Pecking at Pecking Order Theory: Evidence from Pakistan's Non-financial Sector

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Abstract

This study tests the Pecking Order Theory for the capital structure of listed firms in Pakistan. As per Pecking Order Theory in capital structure formulation, internally generated resources would have first priority, followed by debt issuance where equity is used as a last resort. In its strong form, the Pecking Order Theory sustains that equity issues would never occur, whereas in its weak form, limited amounts of issues are acceptable. The methodology adopted in this empirical study involves cross-section regressions and the testing of hypotheses stemming from the underlying theory in its strong and weak forms.

A sample of capital structure of non-financial firms listed at KSE is considered from 2001 to 2008. A statistical tool of panel data regression analysis is used to test different firms' data. The value of R2, t-test and F-Stat indicate firms in KSE supporting the weak form of pecking order theory, i.e., the option of using internal equity and debt is more preferred and a limited amount of external equity is used for reinvestment and fund raising purposes.

Key words: pecking order theory, capital structure, debt issuance, equity, non-financial firms, bankruptcy, trade-off

1. INTRODUCTION

Pecking order theory to date remains essential part of corporate finance. It is considered as one of the most influential theories. In 1958 Modigliani and Miller (1958) presented their theory of investment and held that capital structure decision has no impact on a firm's value, it becomes irrelevant how it is financed given that under perfect market conditions exist and in absence of bankruptcy, tax and other associated costs.

After their initial research many modern theories such as Trade-off theory and Pecking order theory came into being. The main difference was that the assumptions were more realistic, so they could be easily tested. According to Shyam-Sunder and Myers (1999), static trade off model firms determine their optimal debt levels, by comparing cost and benefits of debt financing. This point is where marginal present value of interest tax shield is equal to the marginal present value of the costs of financial distress. But on the other hand pecking order theory suggests that the manner in which firms cover their financing deficits does not depend on the current levels of debt and that the firms always prefer internal funds to external funds and debt to equity. Bram, Charles, Frank, Cadsby, Murray, and Maksimovic, Vojislav. (1990) examine the predictive power of equilibrium dominance in experimental markets where firms with investment opportunities have an informational advantage over potential investors and are permitted to purchase a money-burning signal. Equilibrium dominance often fails to predict well when a Pareto-superior sequential equilibrium is also available. Instead, equilibrium selection appears to be related to the potential earnings of a more valuable firm that can signal its type successfully by defecting from the sequential equilibrium.

De Medeiros, O.R. and Daher, C.E. (2004) test two models with the purpose of finding the best empirical explanation for the capital structure of Brazilian firms. The models tested were developed to represent the Static Tradeoff Theory and the Pecking Order Theory. The sample consists of firms listed in the Sao Paulo (Brazil) stock exchange from 1995 through 2002. By using panel data econometric methods, we aimed at establishing which of the two theories has the best explanatory power for Brazilian firms. The analysis of the outcomes led to the conclusion that the pecking order theory provides the best explanation for the capital structure of those firms.

The capital structure theory has been dominated by the search for optimal capital structure required for any firm Shyam-Sunder and Myers (1999). According to Myers (1984) firms tend to utilize their retain earnings for purpose of financing when it is financially feasible and adequate. The reason is simply the adverse selection. Shyam-Sunder and Myers (1999) proposed that when any firm requires funds from external sources the equity is rarely issued. The firms simply opt for debt given that information costs associated with debt is lower that equity. They also refined these ideas into key testable predictions.

In this paper, our aim is to study the extent to which the pecking order theory provides a satisfactory account of the financing behavior of listed firms listed on Karachi Stock Exchange (KSE) over the 2001 to 2008 period. The sample consists of 286 companies. We adopted similar methodology as Shyam-Sunder and Myers (1999) and Frank and Goyal (2003). Our main objective was to see if our results were in line with previous researches conducted on US and European economies. The uniqueness of this study is fact that the methodology adopted by us is yet to test on Pakistani economy. Our primary objective is to establish the whether or not there is any evidence to support Pecking order theory in Pakistan.

