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Full Length Research Paper

What should they do? Capital structure behavior in financially-distressed firms

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We set out in the present study to analyze the differences in capital structure within financially-distressed firms under the 'trade-off' and 'pecking order' theories, and to determine which financing approach is more beneficial to such financially-distressed firms. Our econometric analysis is performed under the following two steps. Firstly, we select a number of firms under financial distress and attempt to identify their capital structure in order to determine their characteristics. Secondly, we divide our sample of financially-distressed firms into two categories, the first of which are referred to as 'Truly Failed' firms, whilst the second category is referred to as 'Normal' firms (those previously in financial distress but which subsequently recovered and ultimately resumed their normal operations). Prior to the occurrence of financial distress, support is provided by both the 'Normal' firms and 'Truly Failed' firms for the 'pecking order' theory, thereby indicating that these firms have no specific preferences for financing. Following the occurrence of financial distress, the empirical results on the 'Normal' firms continue to provide support for the 'pecking order' theory, whereas the results on the 'Truly Failed' firms provide no such support.

Key words: Financial distress, capital structure, trade-off theory, pecking order theory.

INTRODUCTION

In the majority of studies within the extant literature on capital structure, there has been a general tendency to focus on the exploration of firms proceeding under normal operating conditions, resulting in a distinct lack of focus on financially- distressed firms. When firms fall into financial distress, they are of course in particular need of valuable sources of funding, much more so than non-distressed firms; however, it is also obvious that it will be far more difficult for them to obtain funding at such times. These firms must therefore bear the brunt of their financial crisis through adjustment to their capital structure; that is, they must determine the lowest capital costs that will enable them to solve their financial problems.

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Shyam-Sunder and Myers (1999) clearly showed that if firms find themselves in financial distress, very few managers would consider resorting to the issuance of new shares, either as a means of paying off their debts or for use in investment; despite this, a common characteristic of the capital structure of firms prior to being hit by financial distress is a high debt ratio. Although it becomes obvious to financially-distressed firms with a high debt ratio that the only they will be able to obtain funds is through the issuance of new shares, given that the stock prices of such firms are likely to be at all-time lows, they would clearly be unwilling to use this particular method of raising funds. Gilson et al. (1989) investigated the incentives for private debt restructuring amongst financially-distressed firms, as compared to the far less attractive alternative of declaring bankruptcy, and found that there was a much greater likelihood of private debt restructuring amongst those firms with more intangible assets,

and those that owed a greater proportion of their debt to banks, whilst owing relatively little to lenders.

Although many of the prior studies place considerable emphasis on the ways in which financially-distressed firms can effectively adjust their debt, the exploration of the process of capital structuring has received far less attention. Based upon the theory of an 'optimal capital structure', firms within an imperfect market should strive to maintain specific target debt ratios, following the basic principle of minimizing their costs in order to maximize the value of the firm. General analyses of the appropriate balance between the tax advantages and the costs of financial distress are offered in numerous studies;[1] however, the results have invariably failed to provide any direct practical formulae capable of determining exactly what constitutes an optimal capital structure. Given the problem of asymmetric information and bankruptcy costs, Ross (1977) specifically ignores any consideration of tax, proposing that high-quality firms who consider that they have a lower probability of bankruptcy will issue more bonds (higher debt ratio) so as to effectively distinguish themselves from low-quality firms. Several specific issues have been suggested as creating the 'optimal' firm-specific capital structure, including the risk characteristics of different types of debt, the nature of the assets of the firm, increasing financial distress, failure costs and agency-induced value losses at higher debt levels. Thus, in the post Modigliani and Miller (1963) period, based upon modifications of their original propositions so as to reflect increasing agency costs, as well as bankruptcy and distress costs at higher debt levels, many of the early models of optimal capital structure are often referred to as (static) trade-off models (Jensen and Meckling, 1976). The maximization of firm value essentially equates to the maximization of shareholder wealth. The primary responsibilities of managers therefore should be to seek out the lowest costs of capital structuring and to identify an investment plan which will produce the highest profitability for the firm, thereby ensuring that the working capital of the firm induces the maximum benefits.

