The Size and Determinants of Indirect Financial Distress Costs

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***Abstract*— the aim of this paper is to provide a quantitative estimate of the indirect financial distress costs. This paper focuses on the Malaysian trading and services sector and concentrates only on measuring the financial distress costs in terms of changes in operating performance and changes in capital values. This study will contribute to the existing literature by providing an alternative proxy for indirect financial distress costs and perhaps of the first paper to provide the quantitative estimate of the costs for Malaysia's financially distressed firms. Findings from our study suggest that indirect costs exist, and are found to be between 3.1% to 21.39%. It also suggests those three variables; Tobin's q, size and expected earnings growth are statistically significant at 0.01, 0.1 and 0.05 significance level**.

Keywords- financial distress; indirect costs; firm value; capital discount

I. INTRODUCTION

Indirect costs of financial distress, which is considered as opportunity costs [1], refer to the costs suffered by a firm as a consequence of its weakening financial position [2] or a disruption of "business as usual" [3, 4]. These costs may be viewed in two ways: (a) changes in the operational performance [2, 5-10], and (b) changes in the value of the companies [11-14].

Even though the theoretical debate about financial distress costs is entrenched in the study of capital structure [15], the potential contribution of the study goes beyond capital structure literature. Financial distress costs were found to be a relevant factor for many financing decisions [16], such as in determining the optimal capital structure [17], demand for conventional and Islamic insurance [18], corporate hedging practices [19, 20], and trade receivables policy [21]. This is further supported by the recent study conducted by [22]. Their study found that 88% of Malaysian managers indicate that the potential costs of bankruptcy or financial, is strongly influencing their decision in determining the appropriate amount of corporate debt for their firms. In addition, current literature related to the influencing factors affecting financial distress costs is very scattered. Several studies (see for example [13, 23-25]), have examined the variation in firms' financial distress costs to determine which of the variables are significant in influencing the magnitude of financial distress costs.

Despite the above mentioned importance of this topic, there are relatively few studies measuring the size and analysing the determinants of indirect costs [26, 27]. One of the possible reasons for the lack of research on the indirect financial distress cost is due to its opportunity costs nature and the difficulty in specifying and empirically measuring such costs [3, 6, 23].

To the best of our knowledge, there was no study conducted for Malaysia's financially distressed companies, which, contributing to the non-existence of financial distress cost data for Malaysia [28]. Several authors have used other variables as a proxy for indirect financial distress costs. The examples are [18, 29], those who use working capital to total assets ratio, long term debt ratio and interest coverage ratio, and [30] uses liquidity (ratio of quick assets to total current assets) as the proxy for the indirect financial distress costs. Our study is therefore, aiming to fill this gap.

In this paper, we argue that the size and determinants of financial distress costs would be different due to its unique firm specific characteristics. The study of the magnitude and determinants of financial distress costs that is specific to Malaysia's legal and listing requirement is very important because the existence and significance of the financial distress costs depend on the market setting [1], hence, empirical findings from other countries cannot be generalized to Malaysia. Furthermore, the robustness of the findings of the previous studies needs to be examined against the evidences from other countries such as Malaysia.

II. LITERATURE REVIEW

A. *Past Studies on Indirect Financial Distress Costs*

Altman [5] was the first paper who highlights the need for estimating the indirect costs of financial distress [31]. In his research, bankruptcy costs are measured in two ways; (a) as profit losses (the difference between foregone sales and actual earnings), and (b) abnormal losses (resulting from the difference between estimated and actual earnings). His findings suggest that, on average, the indirect costs of financial distress equal 10.5% and up to 20.8% (abnormal losses) of the company's value. Even though Altman [5] is considered the pioneer in this area, there are several limitations in this research, as highlighted by [32]. First, as

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the sample is small, the results should not be considered as conclusive. Second, as pointed by [33] himself, the indirect costs should not just be limited to companies, which actually fails, firms with high probabilities of failure, whether they eventually fail or not, still incur costs.