2. LITERATURE REVIEW

The Pecking Order Model developed by Myers C.S et al (1984). According to this model firms prefer internal funding over external funding. In case firms require external funding they would prefer debt over equity and equity is generated as last resort. So the firms don't have predetermined or optimum debt to equity ratio due to information asymmetry. The firms adopt conservative approach when it comes to dividends and use debt financing to maximize the value of firm.

When it comes to pecking order theory it has been supported by many academic such as Asquith and Mullins (1986) and Eckbo (1986) had shown evidence of adverse selection relating to equity issues. While research by Cadsby, Frank and Maksimovic (1990) provided similar evidence on experimental bases regarding firm's financing requirements.

One of the aspects of pecking order theory implies that when it comes to profitable firms, they would always prefer internal financing rather than taking up new debts or equity. Even though, debt is considered cheaper than equity within certain proportions. Myers (1984) suggests that it is because the value of firm and wealth of shareholders associated with firm is disturbed by asymmetry of information. This argument is supported by Famma and Fench (2000) who found that profitable firms were less levered as compared to non-profitable firms. Murray Frank and Goyal (2003) held that large firms tend to accumulate debts in order to support and keep up with the payments of dividends while small firms tend to behave in opposite behavior. Abu de Jons,

Verbeek and P. Verwijmeren (2008) conducted his research on 6000 US firms in the period of 1985 to 2005 and found evidence to support pecking order theory. Bessler et al (2008) concluded that non US firms support pecking order theory.

Many research conducted on developing countries support pecking order theory. One such research et al. (2004) on Brazilian economy supported the above mention notion. They concluded that the main reason was the difficulty in issuing equity. Abu Jalal (2007) conducted his research on 17000 non-financial firms across 41 different countries and found that adverse selection costs and information asymmetry were main cause of debt issue. But at same time these two elements did not play vital role in developed countries as compared to developing countries.

Confirming predictions shared by the tradeoff and pecking order models, more profitable firms and firms with fewer investments have higher dividend payouts. Confirming the pecking order model but contradicting the tradeoff model, more profitable firms are less levered. Firms with more investments have less market leverage, which is consistent with the tradeoff model and a complex pecking order model. Firms with more investments have lower long-term dividend payouts, but dividends do not vary to accommodate short-term variation in investment. As the pecking order model predicts, short-term variation in investment and earnings is mostly absorbed by debt (Fama, Eugene and Fench, Kenneth (2000).

In 1990's Jung, Kim, and Stulz (1996) conducted their study on new bond issues and primary stock American firms from 1977 to 1984. They also found evidence in support of pecking order theory. Marsh (1982) also came to similar conclusion when he studied UK firms. While Helwege and Liang (1996) contradict these claims when they conducted their research on IPOs Taggart (1977), Marsh (1982), Jalilvand and Harris (1984) Auerbach (1985), Long and Malitz (1985), Smith and Watts (1992), Opler and Titman (1994) have all contradicted pecking order theory and have held in one way or the other that firms tend to prefer targeted (fixed) debt to equity ratio. Caves (1980) and Gupta (1969) and Baskin (1989) have found sufficient evidence to support Pecking order theory.

In 2011 Jong, A. de, Verbeek, M. & Verwijmeren, P. in their paper tested the static tradeoff theory against the pecking order theory. We focus on an important difference in prediction: the static tradeoff theory argues that a firm increases leverage until it reaches its target debt ratio, while the pecking order yields debt issuance until the debt capacity is reached. For a sample of U.S. firms in the period 1985-2005, we find that the pecking order theory is a better descriptor of firms' issue decisions than the static tradeoff theory. In contrast, when we focus on repurchase decisions we find that the static tradeoff theory is a stronger predictor of firms' capital structure decisions.