Firms generally have two sources of funding, the first of which is internal funding, which is the main source of firms' funding arising from their retained earnings. The second is external funding, which is the main source of debt, and which generally arises from the issuance of new shares. The differences in capital structure come as a result of divergent sources of funding, and it is this issue that poses the most important problem for firms to deal with in their capital structuring. Consequently, they must determine the most effective ways of using their different sources of funding to minimize their capital costs. Two major theories stand out in the exploration of the capital structure of a firm, the 'static trade-off' and' Pecking Order' theories. 'Static trade-off' theory assumes that the balance of a firm's debt, between costs and interest, has a decisive impact on the optimal level of liabilities whilst achieving the minimization of costs, whereas 'pecking order' theory suggests that where there is no information asymmetry, firms will follow a specific course, involving: (i) the initial use of funds that are generated internally (i.e. undistributed earnings); (ii) the subsequent drawing on debt capital if additional funds are required; and (iii) the final resort to the issuance of new equity to cover any remaining capital requirements.

From a static trade-off theory perspective, Stiglitz (1972) argued that a firm should include the bankruptcy costs in its capital structuring, from which the debt of a firm has tax shield benefits; however, at the same time, it must bear the results of any over-borrowing costs arising from the bankruptcy. The value of the firm will be maximized when the marginal benefits of the tax shield are equal to the marginal costs of bankruptcy. At this time, the capital structure of the firm will be at its optimal level. Leland (1994) subsequently developed a theory of optimal capital structuring considering both tax benefits and the offsetting of the costs of financial distress resulting from the use of debt financing.

Shyam-Sunder and Myers (1999) further argued that if the costs of financial distress were found to be too onerous, less optimistic managers would consider issuing equity to finance real investment or reduce their debt. Nevertheless, such managers would be less likely to pursue the issuance of equity if their information was sufficiently favorable and the issue price was too low. Thus, according to the analysis of Shyam-Sunder and Myers (1999), a broader pecking order hypothesis would accommodate some issuance of equity, although at higher debt levels (financial distress) it would be difficult to distinguish between the pecking order and static trade-off theory predictions.

Gilson (1997) adopted a transaction costs perspective to investigate the capital structure of firms in financial distress, and found that since financially-distressed firms are generally limited by high transaction costs, they will adjust their reconstruction costs to the prior optimum capital structure and consult with creditors to repay their debts with certain conditions; nevertheless, despite being subject to many restrictions, the ratio would still invariably be higher than their liabilities. Gilson (1997) explored only whether financial distress would result in the most appropriate capital structure, with no attempt being made to further explore whether the capital structure followed the static trade-off or pecking order theory. Several issues in the restructuring of debt relating to financial distress have been explored in a number of prior studies, including the restructuring of bank claims (Gilson, 1990), debt restruc-turing versus bankruptcy (Gilson, John and Lang, 1990); public debt versus bank debt restructuring (Brown, James and Mooradian, 1993) and asset sales (Brown et al., 1994). The analysis in these studies is essentially placed on the diverse responses of financially-distressed firms;
as such, these studies have provided no evidence on the

[1] Examples include: Kraus and Litzenberger (1973), Scott (1976) and Kim (1978).

capital structuring decisions of these firms in terms of whether they follow the trade-off or pecking order models. However, a dynamic approach of capital structure decisions involves the possibility that companies adjust their level of debt towards to a target debt ratio (Frank and Goyal, 2007). Otherwise, the relationship between size and debt as well as the relationship between profitability and debt found in the current study corroborate the conclusions of several studies (Shyam-Sunder and Myers, 1999; Miguel and Pindado, 2001; Ozkan, 2001; Frank and Goyal, 2003; Panno, 2003; Bevan and Danbolt, 2004; Gaud et al., 2005; Ojah and Manrique, 2005; Tong and Green, 2005).

An attempt is therefore made in the present study to examine the issue of capital structuring decisions amongst financially-distressed firms outside of any legal bankruptcy procedures. Our primary aim is to identify whether these financially-distressed firms tend to adjust their debt ratios in accordance with either the trade-off or pecking order theories. We specifically set out to test two hypotheses, respectively following Gilson (1997) and Barclay and Smith (2005):

H_1: Financially-distressed firms will not follow target debt ratios.

