuity (Naibaho & Natasya, 2023). The concept of signal theory reflects the company's effective communication to recipients of its financial statements or interested parties (Tyahya et al., 2021). The company's manager chooses to provide reliable signals so that asymmetric information does not arise (Widianingsih & Kohardinata, 2024). Companies in healthy conditions can provide good signals for investors as a stimulant for capital investment to prevent financial difficulties (Idawati & Wardhana, 2021). Bad signals related to symptoms of financial difficulty can also be given to users of company's financial reports (Rahmat, 2020).

2.2. Financial Difficulty

The phenomenon of financial difficulty reflects a poor financial condition of the company before bankruptcy (Tyahya et al., 2021). Financial difficulty as a signal of bankruptcy must be considered by company's managers (Christa & Mukti, 2023). The financial difficulty phenomenon includes bankruptcy from the company's failure to pay its debts (Aminatuzzuhro et al., 2024; Hertina et al., 2020), especially its short-term debt (Rahmat, 2020). This makes the financial difficulty phenomenon as the main cause of company's failure (Isayas, 2021). Most researchers use the most popular financial difficulty predictor, namely the Altman's model (Anisa et al., 2023; Awwad & Razia, 2021; Dirman, 2020; Erwan et al., 2023; Finishtya, 2019; Galant et al., 2023; Kebede et al., 2024; Maximillian & Septina, 2022; Sarker & Hossain, 2023). This research uses a different financial difficulty predictor from the previous studies, namely Grover's model as the dependent variable. The Grover model was tested by Jeffrey Grover in 2001 with the addition of 13 new financial ratios (Christa & Mukti, 2023) & is valued as a relevant model to date on various companies in different sectors (Filianti & Septiarini, 2019). In the transportation & logistics sector, proven that Grover, Altman & Springate as the strongest financial difficulty predictor than the Beneish & Dechow model (Aviantara, 2023). In the industrial sector, proven that the Grover's model as the strongest financial difficulty predictor on international retailers compared to Taffler, Springate & Altman (Arini, 2021). In the agricultural sector, proven that the Grover's model as the strongest financial difficulty predictor compared to Zmijewski, Springate & Altman (Prasetianingias & Kusumowati, 2019). In the mining sector, proven that the Grover & Zmijewski model as the strongest financial difficulty predictor compared to Springate & Altman (Hertina et al., 2020). In the banking sector, proven that the Grover's model as the strongest financial difficulty predictor than Zmijewski (Utari, 2021).

2.3. Leverage

The leverage ratio reflects the company's dependency on debt that leads to financial difficulties. If the company's financing is more dependent on debt to finance its operational activities, the company will be more at risk of experiencing financial difficulties due to potential debt default (Anisa et al., 2023; Gunawan et al., 2020; Idawati & Wardhana, 2021). A high leverage ratio reflects the company's condition is increasingly burdened by a lot of debt and maturity, characterized by high interest payments (Isayas, 2021). Following research proved that leverage ratio is crucial, having a strong positive effect on financial difficulty (Amanda & Tasman, 2019; Anisa et al., 2023; Bukhori et al., 2022; Idawati & Wardhana, 2021; Kebede et al., 2024; Naibaho & Natasya, 2023; Pranita & Kristanti, 2020; Sari & Hartono, 2020). From the previous findings, the hypothesis is developed as follows.

H₁: Leverage has a strong positive effect on financial difficulty

2.4. Liquidity

The liquidity ratio reflects how healthy or liquid a company is, in order to avoid financial difficulties. The more the company has a high liquidity ratio, the less it will experience financial difficulties because its current assets are sufficient to cover the company's current debts timely (Anisa et al., 2023; Idawati & Wardhana, 2021). The beginning of financial difficulty is that the company is not capable of paying off its debts, especially its current debts (Hertina et al., 2020). Liquidity is crucial because it can determine profitability as the main focus of the company, which is also measured in the Grover's financial difficulty model (Karim et al., 2021). Following research proved that liquidity is crucial, having a strong negative effect on financial difficulty (Anisa et al., 2023; Bukhori et al., 2022; Kebede et al., 2024; Naibaho & Natasya, 2023; Ramadani & Ratmono, 2023). From the previous findings, the hypothesis is developed as follows.