Few other latest researches on the given topic such as Raj Aggarwal et al (2006), Karadeniz et al (2009), Xueping Wu et al (2004), Huson, Joher Ali Ahmed et al (2009) and Shyam Sunder (1999), have all argued in favor of pecking order model and concluded that this model possess much greater explanatory power when compared to other models. Javed, Attiya Yasmin and Imad, Qaisar (2012)This study investigates the determinants of the various components of debt—short- and long-term debt and their categories—in the case of nonfinancial listed firms in Pakistan for the period 2008–10. We make a significant distinction between these determinants depending on the components of debt issued: long-term or short-term forms of debt. Our results show that large firms are more likely to have access to long-term debt borrowing than

small firms and that, due to supply constraints, small firms resort to short-term forms of debt. Firms with higher potential for growth prefer using less long-term debt as well as debt with fewer restrictive arrangements in order to become more financially flexible. Firms with sufficient fixed assets can generate external finance more easily and at lower cost by using these assets as collateral, which supports the tradeoff theory. Firms generating high levels of profit, however, may choose to finance their investments using internal resources rather than by raising debt finance, which conforms to the pecking order theory. Our results also confirm the presence of the inertia effect and industry-specific effects, and are robust to alternative estimation techniques.

The extent of debt financing mostly depends upon various factors such as economic growth, availability of credit, legal and financial structure etc. other models such capital structuring and static trade off models usually failed to coup with dissimilarities of above factors.

How pecking order is superior to the trade-off model? While the trade-off model implies a static approach to financing decisions based upon a target capital structure, pecking order theory allows for the dynamics of the firm to dictate an optimal capital structure for a given firm at any particular point in time. (Copeland & Weston, 1988) A firm's capital structure is a function of its internal cash flows and the amount of positive-NPV investment opportunities available. A firm that has been very profitable in an industry with relatively slow growth (i.e. few investment opportunities) will have no incentive to issue debt and will likely have a low debt-to-equity ratio. A less profitable firm in the same industry will likely have a high debt-to-equity ratio. The more profitable a firm, the more *financial slack* it can build up. (Liesz, Thomas J., 2002).

Some other researchers have discussed other aspects of this given topic:

Pardesi, Arsalan (2011), in his research paper tests the pecking order theory of capital structure on the textile firms listed on the Karachi Stock Exchange (KSE) covering a period of six years from 2004–2009. The basic pecking order model predicts that firms follow a pecking order of financing, preferring internal finance to external finance and debt to equity. The paper shows that firms do indeed prefer internal financing to external financing. However, the role of preferring debt to equity is ambiguous and requires further research on empirical fronts as well as theoretical fronts. Nevertheless, this article shows that the pecking order theory provides more convincing explanation about the firms' financing behavior then the conventional leverage factors.

The results indicate that the pecking order theory by itself is rejected empirically. However, when compared to a contending regression based on conventional leverage factors it does display much more explanatory power then the conventional leverage regression. The addition of financing deficit to a conventional leverage regression significantly adds to the explanatory power of the model suggesting a greater support towards the pecking order theory.

This study conducts tests of the pecking order theory using an international sample with more than 6,000 firms over the period from 1995 to 2005. In contrast to the predictions of the pecking order theory, we observe a high correlation between the financing deficit and net equity issues. In time-series regressions with the change in net debt as the dependent variable and the financing deficit as the explanatory variable, we report more evidence for the pecking order theory for non-U.S.firms and firms from civil law countries than for U.S. firms (Wolfgang Bessler, W. Drobetz, y and Matthias C. Gruninger, 2010).

Chikashi Tsuji (2011), in his paper establishes that despite theoretical continuing developments in many past years, our understanding of the relationship between theories and practical corporate financing decisions remains incomplete. Therefore, this paper aims to supply the comprehensive material for better understanding of the capital structure, in particular, of the pecking order theory of corporate financing. With this aim, more specifically, we first survey literature related to the pecking order theory in order to widely introduce the empirical evidence including not only for the US but also for other international countries. Furthermore, introducing literature that conducted survey research as well, we also survey the international practical situations of corporate financing decisions related to the pecking order theory.