H_2: Financially-distressed firms will elect to follow 'pecking order' theory.

If the evidence is found to be consistent with the pecking order theory, then this would provide a clear indication of higher transaction costs; therefore, distressed firms would be unable to revise their debt ratios in accordance with trade-off theory. Furthermore, in addition to imposing discipline on the management of financially- distressed firms, the issuance of debt would provide a signal to investors conveying the continuing good prospects of such firms.

Our research project essentially has a two-fold purpose. Firstly, we discuss which methods of capital structuring financially- distressed firms would tend to use, measuring the related variables of the firms as well as the characteristics of their relationship with liabilities, and seeking to identify compliance with either static trade-off theory or pecking order theory. Studies on financially-distressed firms are clearly undertaken after the actual financing of such firms, and therefore use quantitative methods to verify whether trade-off theory or pecking order theory are appropriate for examining the changes in their liability levels. Secondly, if financially-distressed firms can continue to operate whilst attempting to overcome their period of distress, they will clearly still have a chance of regaining their prior status of firms operating under normal conditions. Although many of the prior studies have tended to focus on the 'early warning' model of financial distress, they have rarely gone on to report how such firms continued to operate once they had overcome their period of financial distress. The major factor for factor for such firms is clearly their method of financing, which describes the actual financing of these firms in terms of their capital structure decision-making behavior. This study therefore attempts to further differentiate between two categories of financially-distressed firms, the first of which comprises of 'Truly Failed' firms, whilst the second comprises of those firms that have undergone a period of financial distress but have overcome their difficulties and gone on to resume their normal operations. We examine the capital structure of these two types of firms focusing on their different characteristics. The significance of our examination of financially-distressed firms is the different effects on their operations based upon differences in their financing methods.

METHODOLOGY

In this study, we follow the Watson and Wilson (2002) model in an effort to verify the trade-off and pecking order theories. The static trade-off models, which invariably place emphasis on the determinants of the optimal capital structure, adopt the simplistic assumption that there are only two forms of financing, equity and debt. The empirical work of Jordan et al. (1998) also allows for the construction of a dependent variable, such as the 'debt to equity' ratio or the 'debt to total assets' ratio. Within the pecking order model, fine distinctions are necessary between different sources of financing in order to test various predictions, such as the assumption that retained earnings are preferred to the issuance of new shares (despite the fact that both are classed as equity). Thus, it will clearly be difficult to test the full range of pecking order predictions using the single financial dependent variable of leverage. Furthermore, as argued in Shyam-Sunder and Myers (1999), in most of the empirical specifications, the tendency has been to incorporate a partial adjustment mechanism, which means that even if the behavior of firms follows a pure pecking order model, it will still be extremely difficult to empirically reject the static trade-off model as a valid description of the capital structure policies of distressed firms. In the present study, we use the Watson and Wilson (2002) model in order to mitigate these problems.

The Watson and Wilson model

Watson and Wilson (2002) examined the ways in which firms obtained their necessary funding for growth in their business operations or firm assets. The definition of total assets is provided in Equation (1), as follows:

$$Total\ Assets\ (TA_{it}) = Equity\ (E_{it}) + Debt\ (D_{it}) + Other\ Liabilities\ (OL_{it}) \quad (1)$$

Watson and Wilson (2002) developed the following empirical model to examine whether, over a period of time, the changes in other liabilities (OL_{it}) for each firm were assumed to fluctuate randomly with the average growth rate of the firm:

$$(TA_{itit\text{-}1} - TA_{it\text{-}1})/TA_{it\text{-}1} = \alpha + \alpha_2(E_{itit\text{-}1} - E_{it\text{-}1})/TA_{it\text{-}1} + \alpha_3(D_{itit\text{-}1} - D_{it\text{-}1})/TA_{it\text{-}1} + \varepsilon_{it} \quad (2)$$

where is a fixed effect vector representing the average growth rate of the firm, $(OL_{it} - OL_{it\text{-}1})/TA_{it\text{-}1}$.