In the same year, reference [34] provides a theoretical argument that firm's liquidation decision imposes costs on nonfinancial stakeholders of the company. For example, customers of a company that manufacture a unique product may have to bear the increased costs of maintenance, employees may have to require new skills at a cost, and suppliers may have to incur expenses to adapt their facilities to manufacture other products if the company goes out of business. In response, customers will pay less for the products, labor will demand higher compensation, and suppliers will charge more for supplies if a company has a higher probability of being liquidated. Ultimately, companies will bear these expected liquidation costs along with the costs of conflicting interests of bondholders and stockholders.

Another important early study on this topic is done by Cutler and Summers [12]. They exploit a lawsuit between Texaco and Penzoil to separate these costs and conclude that the ex-ante costs of financial distress are around 9% of Texaco's value. They argue that the significant part of the wealth loss can be attributed to the effect of the lengthy dispute on Texaco's long-term viability, making it difficult for the company to obtain credit, and distracting Texaco's management from their duties. However, similar to [5], the sample used in this research is too specialized and small; hence, the findings cannot be easily generalized.

Following [5, 12, 34], several other studies have attempted to quantify the magnitude of the indirect financial distress costs, each using quite distinct methodologies and data sets. These include the work by [10, 14, 23, 26, 35-46].

However, despite decades of research, there is no common consensus on the scale of the indirect financial distress costs. The review of the available theoretical and empirical evidence suggests that there are both costs and benefits associated with financial distress [14]. This lack of agreement is largely driven by the very heterogeneous techniques used to identify and quantify the financial distress costs [10].

Therefore, this paper attempts to provide more insights into the understanding of this topic by investigating and presenting the empirical evidence on the magnitude of the indirect financial distress costs of Malaysia's financially distressed firms.

B. Determinants of Indirect financial distress costs

1. Time in distress (TID)

Previous studies [e.g., See [47-49]] suggest that time in distress has a positive association with the costs of financial distress. The basic argument is that time in distress relates to the CFD because the claimants might expand the company's resources over the time. The quicker the problems of a distressed firm are resolved; the value of the firm will be better. This is further supported by the research by Gertner & Scharfstein [50] and Giammarino [51], which suggests that bargaining and coordination problems may slow down the restructuring process, and hence resulting in a higher CFD.

However, Reference [52] argue that under well functioning market with a large number of buyers, price-takers and rational sellers and creditors, claimants' bargains are nearly costless; therefore, the overall firm value is not affected. Reference [23] and [47] also found no significant effect of firm value or lost growth opportunities on the time in default. Hence, given the issues presented above, the following hypothesis will be tested:

Hypothesis 1: There is a significant positive relationship between time in distress and indirect financial distress costs.

2. Leverage (LEV)

Leverage continues to be one of the most important explanatory variables in explaining financial distress costs. There are, however, opposing arguments for either positive or negative relation between leverage and financial distress costs. Reference [53] and [54] suggested that there is a positive relationship between leverage and financial distress costs. Reference give evidence that there is a positive relationship between financial structure and firm performance in industry downturns. They reveal that more highly leveraged companies tend to lose market share and experience lower operating profits than their competitors in industry downturns. This indirectly suggests a positive relationship between leverage and loss of market shares since one measurement of financial distress costs is by calculating the changes in corporate performance. Reference [48] and [56] offer a different perspective of the problem in which not only the costs, but also the potential benefits of debt for financial distress processes are considered, implying that the benefits of leverage will reduce financial distress costs. Thus, this paper argues that there is an ambiguous relationship between leverage and indirect financial distress costs.

Hypothesis 2: There is a significant positive/negative relationship between leverage and indirect financial distress costs.

3. Change in Investment Policy (CINV)

As financial distress turns more serious and the probability of bankruptcy rises, the way in which firms react to the crisis must also be taken into consideration [57]. The eventual recovery or bankruptcy of the firm will be the results of the firm's reaction and the financial distress costs it bears [24]. In this context, this paper has selected the changes in investment policies as responses to financial distress, which will have an

impact on the current performance of the firm. Reference [55, 58] recognize that firms investment policy is affected during a financial crises.

