

Box: 5.2: The Determinants of Corporate Leverage: An empirical analysis of non-financial firms listed on PSX

A balanced capital structure with an optimal composition of equity and debt is key to a sustainable funding strategy as well as cost minimization. A very low leverage may reduce the ROE (as seen in DuPont analysis earlier) while a highly excessive leverage enhances the credit risk and, consequently, the cost of debt.

Table 1

Definition of variables

Variables		Definition	Expected Sign
<i>Dependent variable</i>			
Total Debt Ratio	Y	Total debt to total assets	
<i>Independent variables</i>			
Profitability	X1	Operating profit to total assets	PO(-ve) TO(+ve)
Growth	X2	Percentage change of total assets	PO(+ve) TO(-ve)
Size	X3	Natural log of total assets	PO(-ve) TO(+ve)
Liquidity	X4	Current assets to current liabilities	PO(-ve) TO(+ve)
REER	X5	Index of Real Effective Exchange Rate	?
Agregate Demand	X6	Per capita income	+ve

Note: PO = Pecking Order Theory; TO = Trade-off Theory

Source: SBP Staff Estimates

The research in the capital structure field is dominated by two principal themes: ‘*Trade-off theory*’ and ‘*pecking-order theory*’.²⁶¹ This note investigates the applicability of capital structure theories and tries to explore the firm-specific and macroeconomic factors that might affect it. The investigation is performed using panel data technique for a sample of 331 firms listed on the PSX for a yearly sample spanning 2006-2016. Various factors hypothesized to affect the leverage are appended in **Table 1**.

²⁶¹ Pecking order theory argue that companies prefer to finance their investment first by internal resources and then by borrowed capital, and finally by using the equity provided by shareholders (Myers and Majluf, 1984). Kraus and Litzenberg (1973) laid the foundations of

The following model is estimated using fixed effects technique.²⁶²

$$y_{it} = \alpha_0 + \sum_{i=1} X_{it} + u_i + \epsilon_{it},$$

where α_0 is the intercept, X_{it} 's are idiosyncratic and systemic factors defined in **Table 1**, u_i are the individual fixed effects while ϵ_{it} are the firm-specific residuals.

Table 2

The key determinants of leverage of corporate sector Fixed Effect Model (FEM) estimation

Dependent variables	Total Debt Ratio
<i>Independent variables</i>	
Constant	2.586 (0.000)
Profitability	-0.436 (0.000)
Growth	0.027 (0.129)
Size	-0.106 (0.000)
Liquidity	-0.118 (0.000)
Aggregate Demand	0.188 (0.000)
REER	-0.330 (0.000)
R2	0.331
No.of observations	3612
Residual unit root (Fisher)	0.000

Note: (i) *p*-values are reported in parenthesis below the slope estimates (ii) Fisher-type unit root test for unbalanced data (Madala & Wu, 1999).

Source: SBP Staff Estimates

The results, given in **Table 2**, reveal that, on average, profitability, size and liquidity of firms have statistically significant and negative impact on the leverage. This is consistent with the *pecking order theory*. It suggests that highly profitable businesses prefer to finance their projects through own resources rather than relying on

trade-off theory pointing out as the more profitable the company is, the higher the need for the debt tax shield.

²⁶² The Hausman (1978) test favors modeling fixed effects over the random effects.

external funding. Further, the large sized firms, generally blue chip big corporates, tend to have sound financial health and are likely to rely less on external borrowings. Furthermore, the availability of liquidity obviates the need of reliance on outside sources.

The leverage is found to have statistically significant and positive relationship with aggregate demand (proxied via per capita income) and worsening currency parity conditions.²⁶³ Growing economic activity raises the demand for borrowing, most probably, due to funding requirement in expansionary phase of the business cycle (including the need for operating fixed assets). A positive impact of a depreciation on borrowings makes sense either in case the firm is an importer of inputs or an exporter. In case of former, higher input costs may likely increase the need for finances. In case of the later, however, a weak local currency enhances the external demand for local goods, requiring higher production and a need for higher financing.

The results largely confirm our analysis in the previous sections, where it was observed that larger, liquid and profitable firms tend to have lower debts on their balance sheets.

²⁶³ Since we use REER, an increasing trend implies appreciation. Therefore, a negative relationship with REER actually implies a positive association with depreciation.
Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, 13(2), 187-221.

Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The journal of finance*, 28(4), 911-922.
Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the econometric society*, 1251-1271.