When a firm succeeds in maintaining an optimal level of debt, we would expect to find that $_2 = _3$, which indicates that the

proportionate changes in its financing behavior in support of its operational activities are exactly matched; this is achieved by adjusting the same proportionate changes in equity and debt.

According to the assumption of 'pecking order' theory, retained earnings (*RE*) are preferred to the issuance of new debt, and new debt is preferred to the issuance of new equity. If the pecking order theory holds, then the growth rate in *RE* should be higher than the growth rate in equity. Watson and Wilson (2002) make changes to the equity of the firms in order to incorporate the issuance of new equity into the model; this is represented as follows:

$$Equity_{it} - Equity_{it-1} = P_{it} - Div_{it} + NE_{it} \quad (3)$$

where P_{it} refers to the profits available for distribution to common shareholders; Div_{it} are the dividend payments; NE_{it} represents the net changes in the issuance of new equity over the period; and $P_{it} - Div_{it}$ reveals the profits that are retained within the firms over the period.

By substituting Equation (3) into Equation (2), we derive a new equation, Equation (4), which can be written as follows:

$$(TA_{it} - TA_{it-1})/TA_{it-1} = \alpha + \alpha_2(P_{it} - Div_{it})/TA_{it-1} + \alpha_3(NE_{it})/TA_{it-1} + \alpha_4(D_{it} - D_{it-1})/TA_{it-1} + \varepsilon_{it} \quad (4)$$

If the pecking order theory holds, the following relationship for should be observed: $_2 > _4 > _3$. This relationship seems to imply a system of priority in the sources of financing, starting with the retained earnings of the firm, followed by the issuance of debt, and finally, the issuance of equity as a last resort.

Watson and Wilson (2002) provided strong evidence in support of the pecking order theory based upon the problem of asymmetric information which is invariably encountered in external financing. Within the present study, the industry characteristics of the financially-distressed firms include heavy expenditure as well as greater uncertainty or difficulties in the evaluation of the true value of the firm (Carpenter and Petersen, 2002). Therefore, by dividing the sample firms on the basis of whether they are 'Normal' firms or 'Truly Failed' firms, we may be able to gain a better understanding of whether such firms chose to adopt divergent financing behavior. Furthermore, the Wald test is an effective method of testing the sig-nificance of particular explanatory variables within a statistical model.

We include a binary outcome variable and one or more explanatory variables within our regression models, noting that there will be an associated parameter for each explanatory variable in the model. The Wald test is one of a number of ways of testing whether the parameters associated with a group of explanatory variables are zero, if, for a particular explanatory variable, or group of explanatory variables, the Wald test is significant.

RESULTS

The data adopted for the present study comprises of Taiwanese firms which have undergone financial distress, with such financially-distressed firms in Taiwan being defined as those firms listed on the Taiwan Stock Exchange which are either required to suspend all transactions, or to change their transaction method to full delivery stock (in lots of 1,000 shares, as opposed to retail traded) . The sample for this study comprises of annual data obtained from the "Taiwan Economic Journal" (TEJ) databank and the Prospectus and Market Observation Post System (MOPS). The total sample covers the period from 1990 to 2007, which spans the period five years before and five years after the financial distress of the firms. We divide the total sample into two groups, based upon their bankruptcy delisting or the resumption of normal operations. The first group comprises of those financially- distressed firms which ultimately succeed in resuming their normal operations, whilst the second group comprises of those firms which become delisted as a result of the occurrence of financial distress. Following appropriate screening of the data, we are left with a total of 48 sample firms; the first group (the financially-distressed firms which subsequently resumed normal operations) comprises of a total of 18 firms, whilst the second group (those firms which were delisted as a result of the occurrence of financial distress) comprises of a total of 30 firms. We go on in this study to explore the characteristics of the capital structure of all of the financially-distressed firms, and also measure the relationship between the variables and the debt for each firm. We investigate the methods used to obtain funding, thereby identifying whether the financially-distressed firms conform to the static trade-off theory or the pecking order theory. We also aim to determine whether, after the occur-rence of financial distress, the use of quantitative methods to verify changes in the level of liabilities is appropriate for these financial theories.