Reference [26] shows that there is a negative relationship between change in investment policy and the size of indirect financial distress costs. This means that the divesture increases the costs of financial distress. Hence, this paper posits the third hypothesis as: Change in investment policy is negatively related to the indirect financial distress costs.
Hypothesis 3: There is a significant negative relationship between change in investment policy and indirect financial distress costs.

4. Tobin's Q (TQ)

In this study, investment opportunities are proxied by Tobin's Q. Significance of the Tobin's Q coefficient would support the need to control for investment opportunities when explaining financial distress costs. The idea is that if a firm has good investment opportunities in comparison to its sector, this could mitigate the financial distress costs borne by the firm. Reference [7] found a strong positive relationship between Tobin's Q and all proxies for a firm's growth, and [59] show that Tobin's Q is better suited than book-to-market ratio to proxy for investment opportunities. These leading this paper to anticipate that a firm's investment opportunity will influence its expected sales growth.

Hypothesis 4: There is a significant negative relationship between TQ and indirect financial distress costs

5. Intangible Assets (INTANG)

Firms with high asset intangibility usually have values in trademark, expertise, patents, rights, brand names, good reputations and services after sales. In addition to that, the products of these firms will usually be priced relatively higher. That is, customers have to pay higher prices for products or services provided by high asset intangible firms. However, when high intangible asset companies experience severe financial distress, their customers will have higher loss since they lose not only the promised after-sale-service, but also the product name, reputation and status, for which the customers have already paid when they bought the products. As a result of financial distress, customers of high asset intangibility will become more hesitant to buy its products. Therefore, it is common to believe that when a firm is in financial distress, the more intangible the firm's assets, the higher the sales loss. Following the above discussion, the following hypothesis will be tested:

Hypothesis 5: There is a significant positive relationship between intangible assets and indirect financial distress costs.

6. Tangible Assets (TANG)

Financial contracts are strongly influenced by the degree to which a company's assets support the transactions with some form of collateral normally being essential to gaining access to credit. Thus, the proportion of tangible fixed assets in total company assets is a measure of the capacity to provide collateral and consequently obtain (re) financing. Nevertheless, these assets suffer a big loss of value when small companies go into distress because they will often negotiate in adverse market conditions. Reference [46] point out that in recessions many potential buyers of a company's assets only buy when there is a big discount. Thus, sellers of a distressed company try to postpone transactions until the markets become more liquid. Therefore, the higher the percentage of tangibles fixed assets over the total assets; the incentive will be smaller for the different stakeholders to push the firm into bankruptcy. As a result, this research posits the sixth hypothesis as:

Hypothesis 6: There is a significant negative relationship between tangible assets and indirect financial distress costs.

7. Holding of Liquid Assets (LA)

The cash component of the assets is utilized by the firm to assist them in mitigating the effect of financial distress. Pindado & Rodrigues [24] find that the holding of liquid assets are negatively related to the costs of financial distress which implies that insolvent firms can take advantage of holding larger stocks of this kind of assets. Hence, this paper posits the seventh hypothesis as:

Hypothesis 7: There is a significant positive relationship between liquid assets and indirect financial distress costs.

8. Expected earnings growths (EEG)

Firms with higher expected earnings growth are considered susceptible to greater losses in distress [60]. This is because a significant of their operational value depends on unrealized high future earnings [61]. In times of distress, these relatively large components of value are lost. In addition, consistent with debt overhang problem, industries with large growth opportunities tend to have high potential costs of financial distress.

Hypothesis 8: There is a significant positive relationship between expected earnings growth and indirect financial distress costs.

9. Size (SIZE)

In theory, small firms have a bigger problem in assessing capital because of the asymmetric information between insiders and outsiders. The difficulties become severe when the possibility of liquidation arises. However, managing large firms during the period of financial distress maybe costly since its more complicated internal organizations require implicit contracts which may be difficult to enforce during difficult times [62]. Bigger size may represent higher level and more complex conflicts of interest, making it more difficult for the claimants to agree over resolving the distress. Moreover, bigger firms may positively relate to a larger number of creditors and bigger bank loans received by distressed firms. Given the possibility of higher conflicts in

distress resolution as the number of creditors increases, the following hypothesis is tested:

Hypothesis 9: There is a significant positive relationship between size and the indirect financial distress costs.