H₂: Liquidity has a strong negative effect on financial difficulty

2.5. Company's Age

Company's age is a crucial determinant of financial difficulty because just as the year goes by, the effectiveness of the company's management keeps on increasing and thus lower their risk of experiencing financial difficulties (Rahmadi et al., 2023). Mature companies that tend to have stable operations is no longer focusing only on market expansion but continues to improve their performance as an effort to prevent financial difficulties (Isayas, 2021). Each young & mature company has a different financial difficulty problem. The financial difficulty of young company is due to internal shortcomings, while mature companies are more distressed due to fierce competition accompanied by the economic slowdown (Kücher et al., 2020). Following research proved that company's age is crucial, having a strong negative effect on financial difficulty (Galant et al., 2023; Isayas, 2021). From the previous findings, the hypothesis is developed as follows.

H₃: Company's age has a strong negative effect on financial difficulty

3. Method

The research population is all primary consumer goods (IDXNONCYC) companies listed on the official IDX website for the 2020-2022 period, totaling 375 companies as objects. This research applies quantitative methods [Amanda & Tasman \(2019\)](#); [Dini et al. \(2021\)](#); [Muzharoatiningsih & Hartono \(2022\)](#); [Myllariza \(2021\)](#); [Sari & Hartono \(2020\)](#) which collects secondary data from the company's annual financial reports published on the IDX or company's official website ([Bukhori et al., 2022](#); [Dirman, 2020](#); [Galant et al., 2023](#); [Gunawan et al., 2020](#); [Isayas, 2021](#)). A sample of 237 observations from 82 IDXNONCYC companies were selected using purposive technique ([Bukhori et al., 2022](#); [Dirman, 2020](#); [Idawati & Wardhana, 2021](#); [Yanuarda et al., 2023](#); [Tyahya et al., 2021](#)) with the following selection:

- a. 375 IDXNONCYC company-year data listed on the IDX/company's official website for the 2020-2022 period.
- b. Minus 120 IDXNONCYC company-year data that does not fully published their annual financial reports for the 2020-2022 period on the IDX/company's official website.
- c. Minus 9 IDXNONCYC company-year data that uses foreign currency other than Indonesian Rupiah (IDR) on their annual financial reports for the 2020-2022 period.
- d. Minus 9 data outlier.

The dependent variable of this research is the Grover's financial difficulty model. The Grover model is the latest Altman model that is relevant to date ([Filianti & Septiarini, 2019](#)). G Score ≥ 0.01 gives a good sign that the company is in a non-bankrupt state, while G Score ≤ -0.02 gives a bad sign that the company is in a bankrupt state ([Arini, 2021](#); [Christa & Mukti, 2023](#); [Filianti & Septiarini, 2019](#)). From the previous studies, Grover (G) score is measured by the following equation:

$$G \text{ Score} = \left(1,650 \left(\frac{\text{Working Caps}}{\Sigma \text{Assets}} \right) \right) + \left(3,404 \left(\frac{\text{EBIT}}{\Sigma \text{Assets}} \right) \right) - (0,016(\text{ROA})) + 0,057$$