The characteristics of the capital structure within these two types of firms is explored in order to determine whether the differences in operations between the two categories of financially-distressed firms are attributable to their divergent methods of financing, since the finan-cing behavior of a firm may be conditional on its capital structure. If the firms are in need of additional funds, then the first source of capital will be from internal funds, followed by the issuance of debt.

Descriptive statistics

The descriptive statistics of all of the variables adopted for this study are presented in Table 1, from which we can see that the mean percentage value of *Debt Ratio* is quite large, thereby indicating, as argued by Gilson (1997), that financially-distressed firms are unable to adjust their debt ratios to optimal levels as a result of the high transaction costs. This provides evidence to show that those firms classified in this study as 'Truly Failed' firms have higher debt ratios (53.38 per cent) than those of the 'Normal' firms (49.06%).

The mean values of Retained Profits (*RP*) and net issuance of New Equity (*NE*) are found to be small, thereby suggesting the possibility that some adjustment has taken place towards an optimal debt ratio. However, from the large percentage value of *Debt Ratio*, we may infer that the net issuance of new equity is less than that required needed for full adjustment towards the optimum. This is again in line with the transaction costs argument

Table 1. Descriptive statistics.

Statistic	Total asset (NT$ bn)	Debt ratio[a] (%)	RP[b] (%)	NE[c] (%)	D[d] (%)
All firms					
Max	50.08	192.86	84.48	90.47	1411.40
Min	0.06	7.78	–47.10	–68.11	–115.11
Mean	5.86	51.76	3.58	2.53	15.19
S.D.	8.62	22.82	11.41	17.29	72.38
Normal Firms[e]					
Max	43.55	96.76	84.14	81.76	1411.40
Min	0.06	7.78	–25.67	–68.11	–65.82
Mean	6.15	49.06	2.72	2.56	20.42
S.D.	8.10	18.40	10.56	19.82	108.25
Truly Failed Firms[f]					
Max	50.08	192.86	84.48	90.47	394.31
Min	0.14	9.44	–47.10	–38.63	–115.11
Mean	5.69	53.38	4.05	2.51	12.05
S.D.	8.92	24.99	11.88	15.62	36.77
t-statistics	0.58	–2.17*	–1.21	0.03	1.00

[a]Debt Ratio = Debt/Total Assets. [b]RP refers to retained profits relative to Total Assets. [c]NE refers to net new equity issued relative to Total Assets. [d] D is an increase in debt relative to Total Assets. [e]'Normal' firms refers to those financially-distressed firms which subsequently recover and are able to resume their normal operations. [f]'Truly Failed' firms refers to those firms which become delisted as a result of the occurrence of financial distress.

of Gilson (1997). Based upon a comparison between the retained profits and net issuance of equity by 'Normal' firms and 'Truly Failed' firms, we may infer that the former are likely to have more internal funds than the latter, thereby requiring far less frequent issuance of new equity.

Results of the Watson and Wilson (2002) model

The results from Equation (4) – relating to firms pursuing different types of financing behavior – are presented in Table 2. We find that, as a whole, the results provide significant support for the 'pecking order' theory, since $_2 > _4 > _3$. This relationship thereby implies that the sources of financing have a clear system of priority; that is, the slope coefficient on retained profits (*RP*) is greater than the slope coefficients on the issuance of both debt (*D*) and new equity (*NE*). All of the slope coefficients in Table 2 are found to have statistical significance at the 1 per cent level. We also go on to adopt the Wald test to further examine these slope coefficients, in order to determine the statistically significant difference between them. As regards the results on the 'Normal' firms, we find that the slope coefficient on *RP* is 1.243, which is greater than the slope coefficients on *D*, at 1.016, and *NE*, at 0.761, both of which are also found to be statistically significant at the 1 per cent level. The results on 'Normal' firms therefore provide strong support for the pecking order theory. As for 'Truly Failed' firms, the slope coefficient on *RP* is 1.264, which is quite close to the slope coefficients on both *D*, at 1.036, and *NE*, at 0.752, all of which are found to have statistical significance at the 1 per cent level. Thus, the results on the 'Truly Failed' firms also provide strong support for the 'pecking order' theory.