In summary, the predicted sign of the coefficients in the regression model in equation (1) is positive for β_1, β_5, β_8, β_9, negative for β_3, β_4, β_6, and β_7 and mixed for β_2.

III. METHODOLOGY

A. *Population, Sample and Data Collection Procedures*

The target population for the research was all companies from the trading and services sector listed as financially distressed by Bursa Malaysia under the requirement of PN4, PN17 and Amended PN17 respectively, from 15 February 2001 when PN4 was introduced, until 31 December 2011. As of 31 December 2011, there are 48 companies listed as affected issuers under the requirement of PN4, PN17 and Amended PN17.

In order to highlight the trends of the CFD, following Bisogno & De Luca [10], the estimation period is designated as five years prior to the event period. The years relative to the financial distress date are defined as years t-5, t-4 t-3, t-2, and t-1, where t-5 represents five years before the firm is classified as financially distressed firm, while t-4, t-3, t-2, t-1 represent 4, 3, 2 and 1 year before the classification date.

B. *Measurement of indirect financial distress costs*

The literature provides two ways of measuring the indirect financial distress costs, which is by looking at the changes in operating performance or changes in the value of the companies [9, 11, 12]. This paper quantifies the indirect financial distress cost in terms of both, changes in operating performance (opportunity costs, industry-adjusted EBITDA/sales and industry-adjusted EBITDA/assets) and changes in capital values (capital discount sales assets).

The first measure of operating performance is expressed in terms of opportunity costs [24, 26, 40]. It is calculated as the difference between the firm's sales growth and sector's sales growth. A positive answer will demonstrate that the firm bear an opportunity cost and underperform compared to its sector.

As for the second and third measure of operating performance, this paper follows [14], and measure the changes in operating performance relative to the sector by calculating the industry-adjusted EBITDA to sales (and assets).

Changes in equity values are estimated in terms of capital discount. The value of the companies is calculated as the difference between the firm's estimated value and actual value. The following Table 1 below presents the methods for calculating the indirect financial distress costs.

TABLE 1
VARIABLES DESCRIPTION AND CALCULATION

Variable	**Description and calculation**
Opportunity Costs (OC)	$[(Sales_{it}/Sales_{it-1})*100]_{Sector}$ - $[(Sales_{it}/Sales_{it-1})*100]_{Firm}$ Where: $[(Sales_{it}/Sales_{it-1})*100]_{Sector}$ = Sector's sales growth $[(Sales_{it}/Sales_{it-1})*100]_{Firm}$ = Firm's sales growth
Median industry-adjusted EBITDA/Sales (IAES)	$E/S_f - E/S_I$ Where: E/S_f = EBITDA / Sales for firm f E/S_I = median EBITDA / Sales for firm industry
Median industry-adjusted EBITDA/Assets (IAEA)	$E/A_f - E/A_I$ Where: E/A_f = EBITDA / Assets for firm f E/A_I = median EBITDA / Assets for firm industry
Capital Discount (Sales)	[(Estimated Value - Actual Value) / Estimated Value]*100
Capital Discount (Assets)	[(Estimated Value - Actual Value) / Estimated Value]*100

C. *Definition and definition of variables*

Reference [33] suggests that measures of indirect costs must be based on the foregone sales and profits. He also establishes a strong correlation between a firm's sales performance and industry sales in any given year. Therefore, in this study, following [32, 33, 63, 64], indirect cost estimate is expressed in terms of opportunity costs [24, 26, 40]. It is calculated as the difference between the firm's sales growth and sector's sales growth. A positive answer will show that the firm bears an opportunity cost and underperforms compared to its sector. All the variables are shown in Table 2:

Table 2:
Method of variable calculation

Variables	Variables calculation
CFD	$= [(Sales_{it} - Sales_{it-1}) / Sales_{it}]_{sector} - [(Sales_{it} - Sales_{it-1}) / Sales_{it}]_{firm}$
TID	Time period (year) each company was in financial distress