What are then conclusions and implications of the comparison between traditional trade-off model and pecking order theory? While the traditional trade-off model is useful for explaining corporate debt levels, pecking order theory is superior for explaining capital structure changes. By including a discussion of pecking order theory in the capital structure unit we are exposed to a broad base of both theory and practice that will enable us to better understand how important financing decisions are made. In addition to the traditional discussion of the impact of taxes, financial distress, and agency costs upon capital structure decisions, we will gain insight to how management motivations and market perceptions also impact these decisions. We will readily appreciate the concern managers have regarding the reporting requirements required to access capital markets. We will also be able to explain why observed practice does not seem to always follow theory. Furthermore, the addition of pecking order theory into the basic discussion of capital structure provides one more opportunity for *critical thinking* to occur. (Liesz, Thomas J., 2002).

3. METHODOLOGY

For purpose of this study our sample data consist of 286 nonfinancial firms (which paid dividends) listed in KSC (Karachi Stock Exchange). The period in question is 2001 to 2008. The main reason for seclusion of financial firms was the nature of their financial statements due to nature of their business. The leverage ratio of the financial firms varied greatly from non-financial firms and firms which did not pay dividends were excluded because there financial statements did not conform to parameters of our research.

The model is described by following equation:

$DEFt= DIVt+ It + \lrcorner Wt - Ct$

Where Ct stands for after tax and interest operating cash flow, Divt Dividend paid by firms, It for Capital investments of firms, Wt Net increase in working capital of firms and Ct denotes Long-term debt of firms, t denotes the variables of firms measured at the end of given period.

The nature of our data is panel data. Which applies that the data refer to variety of firm's and belongs to different time period. We have used OLS linear regression test on our

empirical data. We have used two equations to test our hypothesis relating to pecking order theory.

We tested aggregate deficit as independent variable via following equation (1)

$\Delta Di = \alpha + \beta\ DEFi + ui$ (1)

In equation (1) is the 1st order difference operator, Dt stands for net debt, which applies that Dt= Dt-Dt-1, while DEF, the deficit of funds is calculated by following equation. Where I is the net investment in fixed assets, W is the net working capital, DIV represent Dividend payments and C is cash flow after interest and taxes. Subscript t refers to time and Subscript i refer to ith firm. If there is evidence of strong form of Pecking Order Theory than α should be zero and β should be one. While in any other case α can be different from zero and b must be close to but less than one. At the same time we test another specification in line with Frank and Goyal (2003) by substituting DEF in equation (1) and we get equation (2) which is as under.

$$\Delta D_i = \alpha + \beta_1 I_i + \beta_1 \Delta W_i + \beta_3 DIV_i - \beta_4 C_i + u_i \tag{2}$$

As per our estimation in equation (2), the main conditions that signal the existence of pecking order theory in strong forms dictate that ,the expected value of α should be equal to zero. While the values of β1, β2, β3 be equal to one. At the same time value of β4 should be equal to minus one. If the value of α is different from Zero and those of β1, β2 and β3 must be less than but close to one and β4 must be greater than but close to minus one. Than this indicate that pecking order exists in its weak form.

We have applied series of diagnostic tests on the data and on the regression residuals, so as to make sure that results of the study are empirically effective. We have applied White (1980) test for heteroscedasticidade and Bera-Jarque (1981) normality test on equation (1) and (2). We have used t test to gauge significance of our results and F test to test the goodness of our results.

4. RESULTS AND DISCUSSION

In the Table 1 summary of the descriptive statistics are given. The variables include the Jarque-Bera test statistics and its p-values, which reveal the non-normality of all accounting variables.

Tab. 1 - Summary of the descriptive statistics. Source: Results generated from our model based on the input data from the Corporate Sector of Pakistan.