Further division of the sample is undertaken in this study based upon the periods both before and after the financial distress of the firms; the regression results are presented in Table 3, where *TA* within the regression model refers to the period of change in the total assets ratio, which, according to 'pecking order' theory is expected to be $_2 > _4 > _3$. As regards the results on the 'Normal' firms in the period prior to the occurrence of financial distress, we find that the slope coefficient on *RP* is 1.138, which is again greater than the slope coefficients on *D*, at 1.015, and *NE*, at 0.823, both of which are found to have significance at the 1 per cent level. In the period following the occurrence of financial distress, the slope coefficient on *RP* is found to be 1.51, which is again greater than the slope coefficients on *D*, at 1.034, and *NE*, at 0.684, all of which are found to be significant at the 1% level.

We adopt the Wald test in order to further examine the statistical significance of the differences between the slope coefficients in the period prior to financial distress, and find that for the 'Truly Failed' firms, the slope coefficient on *RP*, at 1.359, is greater than the slope coefficients on both *D*, at 1.025, and *NE*, at 0.760, all of which are found to have significance at the 1% level. The results of 'Truly Failed' firms once again provide strong

Table 2. Results of the Watson and Wilson model for the full sample, normal firms and truly failed firms [a]

Variables	All firms		Normal firms [b]		Truly failed firms [b]	
	coeff.[e]	*t*-stat.	coeff.[e]	*t*-stat.	coeff.[e]	*t*-stat.
Panel A: Watson and Wilson Model [c]						
Constant	5.739***	3.63	6.486***	5.52	5.094***	4.70
RP	1.250***	7.78	1.243***	6.51	1.264***	8.32
EI	0.757***	7.56	0.761***	7.18	0.752***	7.82
D	1.019***	9.53	1.016***	8.98	1.036***	9.91
Adj. R^2	0.980		0.991		0.936	
Panel B: Wald Test [d]						
$_2 = _3$	74.577***		22.851***		51.615***	
$_3 = _4$	75.068***		34.975***		39.393***	
$_2 = _4$	25.180***		7.263***		16.599***	

[a] The regression model estimated for the different sub-samples, based on profitability, is: $(TA_{it} - TA_{it-1})/TA_{it-1}) = \alpha + \alpha_2 (P_{it} - Div_{it})/TA_{it-1} + \alpha_3 (NE_{it})/TA_{it-1} + \alpha_4 (D_{it} - D_{it-1})/TA_{it-1} + \varepsilon_{it}$, Where the dependent variable is : $(TA_{it} - TA_{it-1})/TA_{it-1}$. [b] 'Normal' firms refers to those firms which are financially distressed, but which subsequently recover and are able to resume their normal operations; 'Truly Failed' firms are those firms that become delisted as a result of their financial distress. [c] *RP* refers to retained profits (*RP* = *Pit – Divit*); *NE* refers to the net amount of new equity issued over the period; and *D* refers to the increase in debt (*D* = *Dit – Dit* –1). [d] The null hypotheses of the Wald test are: H_0: 2 = 3; H_0: 3 = 4; H_0: 2 = 4. [e] *** indicates significance at the 1% level.

support for the 'pecking order' theory. We also adopt the Wald test to examine the statistically significant difference between the slope coefficients in the period after financial distress; however, we find that for 'Truly Failed' firms, the slope coefficient on *D*, at 1.129, is greater than the slope coefficients on both *RP*, at 0.969, and *NE*, at 0.774, with all of these again being found to have statistical significance at the 1% level. Clearly, in the post- distress period, the results on 'Truly Failed' firms do not provide support for the 'pecking order' theory, as a result of which we may infer that these firms are unwilling to use their internal funds at times when they experience fund shortages.

Prior to the occurrence of financial distress, support is provided by both the 'Normal' firms and 'Truly Failed' firms for the 'pecking order' theory, thereby indicating that these firms have no specific preferences for financing. Following the occurrence of financial distress, the empirical results on the 'Normal' firms continue to provide support for the 'pecking order' theory, whereas the results on the 'Truly Failed' firms provide no such support. This could also imply that these financially-distressed firms have no real preference for any specific type of financing behavior. According to 'market timing' theory, market value is an important factor determining the financing behavior of firms. When the market value of the firm is higher than its true value, then the firm would clearly prefer to issue new equity as opposed to debt. Besides, Titman and Wessels (1988) and Wald (1999) state that after financing with the external funds, if the funds are still not enough, the debt ratio should be negative correlation with financial condition.