LEV	$= \frac{\text{Long Term Debt}}{\text{Long Term Debt + Market Capitalization}}$
CINV	$= \frac{\text{Net Retained Cash}}{\text{Fixed Assets + Intangible Assets +Current Assets}} \text{X100}$
TQ	$= \frac{\text{Market Value of Equity + Book Value of Debt}}{\text{Assets}}$
INTANG	$= \frac{\text{Total Market Value}}{\text{Book Value of Assets}} \text{X100}$
TANG	$= \frac{\text{Net Fixed Assets}}{\text{Total Assets}} \text{X100}$
LA	$= \frac{\text{Cash Flow}}{\text{Current Assets}} \text{X100}$
EEG	$= \frac{\text{EBITDA}}{\text{Market Value of Assets}} \text{X100}$
SIZE	= lnSales

D. *Research model and estimation procedures*

This study employs the econometric analysis using panel data that combines the features of time-series and cross-sectional data. In line with the objectives of this study, this study uses three main estimations – Pooled Ordinary Least Squares (OLS), Fixed Effect (FE) and Random Effect (RE). Previous researcher such as Pareja and Linero (2006) uses both OLS and FE in their study, while Ameer (2010) used Pooled OLS only. The main objective of this paper is to examine the determinants of indirect financial distress costs. This paper specifies and estimates the following regression model for all firms:

$$CFD_{it} = \beta_0 + \beta_1 TID_{it} + \beta_2 LEV_{it} + \beta_3 CINV_{it} + \beta_4 TQ_{it} + \beta_5 INTANG_{it} + \beta_6 TANG_{it} + \beta_7 LA_{it} + \beta_8 EEG_{it} + \beta_9 SIZE_{it} + \varepsilon_{it} \quad (1)$$

Where:

CFD_{it}	= Indirect financial distress costs
$\beta_1 TID_{it}$	= Time period in distress
$\beta_2 LEV_{it}$	= Leverage
$\beta_3 CINV_{it}$	= Change in investment policy
$\beta_4 TQ_{it}$	= Tobin's Q
$\beta_5 INTANG_{it}$	= Intangible assets
$\beta_6 TANG_{it}$	= Tangible assets
$\beta_7 LA_{it}$	= Liquid Assets
$\beta_8 EEG_{it}$	= Expected earnings growth
$\beta_9 SIZE_i$	= Size of the firms' sales
ε_{it}	= Error term

With the above multivariate regression specification, the impact of each of the explanatory variables on the indirect financial distress costs was assessed in terms of the statistical significance of the coefficients "β_{it}". An estimated coefficient considered as statistically significant if the p-value ≤ 0.1, p-value ≤ 0.05 and p-value ≤ 0.01 respectively (significant at .1, .05 and .01 significance level).

In this paper, the choice of an appropriate model among pooled OLS or FE or RE depends upon three types of test as suggested and outlined by Park [65]. The tests are F-test, Breusch-Pagan Lagrange Multiplier (LM) test, and Hausman test. This paper will report if fixed and/or random effect exists because panel data modelling is to examine fixed and/or random effects [65]. This paper will report and interpret the results of the F-test for a fixed model, Breusch-Pagan LM test for a random effect model. When both fixed and random effects are statistically significant, this paper will conduct a Hausman test and report the results. Table 3 below summarizes the decision rule used for selecting the most appropriate model to explain the variation in the magnitude of the indirect financial distress costs.

Table 3: Decision rule of the panel specification tests

Fixed Effects (F test)	Random Effects (B-P LM test)	Model Selection
H_0 is not rejected (no fixed effects)	H_0 is not rejected (No random effect)	Pooled OLS
H_0 is rejected (fixed effects)	H_0 is not rejected (No random effects)	FE model
H_0 is not rejected (no fixed effects)	H_0 is rejected (random effects)	RE Model
H_0 is not rejected (fixed effects)	H_0 is rejected (random effects)	Choose a FE model if the null hypothesis of a Hausman test is rejected; otherwise fit a RE model.