The first independent variable of this research uses leverage ratio proxied by DER. DER measures the company's dependency on debt compared to its net worth ([Anisa et al., 2023](#); [Arifianti & Widianingsih, 2023](#); [Karim et al., 2021](#); [Myllariza, 2021](#); [Sarina et al., 2020](#)). High DER gives a bad sign that the company is in the state of financial difficulty ([Karim et al., 2021](#); [Naibaho & Natasya, 2023](#)). From the previous studies, DER is measured by the following equation:

$$DER = \frac{\Sigma \text{Liabilities}}{\Sigma \text{Equities}}$$

The second independent variable of this research uses liquidity ratio proxied by CR. CR measures how liquid the company's assets to cover its short-term liabilities ([Anisa et al., 2023](#); [Isayas, 2021](#)). CR < 1 gives a bad sign of liquidity problems, while CR at 1.5 to 2 gives a good sign that the company is not experiencing financial difficulty ([Karim et al., 2021](#)). From the previous studies, CR is measured by the following equation:

$$CR = \frac{\Sigma \text{Current Assets}}{\Sigma \text{Current Liabilities}}$$

The third independent variable of this research uses the company’s age. The company’s age measures how long the company has been operating (Roiston & Harymawan, 2020; Soesetio et al., 2023; Wang & Guedes, 2024). From the previous studies, company’s age is measured by the following equation:

$$\text{Company's Age} = \text{Ln}(\text{observation period} - \text{company's establishment year})$$

Company’s size is used as a control variable (Galant et al., 2023; Naibaho & Natasya, 2023). Company’s size measures how large a company is by its overall assets (Amanda & Tasman, 2019; Arifianti & Widianingsih, 2023; Erwan et al., 2023; Pramudita & Radianto, 2023; Putri & Kautsar, 2023; Roiston & Harymawan, 2020; Soesetio et al., 2023; Wang & Guedes, 2024). From the previous studies, company’s size is measured by the following equation:

$$\text{Company's Size} = \text{Ln}(\sum \text{Assets})$$

4. Result

The stages of research analysis are descriptive statistics, classical assumption & multiple regression testing (Dirman, 2020; Galant et al., 2023; Kebede et al., 2024; Wijaya & Radianto, 2023) furthermore with robust standard errors (Saputri & Radianto, 2023) which handles heteroscedasticity & autocorrelation problems (Hlasny, 2023; Kohardinata et al., 2020). The test procedure is processed through STATA software to investigate the effects of financial & non-financial determinants, namely leverage (DER), liquidity (CR) & company’s age on Grover’s financial difficulty model of IDXNONCYC companies for the 2020-2022 period affected by pandemic with company’s size as a control variable.

The result on table 1 shows that the IDXNONCYC companies during the pandemic-affected period (2020-2022) are averagely not in the state of financial difficulty, as evidenced by the G Score mean ≥ 0.01 . However, the IDXNONCYC companies tend to have larger debt rather than equity, as evidenced by the positive mean value of DER. Furthermore, the positive mean value of CR means that the IDXNONCYC companies are in a good financial condition. Regarding the proximity of the standard deviation to the mean of each variable, it is found that G Score & DER data are not evenly distributed (varied), while CR, age & size are the opposite.

Table 1. Descriptive Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
G SCORE	237	0.322	0.633	-3.082	1.635
DER	237	2.368	7.052	0.108	92.500
CR	237	2.041	1.780	0.300	10.670
Age	237	3.423	0.606	1.609	4.691
Size	237	28.745	1.713	25.251	32.826

Table 2. The Test of Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
res	237	0.0342	0.2294	5.83	0.054

Table 3. The Test of Multicollinearity

Variable	VIF	1/VIF
Age	1.12	0.895
Size	1.11	0.898
CR	1.07	0.935
DER	1.06	0.940
Mean VIF	1.09	

Table 4. The Multiple Regression Testing

G SCORE	Coef.	Robust Std. Err.	T	P Value	Desc.
Constant	-0.780	0.417	-1.87	0.063	
DER	-0.040	0.005	-7.2	0.000**	H1: accepted
CR	0.199	0.023	8.64	0.000**	H2: accepted
Age	0.111	0.039	2.83	0.005*	H3: accepted
Size	0.014	0.013	1.03	0.305	Control var
F (4, 232): 44,29				0.000**	
R ² : 0.647					