	CD	CFO	CI	DIV	WC
Mean	407.1829703	597.9221759	180.3426829	141.5113675	24.94011324
Median	44.1	78.4791	30.4	15	-0.1
Maximum	47169.1	53710.1636	38748.5	8794.4	17456.6
Minimum	-32701.1	-13435.7289	-18700.1	-2611.4	-48205.5
Std. Dev.	2641.164881	2935.15855	1293.448494	554.2145002	1668.176488
Skewness	8.630322104	11.06324047	10.79872309	7.694800276	10.38768588
Kurtosis	163.9085448	166.6617169	379.6741626	81.58712337	338.4323080
Jarque-Bera	2505461.176	2609283.341	13618137.99	613488.8815	10805210.32
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Observations	2296	2296	2296	2296	2296

The results obtained from equation (1) by using above mentioned tests are given in table 2.

Tab. 2 - Regression results for equation (1). Source: Results generated from our model based on the input data from the Corporate Sector of Pakistan.

Coefficient	Value	Std. Error	t-Statistic	Prob.
A	280.9921	78.52278	3.578478	0.0004
B	-0.502921	0.017809	-28.24027	0.0000
R2	0.400370			
Adj- R2	0.400104			

According to our results mentioned in table 2 the value of α non zero and that of β is also less than 1. Which applies weak form of pecking order theory exists in Pakistani firms. Our results are consistent with results Shyam-Sunder and Myers (1999) and by Frank and Goyal (2002). In both of them recorded β less than 1 i.e. 0.75 while our study shows is -0.50, which conforms to their studies.

The data is "positively skewed" or "skewed to the right," which applies that data has got long tail and mode is least effective in the context of data. The positive skewness of data applies that the mean and the median are both greater than the mode. This also applies that data is not normally distributed.

Moors (1986) established that $\beta_2 = Var(Z^2) + 1$. According to which it may be best to treat kurtosis as the extent to which scores are dispersed away from the shoulders of a distribution, where the shoulders are the points where $Z^2 = 1$, that is, $Z = \pm 1$. Balanda and MacGillivray (1988) wrote "it is best to define kurtosis vaguely as the location- and scale-free movement of probability mass from the shoulders of a distribution into its centre and tails." At the same time high value of kurtosis implies that 'single-peaked'.

The p value and t-statistic show that the result is significant at confidence interval of 95%.

We can see that from the value of α and β that strong from of pecking order theory is not acceptable. Result show that weak form of pecking order theory is supported by Pakistani firms.

These results are in line with Medeiros and Daher (2004) who conducted similar research on Brazilian firms. They also concluded that weak form of Pecking Order existed in Brazil.

The main implication that is different from other studies is the fact that Pakistani firms strongly support weak for of Pecking Order theory. Since the value of average value R2 and adjusted R2 are fairly high but it is less than 0.5 which indicates that it cannot be rationally applied to most of the companies in the data set. Thus notion mentioned above is further strengthen by value of R2obtained in this study for both for equations (1) and (2).

Tab. 3 – Regression results for equation (2). Source: Results generated from our model based on the input data from the Corporate Sector of Pakistan.

Coefficient	value	Std. Error	t-Statistic	Prob.
A	270.0576	49.74645	5.428681	0.0000
β1(CFO)	0.275537	0.018152	15.17947	0.0000
β2(CI)	-0.101163	0.051698	-1.956826	0.0505
β3(DIV)	0.041483	0.084807	0.489146	0.6248

β4WC	-0.611490	0.036980	-16.53591	0.0000
R-squared	0.400370			
Adjusted R-squared	0.400104			

5. CONCLUSION

We have attempted to test whether the hierarchic financing associated to the Pecking Order Theory prevails in Pakistan or not. Based on our research findings we have concluded that in Pakistan this phenomenon exist but in its weak form. These results are in line with those obtained by Sunder and Myers (1999), Frank and Goyal (2003). The main reason for this phenomenon is the low growth rate combined with difficulty in raising new capital as capital markets in Pakistan are not well developed and Pakistani economy lacks investment culture. Along this notion Pakistani firm's (non-financial) usually have low profitability and keeping in mind fact that all firms in our sample paid dividends as well, as result they end up with low retained earnings. So these factors leave firm with no other option but to put the pecking order theory behind them and arrange finance from easiest possible source. This explains why pecking order theory is favored by Pakistani non financial firms given the economic conditions and social conditions they face.

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JEL Classification: G32, G33