Source: Adopted from Park [65].

IV. Empirical Findings and Discussions

A. *Estimation of indirect financial distress costs*

The main objective of this study was to provide empirical evidence on the size of the indirect financial distress costs to the firms under investigations. This section considers the quantitative estimate of the costs of financial distress in terms of changes in operating performance and changes in capital values

1. Operating Performance:

Table 4 shows the values of the indirect costs that were estimated in terms of changes in operating performance. Three measures that were used to estimate the costs were the opportunity costs (panel A), industry-adjusted EBITDA over

sales (Panel B), and industry-adjusted EBITDA over total assets (Panel C).

The sales growth rate which was measured as the difference between the sales growth of the sector and the firm's sales growth, indicates that the size of the costs for the whole period of study is about 10.21% (SD=66.01). As expected, the size of this cost increased from only -1.50% (T-5) to 24.91% (T-1) as it comes closer to financial distress. These results are comparable to [26] and [40], who found that the financially distressed firm bear mean 12% sales loses with respect to the industry. Therefore, it is likely the impact of annual increase in the indirect costs contributes to the firm's eventual classification as affected issuers.

As opposed to CFD based on opportunity costs, Panel B and C (Table 3), offers a different perspective. For the whole period of study, both IAES and IAEA shows that the firms are performing better than the industry. For the whole study period, the mean for industry-adjusted EBITDA/sales and industry-adjusted EBITDA/ Assets is -3.1 (SD=120.83) and -10.66 (SD=21.80) respectively.

TABLE 4
INDIRECT FINANCIAL DISTRESS COSTS (OPERATING PERFORMANCE)

	T-1	*T-2*	*T-3*	*T-4*	*T-5*	*T-5 to T-1*
Panel A (Opportunity Costs)						
Mean	24.91	1.86	16.29	-4.82	-1.5	10.21
Median	26.65	20.07	19.74	13.7	5.59	15.34
SD	34.94	80.63	41.7	114.01	52.76	66.01
Panel B (industry-adjusted EBITDA/Sales)						
Mean	-81.36	-23.07	-35.9	-18.37	-7.25	-3.1
Median	-15.36	-11.46	-14.25	12.29	-3.77	-7.3
SD	244.73	52.32	78.43	35.56	39.39	120.83
Panel C (industry-adjusted EBITDA/Total Assets)						
Mean	-15.36	-11.07	-13.14	-8.91	-4.81	-10.66
Median	-9.19	-7	-8.86	-7.8	3.57	-15.27
SD	25.73	15.32	19.85	9.91	8.02	21.80

2. Capital Values:

As described earlier, capital value losses for the sample firms are calculated using the actual market value (defined as the market value plus the book value of debt), and estimated value using the [66] multiplier approach for sales and assets. A positive answer for changes in capital values will demonstrate that firm a trading at a discount and shows that the sample firms experience losses in capital value. Table 5 presents the actual value, estimated capital values (sales), estimated capital values (total assets), capital discount (sales) and capital discount (total assets) for the sample firms during the study period.

As shown in Panel A and B, the mean of the actual and estimated values is much larger than the median capital values, indicating the capital values are skewed. Declines in the actual and estimated values are observed as the sample firms near financial distress. For example, the estimated capital value (sales) during the T-5 is 259.88 million (SD=217.08), and drop to 182.53 million (SD=175.14) in T-1. Similar patterns can be observed for actual value (Panel C). For the whole period of the study (*T-5 to T-1), the* mean for actual value is 383.65 million (SD=499.71), and recorded a drop by almost 100%, between T-5 (mean = 524.65 million) and T-1 (mean = 262.49 million). The decrease in the estimated values (sales and total assets) and actual value is expected because the operating performance of the sample firms deteriorates as it nears financial distress.