** Sig < 1%, * Sig < 5%

5. Discussion

The first finding is that DER as a proxy for leverage has a strong negative effect on G score and thus has a strong positive effect on financial difficulty. The interpretation of the effect is that as DER increases, the G score will decrease and thus the risk of the companies experiencing financial difficulty is higher. This means that “H1: leverage has a strong positive effect on financial difficulty” is accepted because the more companies depend on their debt to finance their activities, the more the company will be at risk to experience financial difficulty (Anisa et al., 2023; Erwan et al., 2023; Gunawan et al., 2020; Idawati & Wardhana, 2021). By depending on their debt, the company is increasingly burdened by a lot of maturity, characterized by high interest payments (Isayas, 2021). Hence, high leverage indicates a bad signal that the company is experiencing financial difficulties (Erwan et al., 2023; Isayas, 2021; Naibaho & Natasya, 2023; Rahmat, 2020).

The second finding is that CR as a proxy for liquidity has a strong positive effect on G score and thus has a strong negative effect on financial difficulty. The interpretation of the effect is that as CR increases, the G score also increases and thus the risk of the companies experiencing financial difficulty is lower. This means that “H2: liquidity has a strong negative effect on financial difficulty” is accepted because the greater value of the company’s short-term assets than its short-term liability indicates that the company's short-term asset is more sufficient to pay off its short-term debt timely which leads to lower financial difficulty problems (Anisa et al., 2023; Hertina et al., 2020; Idawati & Wardhana, 2021; Naibaho & Natasya, 2023). The beginning of financial difficulty is that the company is not capable of paying off its debts, especially its current debts (Hertina et al., 2020). Hence, high liquidity indicates a good signal that the company is not experiencing financial

difficulties (Anisa et al., 2023; Hertina et al., 2020; Idawati & Wardhana, 2021; Naibaho & Natasya, 2023).

The third finding is that the company's age has a strong positive effect on G score and thus has a strong negative effect on financial difficulty. The interpretation of the effect is that as the company's age increases, the G score also increases and thus the risk of the companies experiencing financial difficulty is lower. This means that "H3: company's age has a strong negative effect on financial difficulty" is accepted because the more companies get older, the more they gain better experience to overcome financial challenges resulting to lower financial difficulties (Rahmadi et al., 2023). Mature companies that tend to have stable operations is no longer focusing only on market expansion but continues to improve their performance as an effort to prevent financial difficulties (Isayas, 2021). Hence, older company indicates a good signal that the company is not experiencing financial difficulties (Rahmadi et al., 2023). However, in order to avoid experiencing a similar phenomenon as previously mentioned in (Berita Depok, 2021; Jannah, 2023; Maghiszha, 2024a, 2024b), the company's age must be followed by company's maturity & strategical approaches to overcome financial challenges (Isayas, 2021; Jannah, 2023; Maghiszha, 2024b; Rahmadi et al., 2023).

6. Conclusion

This research aims to investigate the effects of financial & non-financial determinants, namely liquidity (CR), leverage (DER) & company's age on Grover's financial difficulty model of IDXNONCYC companies for the 2020-2022 period affected by pandemic with company's size as a control variable. All hypotheses of this research are accepted. This research found that leverage, liquidity & company's age have a strong effect on financial difficulty. These findings indicated the importance of both financial & non-financial determinants of financial difficulty that should be taken as a precaution signal by those involved to avoid financial difficulty. This research pioneered the investigation of the effects of financial and non-financial determinants on Grover's financial difficulty model. Theoretically, this research has implications for the development of financial difficulty determinants theory. Practically, this research has implications for investor decision-making in the capital market and companies to prevent bankruptcy. This research is inseparable from limitation that can be improved in future research. This research scope is limited by focusing exclusively to investigate the micro-economic factors on financial difficulty. In order to overcome the research limitation, it is recommended to widen future research scope by investigating macro-economic factor as financial difficulty determinant (Isayas, 2021; Rahmadi et al., 2023) such as GDP or inflation (Ayinaddis & Tegegne, 2023).

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