

The Effect of Firm Size on Capital Structure Decisions: An Application on BIST Manufacturing Sector Firms

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Extensive Summary

The topic of capital structure decisions has been one of the most important issues in finance for a long time. A theory related to this topic, called Trade-off Theory, states that optimal capital structure occurs at a point where the tax advantage of debt is balanced with the bankruptcy and agency costs of debt. Another important theory, called Pecking Order Theory, emphasizes that firms finance their investments firstly by internal resources; as a second choice, they prefer to use debt; new equity issues, on the other hand, are applied only as a last resort. According to this theory, there are information differences among insiders and outsiders related to a firm's current cash flows and investments. In order to make efficient investment decisions, firms prefer the financing instruments that are less sensitive to this information asymmetry. There is no optimal capital structure according to the Pecking Order Theory and leverage is determined by the cash deficiency of a firm.

The effects of the factors that are thought to explain capital structure choices might differ among these theories. As an example, the profitability ratios are expected to negatively affect the leverage ratios according to the Pecking Order Theory while Trade-off Theory expects a positive relationship between profitability and leverage due to the fact that more profitable firms borrow more easily than less profitable ones, and they want to take greater tax advantage for their debt.

It is more costly to issue equity securities for smaller firms because they cannot benefit from economies of scale like big firms. When compared with big firms, smaller firms have higher information asymmetry. Due to these reasons, it is expected that Pecking Order Theory predictions will be more valid in small firms. (Gonzales and Gonzales, 2012).

In this study the firms are grouped in to portfolios according to their sizes. 79 Turkish manufacturing firms that are quoted on Borsa Istanbul over the 2000-2007 period are grouped into four portfolios according to their sizes and total leverage; short and long term leverage ratios are analyzed by panel data analysis. There are approximately 20 firms in each portfolio. The aim of the study is to determine whether

the results obtained from smaller portfolios comply more with the pecking order theory. Beside, it is also determined that whether these effects are higher in smaller portfolios.

In addition to firm-specific factors, macroeconomic factors such as interest rates, tax rates, capital market development, public debt, real GDP growth and exchange rate volatility are also analyzed. The study is conducted using panel data analysis because this method controls for the heterogeneity among firms, provides more explanatory variables, less multicollinearity problems and more degrees of freedom (Hsiao, 1986; Baltagi, 1995). The random effects model is used in this study.

Portfolios are constructed according to firm size. Firms with assets under or above the median values are also divided into two groups according to their position in terms of their total sales relative to median sales. Portfolio D-D consists of firms that have assets under the median value of assets and sales under the median value of sales. Portfolio D-Y consist of firms that have assets under the median value of assets and sales above the median value of sales. The firms that have assets above the median value of total assets and below the median value of sales are grouped into portfolio Y-D and the last portfolio, which is called Y-Y, consists of firms that have assets above the median value of total assets and sales above the median value of sales.

The model of the study is as follows:

$$L_{it} = \beta_1 + \beta_2 MDV_{it} + \beta_3 KAR_{it} + \beta_4 BF_{it} + \beta_5 BÜY_{it} + \beta_6 RİSK_{it} + \beta_7 BDVK_{it} + \beta_8 FAİZ_t + \beta_9 SP_t + \beta_{10} RSGYİH_t + \beta_{11} VERGİ_t + \beta_{12} KBORÇ_t + \beta_{13} VOL_t + \varepsilon_t + v_{it}$$

(Model 1)

Total leverage results show that in the portfolios where total assets of the firms are below the median values, the results generally support the expectations of the Pecking Order Theory. This theory expects a negative effect of profitability and the positive effect of growth opportunities on total leverage. For the portfolios which consist of firms above the median value of total assets, both the Pecking Order and Trade-off theories are supported by the findings. But the coefficients of the pecking order predictions are not higher in small firms compared to bigger ones. So, no evidence could be provided regarding the Pecking Order Theory has higher effect in explaining the capital structure decisions of small firms compared to big firms. Beside a negative coefficient of profitability and a positive coefficient of the growth opportunities, the size of a firm has a positive effect on total leverage ratios of these firms. For the largest firms, risk factor negatively affects total leverage as well. The negative influence of tangible assets on short-term leverage and the positive effect on long term leverage ratios is in line with the maturity matching principle in finance but the negative effect of tangible assets on total leverage ratio is not expected by the Trade-off Theory. Although the expectations of the Pecking Order Theory on tangible assets are mixed, it can be said that these results give partial support to the Pecking Order Theory in terms of tangible assets. Looking at macroeconomic factors, interest rates negatively affect all of the portfolios, whereas stock market development and exchange rate volatility have a positive effect on them. The effect of interest rates on the biggest portfolio is higher than the others. The results for stock market development can be interpreted in terms of capital markets and the banking sector being complementary to each other. The effects are higher in bigger portfolios. The positive effect of the exchange rate may be due to

the fact that exchange rate parities are quite low in the period of analysis. The coefficients are higher in the smallest and biggest portfolios. Real GDP growth has a negative effect on total leverage of the firms that have assets above the median. Tax rates negatively affect the total leverage of the portfolio that consists of the largest firms. Although this result is in contradiction to the expectations of the Trade-off theory, a new and a more certain tax variable that shows the direct tax payments of the firms is required for a more reliable conclusion.

As for the short term leverage ratios, both the Trade-off and Pecking Order theories are supported except for the portfolio that consists of the smallest firms. While a negative sign for profitability and a positive sign of growth opportunities confirms the Pecking Order Theory, the positive sign of the size factor is consistent with the expectations of the Trade-off Theory. The negative coefficient of the risk factor in the largest portfolio also provides evidence for the Trade-off Theory. The negative sign of tangible assets in all of the portfolios give partial support to the Pecking Order Theory. The results of macroeconomic factors are similar to those of the total leverage ratios. But the real GDP and the tax rate are significant only in the portfolio that consists of the largest firms. Although, the coefficient of capital market development for the biggest portfolio is very low, it should be interpreted with the results of long term debt analysis. Because capital market development increases long term debt only in the biggest portfolio.

As for the long term leverage ratios, the results of the smallest firms show that profitability and size negatively affect long term leverage, whereas the effects of tangible assets and growth opportunities are positive. Although the positive impact of tangible assets on long term leverage might be thought to support Trade-off Theory, it is better to interpret them with the results of total leverage. The medium-sized firms give limited support to the Pecking Order Theory and the largest firms again support both of the theories with a negative coefficient for profitability and a positive coefficient for the size variable. The results of the interest rates, stock market development, tax rate and volatility are only significant in the largest firms portfolio.

As a result it can be said that the findings for smaller portfolios support the Pecking Order Theory while the findings for larger portfolios support both theories. But the results that comply with the Pecking Order Theory are not heightened in smaller portfolios. The results of the macroeconomic factors vary with the firm size.

Since this analysis is performed with the firms that are quoted on Borsa Istanbul, the firms that are defined as small firms are the firms that are relatively small compared with the other quoted firms. For further studies it is better to make the analysis with the data of small and medium sized companies.