Panel D and E provides the capital discount based on the [66] estimates. The discounts in capital values are estimated as estimated market values minus actual values divided by estimated market values. As opposed to the above, where the capital values (sales and assets) and actual values moving in the same direction (declining), the capital discounts offers a different perspective. From capital discount (sales) point of view, except for T-1, the sample firms seems to be trading at a premium, and perform better than the sector. This is consistent with the statement by [56] that, "financial distress often accompanied by comprehensive organizational changes in management, governance, and structure. This organizational restructuring can create value by improving the use of resources" (see [56] p.420).

The capital discount (assets), on the other hand shows that the sample firms experience losses in capital's value. By the end of fiscal years prior to financial distress, the sample firms are trading at a discount about 40.73%. One of the possible explanations for this is assets fire sales [38, 46], where the firms, especially those experiencing financial distress, are forced to sell their assets below the expected market price.

TABLE 5
INDIRECT FINANCIAL DISTRESS COSTS (CAPITAL VALUES)

	T-1	*T-2*	*T-3*	*T-4*	*T-5*	*Sector*
Panel A: Estimated capital value (Sales)						
Mean	182.53	209.56	221.13	265.14	259.88	1331.29
Median	158.93	177.95	158.5	184.41	188.37	226.86
SD	175.14	164.22	399.98	274.75	253.79	3918.6
Panel B: Estimated capital value (Assets)						
Mean	325.85	358.95	389.08	477.08	560.38	1937.72
Median	185.69	216.91	203.17	219.43	180.87	241.68
SD	355.11	381.69	416.04	561.22	726.2	5995.58
Panel C: Actual Value						
Mean	262.49	314.56	355.43	461.11	524.65	1898.81
Median	81.12	172.15	158.5	205.74	186.25	223.03
SD	348.73	384.82	399.98	573.4	681.35	5839
Panel D: Capital Discount (Sales)						
Mean	100.91	-31.4	-63.18	-60.9	-60.4	4.07
Median	-3.78	-16.58	-30.5	-40.25	-37.54	0.05
SD	77.05	119.11	137.49	115.3	123.93	86.01
Panel E: Capital Discount (Assets)						
Mean	40.73	27.98	17.91	9.92	10.39	5.93
Median	26.45	16.92	7.3	5.67	6.13	0.15
SD	77.05	52.89	35.18	21.75	22.85	30.21

B. Regression results and analysis

Table 6 presents the result of the Pearson's Correlation coefficients among the independent variables. The correlation coefficients between pairs of independent variables are generally low, suggesting that a serious collinearity problem is unlikely. However, the statistically significant correlations between some of the independent variables reported in Table 3 raise the possibility of multicollinearity. Therefore, variance inflation factors (VIF) is also computed to test for the presence of multicollinearity. Kennedy (1998) suggests that a VIF of more than 10 indicates harmful collinearity and may warrant further examination. While, Tolerance's (defined as 1/VIF) value that is lower than 0.1 is comparable to a VIF of 10. As shown in Table 7, the calculated VIF and 1/VIF are all less than 10 and more than 0.1 respectively, suggesting that multicollinearity does not appear to be a severe problem in this study.

Table 6: Correlation Matrix

IV	TID	LEV	CINV	TQ
TID	1.00			
LEV	0.03	1.00		
CINV	0.023	0.37*	1.00	
TQ	-0.07	0.26*	0.15*	1.00

*significant at 5% level

	INTANG	TANG	LA	EEG	SIZE
INTANG	1.00				
TANG	-0.26*	1.00			
LA	-0.003	0.03	1.00		
EEG	-0.03	0.07	0.03	1.00	
SIZE	0.33*	-0.01	0.08	-0.03	1.00

*significant at 5% level

Table 7: Variance-Inflation Factors

Variable	VIF	1/VIF
SIZE	1.56	0.642564
CINV	1.54	0.647709
INTANG	1.42	0.705990
LEV	1.33	0.753845
TANG	1.15	0.867976
TID	1.12	0.894776
EEG	1.05	0.951586
LA	1.02	0.975733
Mean VIF	1.27	

Table 9 presents the regression results from three different specifications of the basic model in equation (1). The results are based on Pooled OLS, fixed effects and random effects regression. In this paper, the choice of an appropriate model among pooled OLS or fixed effects or random effects model depends upon three types of tests as suggested by [65]. The tests are Chow test, Breusch-Pagan LM test and Hausman Test.