Conclusions

We have made a preliminary attempt in this paper to empirically test the implications of the 'pecking order' model, which argues that when financially- distressed firms require additional finances, the use of retained earnings is preferable to the issuance of debt, which, in turn, is preferable to the issuance of new shares to outsiders. The pattern of the coefficients in this study is found to be consistent with the predictions of the 'pecking order' model, with this being found to be particularly strong in relation to closely held firms, where there is information asymmetry, as well as commonality of interests between shareholders and managers; thus, the suggested pecking order preferences would be most apparent. We have examined the capital structure of financially-distressed firms, adopting the Watson and Wilson (2002) model in order to empirically determine whether the firms follow 'pecking order' or 'trade-off' theory. We find that there is some degree of diversity between the 'Normal' firms and the 'Truly Failed' firms with regard to their choice of capital structure, and as such, our results provide strong support for the pecking order approach to capital structure adjustments by firms during periods of financial distress.

The empirical results on both the 'Normal' firms and the

Table 3. Results of the Watson and Wilson model for normal firms and truly failed firms in the pre- and post-distress periods[a].

Variables	Normal firms Pre-distress[b]			Normal Firms Post-distress[b]			Truly Failed Firms Pre-distress[b]			Truly Failed Firms Post-distress[b]		
	coeff.[e]		*t*-stat.	coeff.[e]		*t*-stat.	coeff.[e]		*t*-stat.	coeff.[e]		*t*-stat.
Panel A: Watson and Wilson Model[c]												
Constant	7.797	***	5.83	4.848	***	4.12	4.450	***	3.67	4.984	***	6.28
RP	1.138	***	9.19	1.515	***	7.98	1.359	***	8.84	0.969	***	7.13
EI	0.823	***	10.28	0.684	***	8.23	0.760	***	5.35	0.774	***	7.56
D	1.015	***	9.79	1.034	***	10.38	1.026	***	9.38	1.129	***	9.55
Adj. R^2	0.994			0.878			0.943			0.919		
Panel B: Wald Test[d]												
$_2 = _3$	5.750		**	20.339		***	28.987		***	3.589		*
$_3 = _4$	8.886		***	29.602		***	9.486		***	41.904		***
$_2 = _4$	1.359			7.070		***	19.945		***	2.885		*

[a] The regression model estimated for the different sub-samples, based on profitability, is: $(TA_{it} - TA_{it-1})/TA_{it-1} = \alpha + \alpha_2 (P_{it} - Div_{it})/TA_{it-1} + \alpha_3 (NE_{it})/TA_{it-1} + \alpha_4 (D_{it} - D_{it-1})/TA_{it-1} + \varepsilon_{it}$, Wherethe dependent variable is : $(TA_{it} - TA_{it-1})/TA_{it-1}$. [b] 'Normal' firms refers to those firms which are financially distressed, but which subsequently recover and are able to resume their normal operations; 'Truly Failed' firms are those firms that become delisted as a result of their financial distress. [c] *RP* refers to retained profits (*RP* = *Pit – Divit*); *NE* refers to the net amount of new equity issued over the period; and *D* refers to the increase in debt (*D* = *Dit – Dit* –1). [d] The null hypotheses of the Wald test are: H_0: 2 = 3; H_0: 3 = 4; H_0: 2 = 4. [e] *** indicates significance at the 1% level; ** indicates significance at the 5 per cent level; and * indicates significance at the 10% level.

'Truly Failed' firms prior to the occurrence of financial distress provide strong support for the 'pecking order' theory, thereby indicating that they have no specific preferences with regard to their methods of financing. However, our empirical results also show that in the period after the occurrence of financial distress, 'Normal' firms continue to provide strong support for the 'pecking order' theory, whereas the 'Truly Failed' firms do not exhibit such support. In conclusion, the empirical results of the present study provide evidence to show that the financing behavior of financially-distressed firms in Taiwan is quite divergent.

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