Table 8 shows the results of the Chow test for a pooled model, the Breusch-Pagan LM test and the Hausman test. The results of the Chow test for a pooled model vs. the fixed-effects model, F=2.05, as being significant at 1% level, suggest that a heterogenous fixed effect is superior to the pooled model.

The next step is to estimate whether the random effects is preferred to pooled OLS estimation. As table 8 shows, the null hypothesis for the Breusch-Pagan LM test can be rejected and hence, it can be documented that the random effect model is the most efficient estimator. Meanwhile, the Hausman test for fixed effects vs. random effects model, $\chi 2 = 28.19$, is significant at 5% significance level, indicating that the difference between the random effects and fixed effect model is significant, leading to a conclusion that fixed effect model is better than a random effect model. Therefore, the

discussion of the determinants of indirect financial distress costs is based on the results of fixed effect model.

TABLE 8
PANELS SPECIFICATION TESTS

Panel specification test		
Test	Statistics value	P value
Chow test	2.05	0.0004
Breush-Pagan LM test	3.44	0.0319
Hausman test	28.19	0.0004

The result in Table 9 suggests that three variables were found to be statistically significant at the 0.01, 0.05 and 0.1 significance level. SIZE was found to be negatively related to indirect costs, suggesting that the bigger the firm's assets, the smaller will be the indirect financial distress costs. This finding is consistent with [3] that small firms might better be able to avoid problems of financial distress because of their less complicated internal contractual agreements. Reference [3] also shows that smaller firms experience drop in sales only slightly greater than the sample average while the experience drop in the market values of their equities, are considerably larger than the sample average. For Tobin's Q (TQ), consistent with previous literature such as [7], this paper found a strong positive relationship between TQ and CFD, leading this paper to anticipate that a firm's investment opportunities will influence its expected sales growth. As for the expected earnings growth (EEG), consistent with previous literature such as [60] and [61], this paper found a significant positive relationship between expected earnings growth (EEG) and CFD. Firms with high expected earnings growth are considered prone to greater loses in distress [60]. This is because a significant of their operating value depends on as yet unrealized high future earnings [61]. In times of distress, these relatively large components of value are lost. In addition to that, consistent with debt overhang problem, industries with large growth opportunities tend to have high potential costs of financial distress.

Table 9: Regression results

TID	0.0025 (0.562)
LEV	-0.0284 (0.241)
CINV	0.0229 (0.463)
TQ	37.66* (0.021)
INTANG	0.0148 (0.741)
TANG	0.120 (0.709)
LA	0.0129 (0.884)
EEG	0.368** (0.002)
SIZE	-36.60*** (0.000)
Constant	153.0*** (0.000)
N	240
R^2	0.427
Adj. R^2	0.256
p-values in parentheses	
* p<0.05, ** p<0.01, *** p<0.001	

C. Conclusion

This paper has examined the indirect financial distress costs for 48 financially distressed firms from the trading and services sector. The mean indirect costs is 10.21% (SD=66.01), -3.1% (SD=120.83), -10.66% (SD=21.80), and 4.07% (SD=86.01), 5.93% (SD=30.21) for opportunity costs, median-adjusted EBITDA/sales, median-adjusted EBITDA/assets, capital discount (sales), and capital discount (Assets) respectively. It is important to note that the capital discount (sales) shows that the firms under investigation are operating at a premium, and perform better than the sector. The evidence also provides further confirmation the pattern of the indirect costs. All proxies for indirect financial distress costs, with the exception IAES and IAEA, increases and become apparent as the firms near financial distress. The results also suggest that only three explanatory variables, Tobin's Q, SIZE and expected earnings growth are statistically significant. Although this paper provides empirical evidence, a number of areas need to be refined with future empirical research. This study focuses only on trading and services sectors and concentrates only on the quantitative estimates of the costs. Future research might want to include other sectors and consider other techniques or models to estimate the costs.

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